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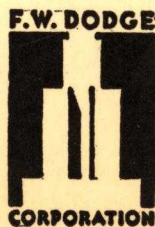
SWEET'S CATALOG FILE

A File of Manufacturers' Catalogs designed for the use of Architects, Engineers, Contractors and others whose practice it is to select, specify or purchase building materials, equipment and allied services.

SWEET'S CATALOG SERVICE

**DIVISION OF F. W. DODGE CORPORATION
119 WEST FORTIETH STREET, NEW YORK**

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**CATALOG
NO.
4**

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1913

OF THE

UNITED STATES

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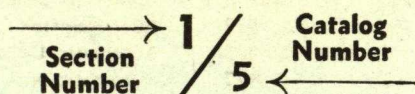
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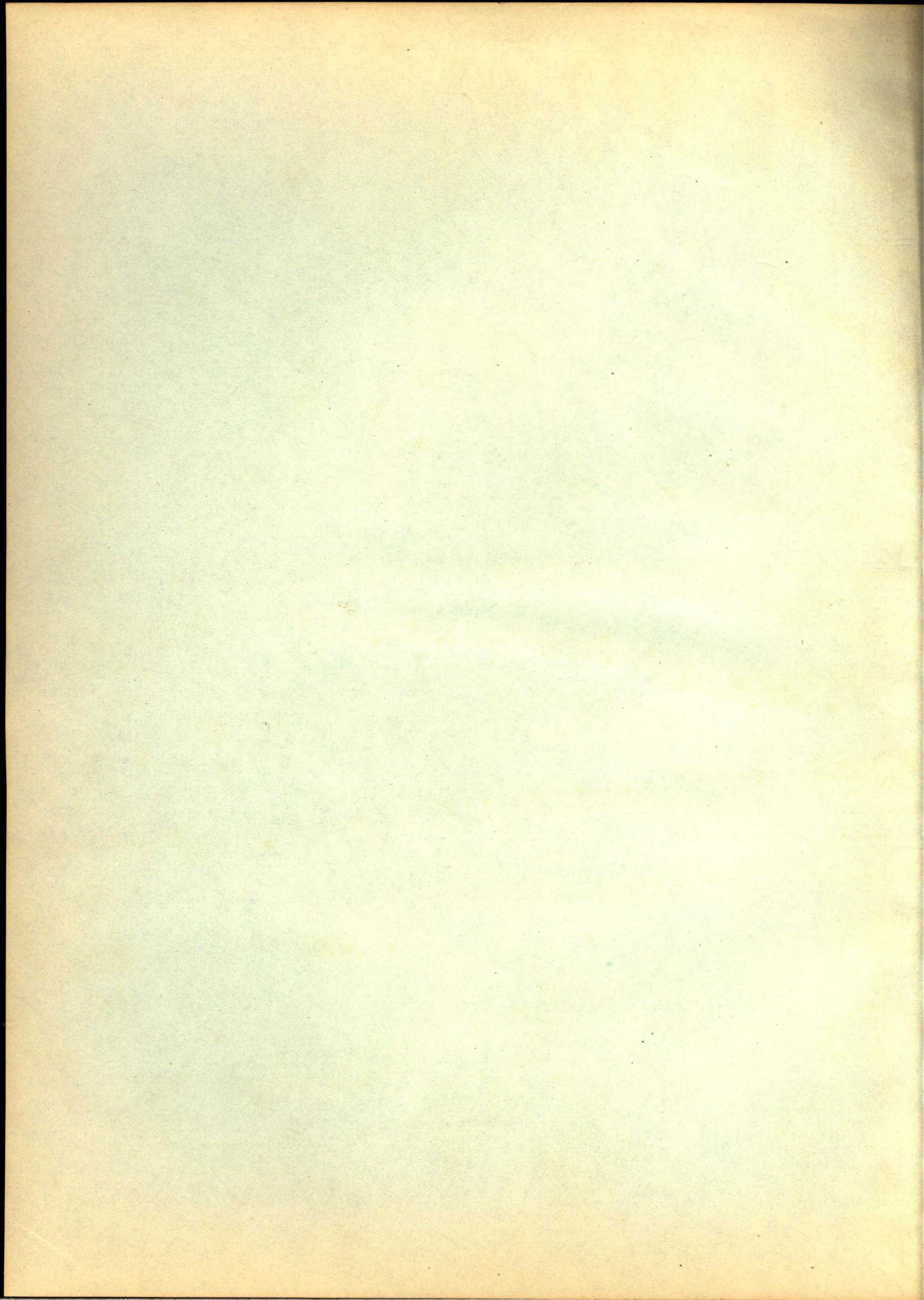
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THE HISTORY OF THE UNITED STATES

The history of the United States is a story of growth and change. From the first settlers to the present day, the nation has evolved through various stages of development. The early years were marked by exploration and the establishment of colonies. The American Revolution led to the birth of a new nation, and the subsequent years saw the expansion of territory and the growth of the economy. The Civil War was a pivotal moment in the nation's history, leading to the abolition of slavery and the strengthening of the federal government. The late 19th and early 20th centuries were characterized by industrialization and the rise of the United States as a world power. The mid-20th century saw the nation's involvement in two world wars, and the latter half of the century was marked by the civil rights movement and the Vietnam War. The present day is a time of continued growth and change, with the United States facing new challenges and opportunities.

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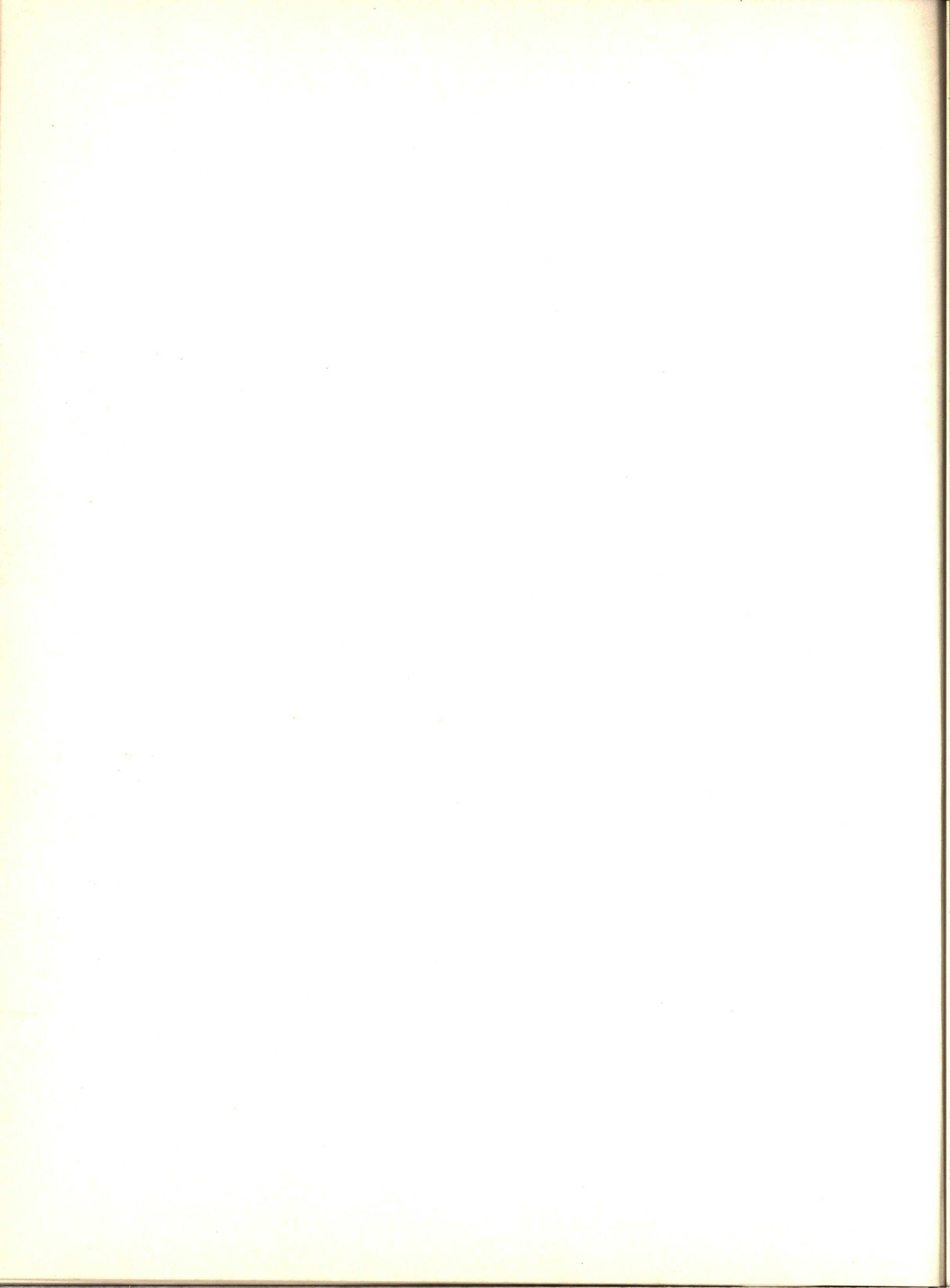
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WALSHCOFF

WALSHCOFF

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ALUMINUM COMPANY OF AMERICA

Member of The Producers' Council, Inc.

Manufacturers of Alcoa Aluminum and Its Alloys

1844 Gulf Building, PITTSBURGH, PA.

SALES OFFICES

ALBANY, N. Y., 90 State Street
ATLANTA, GA., 1818 Rhodes-Haverty Building
BOSTON, MASS., 20 Providence Street, Park Square
BUFFALO, N. Y., 1880 Elmwood Avenue
CHARLOTTE, N. C., 619 Johnston Building
CHICAGO, ILL., 520 No. Michigan Avenue
CINCINNATI, OHIO, Times Star Building
CLEVELAND, OHIO, 2210 Harvard Avenue
DALLAS, TEX., 1601 Allen Building
DAVENPORT, IOWA, 919 Kahl Building
DENVER, COLO., 634 U. S. National Bank Building
DETROIT, MICH., 3311 Dunn Road
FAIRFIELD, CONN., Boston Post Road
HARTFORD, CONN., Capitol Building, 410 Asylum Street
WASHINGTON, D. C., 605 Southern Building

INDIANAPOLIS, IND., 1008 Merchants Bank Building
KANSAS CITY, MO., 2306 Power & Light Building
LOS ANGELES, CALIF., 5151 Magnolia Avenue
MILWAUKEE, WIS., 735 North Water Street
MINNEAPOLIS, MINN., 1060 Northwestern Bank Building
NEWARK, N. J., 1111 Academy Building
NEW ORLEANS, LA., 1512 American Bank Building
NEW YORK, N. Y., 230 Park Avenue
PHILADELPHIA, PA., 2307 Fidelity-Philadelphia Trust Building
PITTSBURGH, PA., Gulf Building
ST. LOUIS, MO., 1000 Continental Building
SAN FRANCISCO, CALIF., 709 Rialto Building
SEATTLE, WASH., 1005 White Building
TOLEDO, OHIO, 915 Ohio Bank Building

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Natural Qualities

When you specify aluminum, you are obtaining a metal that is extremely light in weight yet has adequate strength for all decorative purposes and most structural uses. It has a high resistance to the corrosive action of the atmosphere and of a great many chemicals. High electrical and thermal conductivity are obtained as well as high reflectivity for radiant energy. It compounds are colorless.

Available Forms

When working with aluminum, you have a variety of all the forms of metal known.

Basic aluminum commodities are:	
Castings	Rod
Sand	Bar
Die	Forgings
Permanent mold	Screw Machine Products
Extruded Sections	Impact Extruded Products
Rolled Sections	Busbar
Sheet—coiled or flat	Rivets
Plate	Nails
Tubing—regular or irregular	Screws
shapes	Bolts
Foil	Pipe and Pipe Fittings
	Wire

Many Alloys

Through constant research and experimental alloying of commercially pure aluminum with small percentages of other metals, a system of varying aluminum alloys has been developed. Thus all the forms of aluminum are available in many different alloys with a wide range of mechanical properties to suit almost any requirement of service.

Ease of Fabrication

Today aluminum alloys are being fabricated and formed with ease into the most difficult assemblies in plants in all parts of the country. Aluminum can be drawn, spun, stamped, extruded, forged or cast. Aluminum alloys may be welded by torch, arc or resistance methods. Riveting with aluminum is accomplished by the usual procedure as used for other metals. Aluminum alloys are readily machined. Thus aluminum may be worked or fabricated on the same equipment as used for other metals, making only minor changes necessary for the varying properties of aluminum.



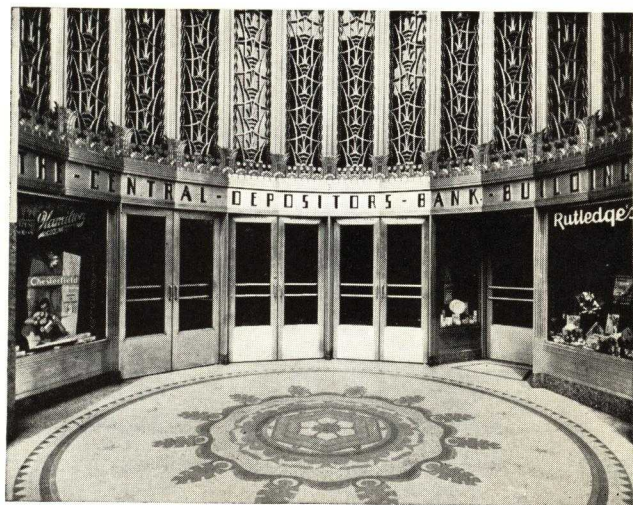
Cost of Aluminum

It is true if cost comparisons are made on a per pound basis that the price of aluminum is generally somewhat higher than that of other commonly used metals. However, comparisons should be made on the cost of the finished article as made from the various metals, since the volume of metal commonly used will be about the same, the price per pound of aluminum should be divided by the ratio of specific gravities (approximately 3 for most of the common metals) when comparing material costs. There should also be taken into consideration the economies which often result from the greater ease with which aluminum can be fabricated, finished and handled.

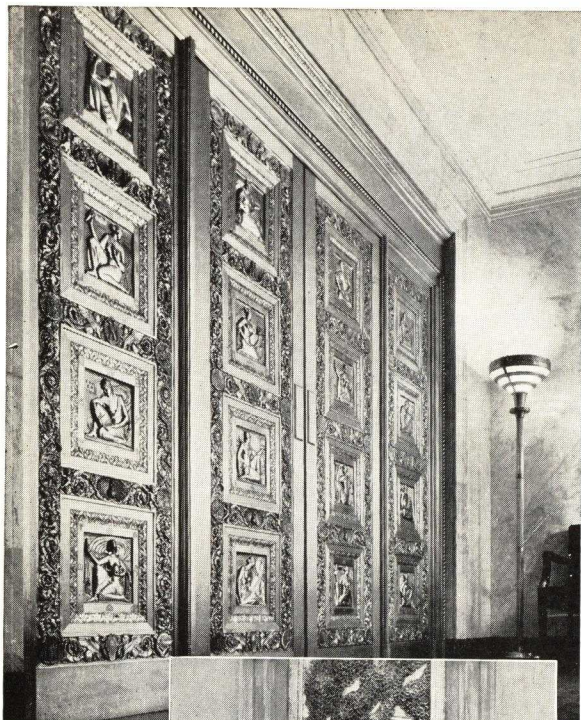
Thus when all factors are considered the cost of aluminum is often lower than metals which originally cost less per pound.

Maintenance

Because aluminum is highly resistant to corrosive atmospheres, little other than routine cleaning work is necessary. Since the compounds of aluminum are colorless, there is no danger of metallic streaking or staining of adjoining surfaces. Aluminum cannot warp or crack. It cannot rust and does not need to be painted.

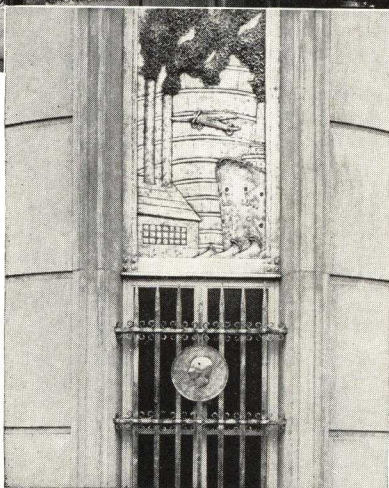


There are no limitations in designing doors and ornamental work in aluminum. Doors of aluminum are easy to operate, for they are so light in weight



Above:
Door designs of extreme simplicity as well as those of greatest detail are possible with aluminum.

Right:
An interesting effect obtained by hand-forged aluminum spandrel, medallion and grille.



Available Information

There have been presented here a few of the basic considerations about the metal aluminum. Naturally many more details are needed by the architect before he can specify and use this metal in his work. And quite obviously also it would be impossible to present here all of the information needed. There are, however, available a number of detailed booklets which give much valuable information and which will be sent immediately upon request to Pittsburgh or any of our branch offices. A list of these booklets with a short description of their contents follows:

Architectural Extruded Shapes—Shows in full size all of the aluminum extruded shapes applicable to architectural work. Many assembly details for store fronts, doors, windows, copings, etc., given. Contact our nearest Sales Office if you want this book.

Windows of Alcoa Aluminum—Has 30 pages of details and sizes available from all of the manufacturers now regularly selling aluminum windows. Also discusses in general the advantages of aluminum for windows.

Sills and Copings of Alcoa Aluminum—Lists all the sizes of sills available from warehouse stock and shows specially shaped sections for which dies are already available. Detail drawings show typical construction with aluminum sills and method of installation. Drawings of styles of copings explain the ease of installation and show the versatility of aluminum copings.

Contemporary Spandrel Design—Gives design considerations, methods of anchoring spandrels and shows a number of spandrel designs that have been successfully used.

Alcoa Aluminum and Its Alloys—112 pages of detailed information about all of our wrought and casting alloys with tables giving mechanical properties, composition, bend radii, commercial tolerances and many other pertinent facts. Discusses the choice of the proper alloy and the methods of fabricating aluminum. Really a complete textbook on aluminum.

Welding Aluminum—Gives in detail the up-to-date practices of torch, arc and resistance welding of aluminum.

Riveting Aluminum—Tells in detail the standard procedure for properly handling aluminum riveting work.

Machining Aluminum—Gives instructions for properly handling all of the ordinary machining problems encountered in shop practice.

Finishes for Aluminum—68 pages of detailed information about the mechanical, chemical dip, electrolytic oxide, electroplated and paint, lacquer and enamel finishes, which may be applied to aluminum.

SPECIAL CONSIDERATIONS

Extrusions

Of special interest to architects and designers is the fact that aluminum can be extruded in a variety of shapes and sizes. So, for structural parts, shapes are available or can be designed to dispose the metal more efficiently with relation to stresses

than is possible by use of standard rolled shapes or formed sections. For decorative purposes extruded sections, too, serve the designers' purposes, for they have smooth surfaces and have sharp clearly defined lines.

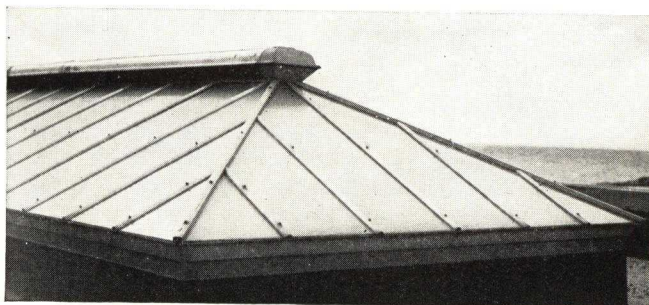
The range of shapes possible is practically unlimited. Dies for special shapes are *not* expensive.

Finishes

Finishes for aluminum may be divided into five general groups, i.e., mechanical, chemical dip, electrolytic oxide, electroplated, and paint, lacquer and enamel finishes.



Extruded, rolled, or cast construction is possible when store fronts are made of versatile aluminum. The use of the patented Alumilite finish keeps aluminum fronts bright and shiny



The light weight and high strength of aluminum, plus its excellent weather-resistant qualities, make this metal particularly well adapted to skylight work

The mechanically produced finishes are: polished, high-lighted, scratch brushed, satin, hammered, fluted, sandblasted, tumbled, and burnished.

Frosted dip, reflector dip, etched and chemical oxide finish comprise the chemical dip finishes.

In the oxide finish classification is the Alumilite* finish which is produced by an anodic treatment of aluminum in a suitable electrolyte so as to secure a dense, adherent coating of aluminum oxide. The finish may be either plain oxidized aluminum or colored. Alzak reflector* coating completes this group. These reflectors are finished with an oxide coating to give the surface protection and the high reflection factors (82 to 85 per cent for specular finish) are obtained by a special electrolytic treatment of suitable sheet prior to applying the anodic finish.

Electroplates, such as chromium, nickel, zinc may be applied directly on aluminum. Copper, brass, silver, as well as numerous other metals, may be readily applied to a preliminary nickel plating. Colored or oxidized finishes may be obtained on these deposits by the usual procedures. Black nickel may be applied directly to aluminum to be used as a background for etched name plates.

The paint, lacquer, and enamel finishes are of course obvious.

Alcoa Aluminum in a Modern Building

This list suggests some of the purposes for which Alcoa Aluminum is serving the architects' needs.

Awnings and Awning Boxes	Mirror Frames
Balustrades	Mullions
Batten Seam Roof	Newel Posts and Base
Ceiling Moulding	Ornamental Wall Plaques
Clocks	Radiators
Conduo Moulding	Revolving Doors
Coping	Spandrels
Directory Board	Stair Nosings
Doors and Frames	Stair Railings
Electric Light Conduit	Stair Risers
Elevator Doors	Store Fronts
Elevators	Terrazzo Strips
Fascia	Threshold Plates
Foyer Decorations	Trim
Hardware	Ventilating Ducts
Interior Grille	Ventilators
Kick Plates	Wall Rails
Lighting Fixtures	Window Sash and Frame
Mail Chute and Letter Box	Window Sills
Marquises	

Warehouse Stocks

To facilitate delivery of Alcoa Aluminum and its alloys, adequate stocks of the metal are available at strategic points throughout the country.

Sheet, extruded shapes, tubing, structural shapes, wire, rod, bar, screw machine stock, rivets, machine and wood screws, nails, pipe fittings, are carried by the following distributors and all of their branches:

METAL GOODS CORP.
2400 No. 10th St.
St. Louis, Mo.

PACIFIC METALS CO., LTD.
3100 Nineteenth St.
San Francisco, Calif.

STEEL SALES CORP.
129 So. Jefferson St.
Chicago, Ill.

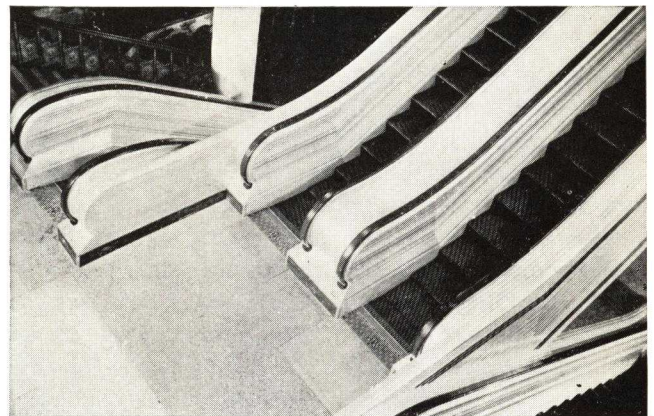
J. M. TULL METAL & SUPPLY CO.
285 Marietta St.
Atlanta, Ga.

WHITEHEAD METAL PRODUCTS CO., INC.
303 West 10th St.
New York, N. Y.

WILLIAMS AND CO., INC.
901 Pennsylvania Ave.
Pittsburgh, Pa.



Because they are light in weight, easy to handle, may be finished to obtain numerous effects, and never need painting, aluminum spandrels have been used on many monumental structures

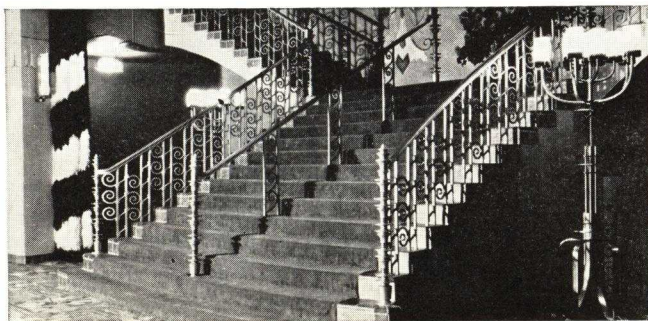


Escalator guards constructed of extruded aluminum sections permit many pleasing ornamental effects. Besides, they wear well and cannot splinter.



Above: This foundry office building demonstrates how aluminum adds dignity to a structure. Here are found aluminum windows, sills, spandrels, frame for glass block, and strip continuing the window lines.

Left: But one of the many ways aluminum enhances the appearance of interiors is demonstrated by this theatre lobby railing



**Patented Process.*

BOHN ALUMINUM & BRASS CORPORATION

Manufacturers of Extruded Architectural Shapes and Architectural Sand Castings

1400 Lafayette Bldg., DETROIT, MICH.

EXTRUDED ALUMINUM AND BRONZE

Extruded Bohnalite Aluminum and Bohnalloy Architectural Bronze offer the architect a truly modern medium in which to express individuality in design. The ever increasing list of major building projects in which Bohnalite and Bohnalloy extruded shapes have an important part is direct testimony of accuracy and fineness of manufacture of these Bohn products. Specifications which read "Extruded metal to be as manufactured by BOHN ALUMINUM & BRASS CORPORATION, Detroit, assure both architect and owner that the ornamental contractor will have a source of material that has combined metallurgical and engineering research with an experienced and skilled production staff in producing extruded metal shapes of superior quality.

Bohnalite Extruded Aluminum

Bohnalite extruded aluminum shapes are manufactured for the architectural metal trade under rigid metallurgical and mechanical control throughout the entire process of manufacture.

Virgin metals are alloyed to produce the various aluminum alloys recognized for architectural purposes. Each step in the preparation and melting of these alloys is subject to strict laboratory supervision to insure a finished product of the highest possible grade.

Bohnalite alloys are highly resistant to atmospheric corrosion, are colorless and will not stain or streak adjoining surfaces.

The danger of cracking or splitting due to internal strains is absent, as Bohnalite alloys will return to their original structure after expansion or contraction.

Bohnalite alloys are approximately one-third the weight of other commonly used architectural metals, with the consequent economy of material cost, shipping, handling and erecting.

Bohnalloy Extruded Bronze

Bohnalloy extruded bronze shapes are produced faithfully and true to design. Profiles are sharp and clear-cut, and dimensions are accurate and uniform.

The dense crystalline structure of Bohnalloy extruded bronze shapes insures strength of material and smooth, easily finished surfaces.

Straightening operations are given special care, insuring a minimum of fabricating cost to the user.

Bohnalloy No. 55, a standard architectural bronze has a tensile strength in excess of 45,000 lbs. per sq. in. Bohnalloy No. 56-A, an exclusive development of the Bohnalloy series, is a high tensile, corrosion resisting, easy welding bronze with an ultimate average tensile strength of 60,000 lbs. per sq. in., or more.

Extensive equipment and large production capacity insures fabricating and erection schedules being maintained and makes prompt service possible in emergencies.

CAST BOHNALITE ALUMINUM

Bohnalite Aluminum

Bohnalite architectural castings are manufactured with quality, beauty and utility uppermost, under rigid specifications. A dense crystalline structure of virgin metals offers the maximum resistance to atmospheric corrosion and inter-crystalline corrosion.

Various standard finishes are available and many striking and beautiful effects may be obtained.

Bohnalite alloys may be executed in very intricate design and detail, being extremely ductile and adaptable to fine execution.

Architectural Castings

Bohnalite alloys have a specific gravity of 2.7 and in comparison with other commonly used architectural metals, their weight is approximately one-third.

The advantage gained by this saving in weight results in a favorable comparative material cost and in addition a substantial economy in transportation handling and erection costs.

Typical examples of Bohnalite architectural castings are found in spandrels, copings, sills, crestings, grilles, entrances, newel posts and balustrades, cornices and tablets.

A FEW BOHNALITE OR BOHNOLLOY INSTALLATIONS IN RECENT BUILDINGS

Detroit, Mich., Post Office
 Post Office Department, Administration Building
 Trenton, N. J., Post Office
 U. S. Department of Labor, Washington, D. C.
 Federal Reserve Bank Building, Philadelphia, Pa.
 U. S. Naval Hospital, Philadelphia, Pa.
 Pennsylvania R. R., Newark, N. J.
 Chicago, Milwaukee & St. Paul R. R.
 Portland, Ore., Post Office
 Youngstown, Ohio, Post Office
 Radio City, Rockefeller Center
 Downtown Post Office, New York, N. Y.
 University Housing Project, Atlanta, Ga.
 Archives Building, Washington, D. C.
 State Capitol, Bismarck, N. D.
 May Company Store, Cleveland, Ohio
 Ford Recreation Building, Dearborn, Mich.
 Federal Reserve Bank, New York, N. Y.
 Triborough Bridge, New York, N. Y.

Waldorf Astoria Hotel
 New York Telegram Building
 Key West, Fla., Post Office
 U. S. Public Health Service Building
 Kill Van Kull Bridge
 Cincinnati Union Terminal
 Cincinnati Times Star Building
 Attica Prison
 Greensboro, N. C., Post Office
 Altoona, Pa., Post Office
 U. S. Botanical Garden, Washington, D. C.
 Lincoln Savings Bank, N. Y.
 Montgomery, Ala., Post Office
 Worcester Art Museum
 Pittsburgh, Pa., Post Office
 Bankers Trust Co., New York
 Solomon Juneau High School
 Providence County Courthouse
 Jefferson County Courthouse, Texas
 Benjamin Franklin Memorial



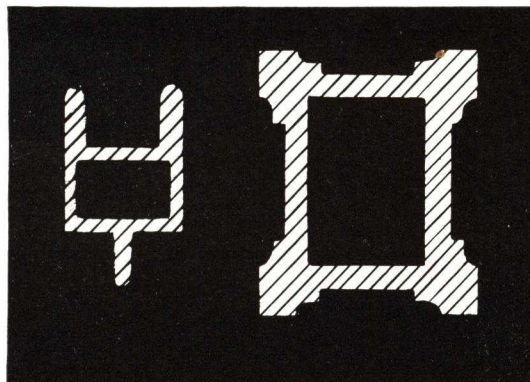
Jefferson County Courthouse, Beaumont, Tex.

INTEGRALLY EXTRUDED HOLLOW SHAPES**An Exclusive and Revolutionary
Bohn Extrusion Development**

Again our engineering and research development leads the field. Extruded hollow shapes, all of one piece are now available to the trade.

It is no longer necessary to accept the substitutes of lock seams, dovetail pieces or welded seams.

The tremendous advantages are obvious, typical cross sections of production specimens are shown in the margin.



CHASE BRASS & COPPER CO.

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WATERBURY, CONN.

CHASE WAREHOUSES

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LOS ANGELES, CALIF.

MILWAUKEE, WIS.
MINNEAPOLIS, MINN.
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NEW YORK, N. Y.
NEWARK, N. J.
PHILADELPHIA, PA.
PITTSBURGH, PA.

PROVIDENCE, R. I.
ST. LOUIS, MO.
SAN FRANCISCO, CALIF.
SEATTLE, WASH.

For Other Chase Pages, see File Index

ECONOMY OF DESIGNING WITH CHASE EXTRUDED SHAPES In Architectural Bronze

Why These Shapes Are Economical

It is more economical to use extruded bronze in place of cast or drawn shapes. By means of the extrusion process shapes may be formed to a minimum thickness which reduces the tonnage considerably. This results in a substantial saving in costs when a quantity of material is used. The extrusion process also makes it possible to get sharper and cleaner profiles than can be obtained with cast bronze. This helps toward faithful execution of even the most intricate designs.

On all new extruded shapes it is necessary to add a special charge to cover the cost of new dies. You can eliminate this extra cost by including only standard extruded shapes in your specifications. There are hundreds of Chase Standard sections available in Architectural Bronze. You will find that these



standard sections are particularly adaptable to original bronze designs.

Remodeling Work

Chase standard extruded shapes in Architectural Bronze are particularly adapted to remodeling work.

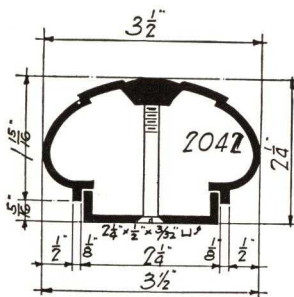
Right now in the midst of the extensive modernization movement, the architect can save time and money by specifying these standard sections. There is a wide range of shapes, designed especially for store front construction. Also cornices, door jambs, hand rails and all types of mouldings for interior decorative trim.

A complete knowledge of Chase extruded shapes will help the architect to take advantage of standard sections on all types of Architectural metal work.

A FEW TYPES OF SHAPES AND USES

Hand Rails

Here is a detail drawing of Chase Hand Rail No. 2042. This is representative of the attractive hand rails available as standard sections. The design of these hand rails is broad enough to permit the architect to select the hand rail needed for a particular style railing.

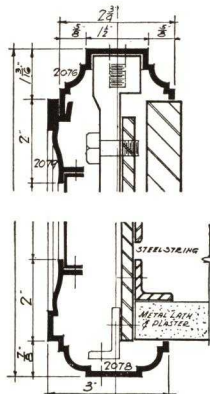


Railing Bases and Stair String Mouldings

The detail drawing at left center illustrates a section of top of face string showing application of Chase Standard Shapes No. 2076 and 2079.

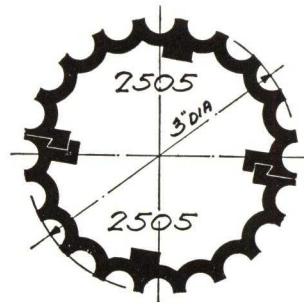
The detail drawing at lower left illustrates a section of bottom of face string and soffit moulding showing application of Standard Shape No. 2078.

There is also a complete line of standard extruded shapes for railing spindles.



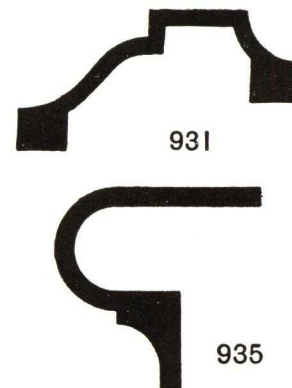
Pilasters

This detail illustrates the method used to produce full round pilasters using two sections of a reversible shape. An assembly of this kind is especially effective when smaller sections are used to form colonettes in conjunction with other members.



Miscellaneous Shapes

There are several hundred miscellaneous standard shapes which can be applied to original bronze designs. This effects a saving in both time and cost. Many of these shapes have two or more applications. For example: Chase Shape No. 935 was used as a window stool nosing and it was also used to produce an attractive bronze trim. Chase Shape No. 931 has been effectively used as a panel moulding.



COMPLETE CATALOG OF EXTRUDED SHAPES

The new Chase Catalog of Architectural Bronze Extruded Shapes has been prepared to help the architect in designing bronze work. Illustrations, working drawings and specifications provide tools from which designs may be detailed. Assemblies of standard shapes can be made with direct tracings from the full-size cross sections.

If you are not entirely familiar with the possibilities of extruded bronze shapes, we will be glad to answer any questions and send samples of actual materials.

If you would like a copy of this helpful catalog, please write to CHASE BRASS & COPPER Co., 1939 Malvey St., Waterbury, Conn.

C. G. HUSSEY & COMPANY

A DIVISION OF COPPER RANGE CO.
EXECUTIVE OFFICES AND MILLS
PITTSBURGH, PA.

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BUFFALO, 47 West Northrup Pl.
CHICAGO, 212 So. Jefferson St.
CINCINNATI, 424 Commercial Sq.

CLEVELAND, 5318 St. Clair Ave.
DETROIT, 6460 Kercheval Rd.
NASHVILLE, 213 McCall St.

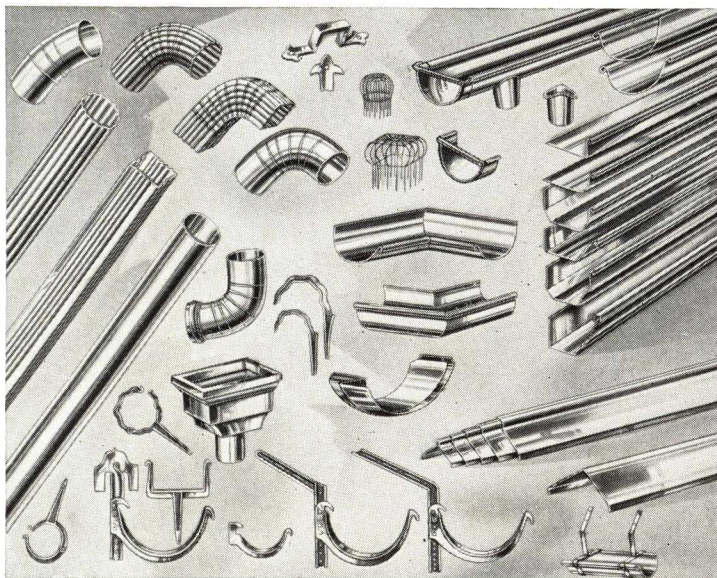
NEW YORK, 140 Sixth Ave.
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SAN FRANCISCO, 7 So. Front St.

COPPER, BRASS AND BRONZE FOR EVERY ARCHITECTURAL PURPOSE

Company Facilities and Service

HUSSEY Copper and Brass Service is backed by the accumulated experience of 90 years of progressive specialization in copper manufacture from mining and refining to rolling and fabrication—a service that is 100 per cent complete.

Seven strategically located Hussey Warehouses with full stocks of quality copper sheets and roofing material is your guarantee of a dependable, ready source of supply. Thirteen Hussey Sales Offices, located from coast to coast assure prompt dispatch of your order as well as expert counsel on copper roofing material problems when required.



Range of Products

C. G. HUSSEY & COMPANY have long been known for the wide variety of copper, brass and bronze products manufactured. Among Hussey products are sheet copper; tinned, lead, nickel or chromium coated copper; special copper for remanufacture; copper, brass and bronze rod, tubing and special shapes; wire of copper, brass, or commercial bronze; preformed products, such as conductor pipe, eaves troughs, gutters, ridging and all necessary elbows, shoes, hangers, heads and strainers to make a complete installation. Some of the applications of these products in architecture are shown and briefly described below.

TYPICAL ARCHITECTURAL USES OF HUSSEY PRODUCTS

Copper Roofing and Flashing

Because of its long life, beautiful color and easy working qualities Hussey Pure Lake Sheet Copper has always been popular with the architect for roofs of churches, monumental buildings and residences.

For permanent protection against moisture and seepage, Hussey offers genuine Majestic 3-Way Super-Bond Flashings which form not only a perfectly rigid bond between flashing and mortar but also effectively drain seepage, directing seeping from the masonry surfaces into gutters where it belongs. Detailed data on Hussey Pure Lake Roofing Copper and Majestic Flashings will be furnished on request.

Marquees of Hussey Copper or Bronze

Modern design has developed the marquee into an important part of theatres, hotels, auditoriums and many buildings. Copper and bronze lend themselves to such design and combine most satisfactorily with glass to provide a decorative feature to any structure.

Formed Copper Products

Roof drainage products of copper are an important part of the C. G. Hussey complete line. A separate catalog of shapes, sizes and designs will be furnished on request. Copper shingles are made in 16, 14 and 12-ounce thicknesses and lay 133 shingles to the square.

Bronze and Sheet Copper Spandrels

Spandrels of copper and bronze are produced in practically any design the architect conceives, and Hussey material is ideally adapted for this purpose. Sheet copper spandrels have many advantages, such as light weight, durability and shallow depth and are being used in many modern buildings.

Termite Protection

The Copper and Brass Research Association has recently issued a very informative booklet on "Termite Protection with Copper Shields"—every architect should have a copy. Your request to the Association direct or through this company will receive prompt attention.

Floor-Dividers

Hussey Warehouses also carry a complete line of brass floor-dividing strips for terrazzo, cement, marble, composition floors, etc.

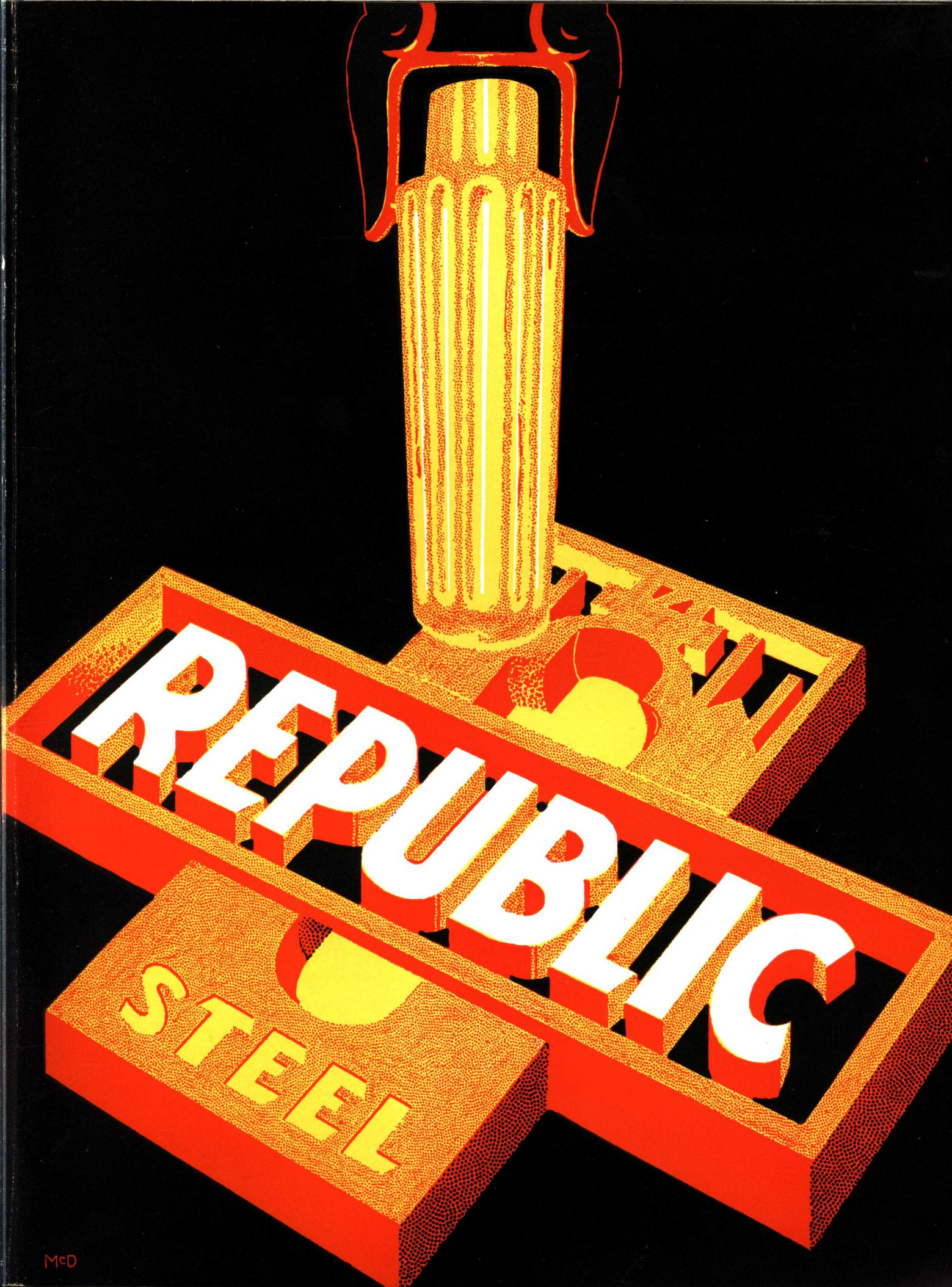
A FEW OUTSTANDING PUBLIC BUILDINGS AND PROJECTS IN WHICH HUSSEY COPPER WAS USED

Senate Office Building, Washington, D. C.
The White House, Washington, D. C.
Congressional Library, Washington, D. C.
Walter Reed Hospital, Washington, D. C.
Saratoga Springs State Spa, Saratoga Springs, N. Y.
Auburn Prison, Auburn, N. Y.
Rochester State Hospital, Rochester, N. Y.
U. S. Post Office, Goshen, N. Y.
Buffalo State Hospital, Buffalo, N. Y.
Goodyear State Hospital, Buffalo, N. Y.
Warren Brown Memorial Hall of Washington University, St. Louis, Mo.
Flower Conservatory of Forest Park, St. Louis, Mo.
Republic Building, Cleveland, Ohio
U. S. Post Office, Cleveland, Ohio
Ohio Bell Telephone, Garfield Extension, Cleveland, Ohio
New Eastern High School, Baltimore, Md.
Maryland Penitentiary, Baltimore, Md.
U. S. Parcel Post Office, Washington, D. C.
Edison School, Union City, N. J.

A. Harry Moore School, Jersey City, N. J.
Holland Tunnel, New York, N. Y.
Psychopathic Hospital, New York, N. Y.
U. S. Military Academy, West Point, N. Y.
Parcel Post Office, Brooklyn, N. Y.
Port of New York Authority Bldg., New York, N. Y.
Bellevue Hospital, New York, N. Y.
John Adams High School, Brooklyn, N. Y.
De Witt Clinton High School, Bronx, N. Y.
Grover Cleveland High School, Brooklyn, N. Y.
Sing Sing Prison, Ossining, N. Y.
Teachers College, Auditorium Bldg., Trenton, N. J.
U. S. Post Office, Newark, N. J.
Fordham College Buildings, Bronx, N. Y.
U. S. Post Office, Boston, Mass.
Naval Hospital, Boston, Mass.
Eastern State Penitentiary, Gratersford, Pa.
East Liberty Presbyterian Church, Pittsburgh, Pa.
Mellon Institute of Industrial Research, Pittsburgh, Pa.
Adler Planetarium, Chicago, Ill.

You will find the Hussey Catalog a valuable source of information for Copper, Brass and Bronze products—write for your copy

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A GOOD NAME is an asset without which no building product can gain the confidence of men who plan and build. For buildings become lasting monuments to their creators. If the structure endures and gives faithful service, the architect and builder are honored. If shoddy materials or faulty design cause early failure, discredit is reflected. In no other industry is material quality more important, good reputation more essential.

Republic Steel Corporation and subsidiaries offer the most complete line of steel products for the building industry. At your service are more than sixty plants in nineteen states, sales offices strategically located all over the nation, trained research workers and practical engineers, and production and development resources of one of the world's great makers of iron and steel.

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TRUSCON STEEL CO.	See File Index



Front Cover


Enduro on the tower of the Chrysler Building, N. Y. C.—an example of Enduro's ability to defy time and corrosion. Installed in 1929.

William Van Allen,
Architect

Photo by
Margaret Bourke-White
from Pictures, Inc.

REPUBLIC STEEL CORPORATION

GENERAL OFFICES • CLEVELAND, OHIO



REPUBLIC STEEL'S

ENDURO

STAINLESS STEEL FOR ARCHITECTURE

TIME—CORROSION—RUST—RESISTANT

All Buildings—Regardless of Usage—CAN

FOOD MARTS



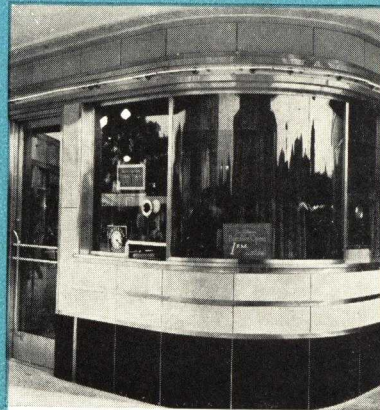
Fred Wolferman, Inc.
Kansas City, Mo.
E. W. Tanner, Architect

CHURCHES



Church, Our Lady of Perpetual Help
Tampa, Fla.
Frank Frimmer, Architect

THEATRES



Box Office, Ardmore Theater
Ardmore, Penna.
William H. Lee, Architect

OFFICE BUILDINGS



Evening Bulletin Building
Philadelphia, Penna.
George Howe, Architect

There are countless applications FOR THIS MODERN METAL

Stainless steel for modern buildings . . . a statement that is all embracing in range of application, is particularly true of ENDURO, Republic's perfected stainless steel. To attempt a list of all of the applications for this silvery-white stainless steel would fill many pages and would be but a list of usages to which any metal may be used in any building. All buildings—regardless of usage, from palatial hotel to private dwelling can employ ENDURO for beauty and utility.

The corrosion resisting qualities of ENDURO make it particularly adaptable where there is the possibility of damage from atmospheric attack. For example, ENDURO has been used for decorative effects in some of the country's finest buildings and yet its qualities make it equally suitable for such practical purposes as heater smoke pipes and conductor pipe, where it has a life many times that of ordinary pipe with the consequent economy and freedom from trouble.

A few possibilities include . . .

Air Conditioning Equipment	Chutes, Mail	Doors, Vault	Laboratory Equipment	Pillars	Sinks
Beer and Liquor	Clock Dials	Down Spouts	Letters, Stamped, Formed and Cast	Plaques	Skylights
Dispensing Equipment	Columns	Drinking Fountains	Lighting Fixtures	Play Ground Equipment	Smoke Pipe for Furnace
Blowers	Conveyor Systems	Elevator Dials	Lintels, Window	Posts	Soffits
Bolts and Nuts and Nails	Cornices, Copings and Gutters	Entrances	Louvers	Push Plates, Door	Spandrels
Booths	Counter Covers	Etched Panels	Marine Ornamentation	Railing, Decorative	Spires
Boxes, Safe Deposit	Courses, Band	Facades	Marques	Refrigerators	Store Fronts
Bulletin Board Frames	Crosses on Churches	Flashing	Medallions	Risers, Stair	Structural Members
Cabinets	Desks	Floor Plates and Tread	Mirrors	Rings, Circular	Tablets, Memorial
Cable, Wire	Display Cases (plain or refrigerated)	Flues	Moulding, Windows, etc.	Roofing	Theatre Equipment
Cages	Domes	Frames, Advertisement	Mullions (Exterior and Interior)	Rosettes	Towers
Casements	Door Jambs, Sashes and Moulding	Gates	Name Plates	Safes	Urns, Decorative
Ceilings	Door Push Bars and Plates	Grilles, Radiator and Decorative	Ornamental Metal Work	Screens (Frames and Cloth)	Vaults
Chairs	Doors, Elevator	Hardware	Panels, Plain and Fluted	Scroll Work	Ventilators and Ducts
Channels	Doors, Revolving	Hoods, Range and Laboratory	Partitions	Sheathing	Vestibules
Chimney Tops (to prevent down drafts)	Doors, Swinging	Incinerators	Piers	Shelving	Window Frames
Chute Covers		Kick Plates, Door	Pilasters	Shower Cabinets	Wire Cables
				Signs	
				Sills, Window	

Two REPUBLIC Stainless Steels

Two of Republic's many stainless steels are of special interest to the architect because of their particular suitability to architectural applications. These are ENDURO 18-8 and ENDURO AA. ENDURO 18-8 meets all

architectural requirements and is widely used for such purposes. ENDURO AA is less expensive and is used to some extent for interior work. The characteristics, finishes and fabrication are described on following pages.



REPUBLIC STEEL CORPORATION

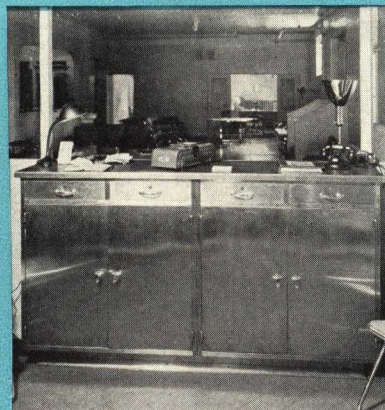
EMPLOY ENDURO[★] STAINLESS STEELS

RESIDENCES



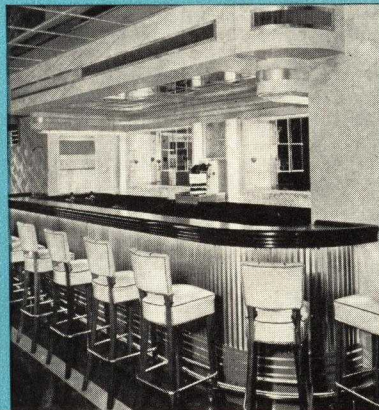
Southern Hardwood Home
Memphis, Tenn.
Mahan & Woods, Architects

HOSPITALS



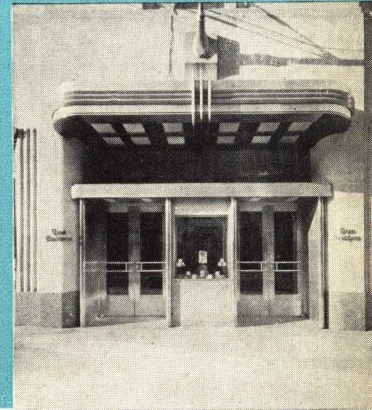
The Children's Hospital
Denver, Colo.
Burnham Hoyt, Architect

HOTELS AND RESTAURANTS



Hotel Onesto
Canton, Ohio
Frank Onesto, Designer

STORES



Hess Bros. Department Store
Allentown, Penna.
Thalheimer & Weitz, Architects

The following pages give important data for
the ARCHITECT on . . .

ENDURO is the trade name identifying the group of Stainless and Heat-resisting Steels perfected by Republic Steel Corporation at its Alloy Steel Division, Massillon, Ohio. Within the limits of these pages we have endeavored to present to the architect the unusual characteristics and wide range of possible applications offered by ENDURO. Many unusual uses do not come to our attention and we urge the architect to pass on to us, either direct or through our representatives, any unusual method of employing ENDURO Stainless Steels.

ENDURO—Republic's Perfected STAINLESS STEEL TECHNICAL DATA

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REPUBLIC'S *Architectural Service*

In the discussions on the pages which follow, emphasis has been laid on the necessity for selecting the proper type of steel to meet the particular conditions of the use contemplated. To assist the architect in specifying that type which will most satisfactorily meet his requirements, we offer the services of the Metallurgical Department of Alloy Steel Division, REPUBLIC STEEL CORPORATION, with its completely equipped modern laboratories where authorities are continually studying every factor connected with the production and application of stainless steels and where specialized advice is freely available.

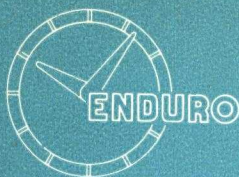
In connection with the uses of stainless steels shown and described herein it should be borne in mind that

★ Reg. U. S. Pat. Off.

REPUBLIC STEEL CORPORATION does not sell or furnish the products direct. The Corporation produces only the unfinished material which is fabricated by others. Any of the district sales offices listed on the back cover will be glad to cooperate with the architect and suggest fabricators who are experienced and qualified to handle the work. They will also advise the architect on questions of specifying, detailing and installation.

For such advice or assistance, please call the District Sales Office or the distributor nearest you or write to the Alloy Steel Division of the Corporation at Massillon, Ohio. Samples of various finishes will be furnished any architect on request.

ALLOY STEEL DIVISION, MASSILLON, OHIO • GENERAL OFFICES, CLEVELAND, OHIO



General Description,
History, Range, Capa-
bilities and Types
of Stainless Steel

Comparison of
Stainless Steel
and
Stainless Iron

Characteristics
Analysis and Physical
Properties of
Enduro 18-8

ENDURO STAINLESS STEELS

Enduro Stainless Steels are silvery-white in appearance and cannot chip, crack or wear thin as they are the same metal all the way through. With reasonable care they do not tarnish, corrode or become dull when properly applied. They can be worked and fabricated for any purpose. They can be given a number of different finishes or combinations, or may be etched and enameled to produce unusually beautiful effects. They may be combined with colored porcelain enamel (or with other metals) to produce a wide variety of pleasing effects. In brief, the unusual properties of Enduro Stainless Steels indicate their use not only for the finest of decorative effects but also for every application subject to possible corrosion.

Probably few persons not directly connected with the industry appreciate the wide range of uses now being made of stainless steel. A list of these would be a roll call of almost every manufacturing process in the United States. From cooking utensils to automobile parts, from golf clubs to bank vaults, stainless steel is finding new applications every day. In the engineering, chemical, power and oil refining fields, the corrosion- and abrasion-resistance and strength of stainless steel at high temperatures are essential.

Although chromium, the element, was discovered in 1789 and the acid-resisting properties of chromium-iron alloy appreciated as early as 1821, it was not until within the past twenty years that commercial application has been made of such alloys. Since 1913 hundreds of patents have been granted both in this country and abroad for various stainless alloys.

Naturally this flood of patents has led to considerable confusion, particularly among laymen, as it seems that nearly every steel manufacturer has entered the stainless field to make this or that analysis. Rash claims have been made regarding the performance of these alloys and far too often the application has been made to suit the alloy on hand rather than applying a specific alloy which would give the desired results.

While different trade designations are still used by various manufacturers, standard type numbers have been assigned to all stainless steel analyses. This has been done under the supervision of the American Iron and Steel Institute.

Technically there is a distinction between stainless iron and stainless steel, although the latter term is popularly, if erroneously, used to designate all stainless alloys.

Stainless Iron generally is an alloy of iron and chromium, or of iron, chromium and nickel, with a *very low carbon* content. The stainless properties of the alloy are due to the ability of chromium to form with iron a solid solution which is resistant to the various corrosive media. It is essential that sufficient chromium be present in solid solution to ensure stainless properties. The chromium content of Enduro Stainless Irons has been adjusted accordingly.

Stainless irons, or stainless steels as they are popularly known, as a class do not respond to hardening by heat treatment. Neither do they require special heat treatment other than that received at the mill to develop stainless properties. Stainless steel lends itself to deep drawing and other forming operations.

To meet the demand for corrosion-resisting alloys suitable for a wide variety of specific purposes, Enduro Stainless Steel has been developed in a number of types. In this development, all factors affecting corrosion-resistance have been considered and their relative importance established. The result is a series of alloys possessing maximum corrosion-resistance and physical properties, consistent with ease of workability, for each field of application. Two of these steels were especially developed for architectural uses and are described in detail on the pages which follow.

ENDURO 18-8 Enduro 18-8 contains approximately 18 per cent of chromium and 8 per cent of nickel with carbon over .08-.20 per cent. The addition of nickel—a metal possessing in itself considerable corrosion-resistance—to the stainless analysis greatly increases the corrosion-resistance of the alloy, extending this resistance to a number of materials which attack stainless chromium iron, to the point of complete immunity from attack. The addition of nickel also increases resistance to scaling at high temperatures, reduces grain growth, and at the same time lessens embrittlement after long service at high temperatures. Metallurgically, the effect of the nickel is to produce an alloy of the stable austenitic type; characterized by extraordinary toughness and ductility, no capacity for hardening under heat treatment, high resistance to impact, and the property of being non-magnetic. To take full advantage of the addition of nickel, certain processing is necessary and this forms an important part of the Enduro production method.

TYPICAL ANALYSIS AND AVERAGE PHYSICAL PROPERTIES OF ENDURO 18-8

Analysis

Carbon.....	over .08-.20%
Chromium.....	17.5-19.0%
Nickel.....	8.0-9.0%
Silicon.....	.75% max.
Manganese.....	.60% max.
Sulphur.....	.030% max.
Phosphorus.....	.030% max.

Weight—virtually the same as steel—0.286 lb. per cubic inch.

Thermal Conductivity expressed in calories per centimeter cubed: .035 Resistance to High Temperature Scaling.

Continuous Service 1600° F.

Intermittent Service 1450° F.

Co-efficient of

Linear Expansion—Temperature x 10.⁻⁶

0- 100° C. = 16.0

0- 300° C. = 17.0

0- 600° C. = 18.0

0-1000° C. = 20.0

Melting Point (approximately 2550-2600° F.)

Cold working increases the ultimate strength and yield points over those shown above but reduces ductility.

Average Physical Properties Annealed (24 Gauge Sheet)

Ultimate Strength.....	85,000 lbs. per sq. in.
Yield Point.....	35,000 lbs. per sq. in.
Elongation in 2 in.....	55.0%
Elongation in 4 in.....	50.0%
Elongation in 8 in.....	45.0%
Rockwell B.....	80.0
Olsen Cup Test.....	.450-.500

(Lighter gauges will have lower cup values)

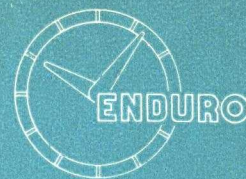
Average Physical Properties (Annealed Round Bar Stock Up to 2 in. Rd.)

Ultimate Strength.....	85,000 lbs. per sq. in.
Yield Point.....	35,000 lbs. per sq. in.
Elongation in 2 in.....	55.0%
Red. Area.....	65.0%
Rockwell B.....	80
Brinell.....	156

(Larger sizes will have lower strength values)

It is not uncommon to find 250,000 lbs. tensile strength, 2% elongation and 40-45 Rockwell "C" hardness in cold drawn 18-8 wire.

Cold rolled strip having 150,000 lbs. ultimate strength, with 20% elongation in 2 in., can be obtained. It will stand a 135° bend across the grain of the metal and 135° to 180° with the grain.



Characteristics, Analysis and Physical Properties of Enduro 18-8 (Continued)

FABRICATING ENDURO 18-8

The proper fabrication of any metal is a most important part of a successful installation and for this reason the data below are presented for the information of the architect who may be unfamiliar with the best methods of working and forming Enduro 18-8. Enduro 18-8 is one of the finer metals and should be handled similarly to other high grade materials rather than attempt to fabricate it by employing methods generally used on common iron or steel products.

Enduro 18-8 is well suited for deep drawing, punching and shearing. Its extremely high elongation and low yield point are indicative of what may be expected of this alloy as compared to regular deep drawing steel. It should, however, be pointed out that Enduro 18-8 work-hardens very rapidly and to a much higher degree than does regular drawing steel. For this reason it is necessary to perform as much work as possible in a single drawing operation and to reanneal between operations. The blanks used should be of sufficient size not to require excessive ironing out in the dies to secure cup depth, as the work-hardening characteristics of the alloy may cause high breakage loss as well as excessive wear on the dies. The use of a special lubricant of suitable consistency and body is quite important. A number of suitable drawing compounds are obtainable from chemical supply concerns and lubricant manufacturers. Speed of the press should be about one-half that used for steel and press capacity should be doubled. Hold-down pressure must be greater than that required for ordinary steel and will vary with the job. Die clearance should be about twice that used for steel or brass.

The work hardening characteristics and high tensile strength of Enduro 18-8 make it necessary to use more power in performing drawing operations than is required in forming and drawing steel of a similar gauge. A very close adjustment of shear blades and of clearance between punches and dies is recommended for punching and shearing operations. The power required will be greater for the reason previously given and it will be necessary to shear through the entire thickness of metal rather than permit it to snap off after a portion of the cross-section has been cut through, as occurs in punching most materials.

Enduro 18-8 is ideal material for rivets. As it does not harden on rapid cooling, nor develop coarse crystalline structure on heating, the more accurate temperature control required for straight chromium iron rivets is not necessary. Rivets when driven hot should be heated within a temperature range of 2100-2200° F. Smaller size rivets may be driven cold, as they remain tough and thoroughly dependable. Hot driving is recommended for rivets over 3/16 in. in diameter.

Enduro 18-8 may be welded by either the acetylene torch or electric arc, using specially prepared Enduro 18-8 welding rods or electrodes. It may also be spot and resistance welded, but cannot be forge or hammer welded. Seam welding of light gauge sheets is readily accomplished. Having no capacity for hardening, welds remain tough and ductile and do not develop the coarse, "weak" crystalline structure characteristic of the straight chromium iron alloys.

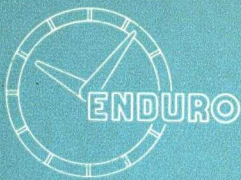
For acetylene welding, uncoated welding rods should be used. With plates and other heavy materials, chamfer the edges to be welded and place these a small distance apart. Build up a bead between these edges, keeping the flame pointed in the direction

The Importance of Proper Fabrication in Successful Installations

Deep Drawing, Punching and Shearing Qualities of 18-8

Riveting — Enduro 18-8 is ideal material for Rivets

Welding Qualities — Methods by which Enduro 18-8 may be welded



**Ways in which Enduro
18-8 may be welded
(continued)**

**Soldering of Enduro
18-8 produces strong
and firm joints**

**Brazing and
Silver Soldering —
Satisfactory Fluxes**

**Machining and
Drilling are best
accomplished with
Enduro 18-8-FM.**

**Protecting the Surface of
POLISHED Enduro during
Forming, Drawing, Mould-
ing, Construction and
Erection**

**Preventing of Injury
During Fabrication**

**Protection during
Building Construction**

**Passivation and
Passivation Tanks**

of welding so as to preheat the work. Use a slightly reducing flame, and see that it is no larger than necessary for the work to be done. For electric arc welding, specially coated rods or electrodes must be used. Reverse polarity (electrode must be positive and work the negative pole) and regulate the machine to give the same or lower voltage than would be used with plain steel rods, and with sufficient current to give good fusion. Definite instructions cannot be given as much will depend upon the character of the work and the type of machine used. (See Enduro Welding Booklet for further information.)

While welds made with Enduro 18-8 are naturally tough and ductile, the annealing treatment previously mentioned is strongly recommended if the welded material is to withstand severe corrosive attack. This treatment will tend to remove the difference in structure between the weld and the adjacent metal, which is the primary cause of local attack in welded structures. Where acid corrosion may be encountered and annealing of the weld is not possible, Enduro 18-8-S should be used.

Enduro 18-8 may be soldered without difficulty, producing firm, strong joints. For pickled finish sheets, the ordinary muriatic acid, cut with zinc, may be used. However, better results will be obtained with special commercial fluxes, used with ordinary solder, and by pursuing the same procedure as with copper, tin, terne, etc. For polished sheets, the surfaces to be joined should be roughened with a coarse emery wheel or cloth before tinning.

The metal comprising the joints should be properly tinned before assembly. The half tin, half lead type of solder may be used but solder with higher tin content such as 75% tin—25% lead is recommended because it does not discolor as rapidly under atmospheric exposure. Pure block tin can also be used. On account of the low thermal conductivity, use a large soldering iron which will have sufficient heat capacity to heat the metal thoroughly. Immediately after soldering, *all traces of acid must be thoroughly removed* by washing with soap and water to which has been added some washing soda, as the acid attacks the metal readily and will stain if not removed. Soldering should not be depended upon for strength but simply to seal the joint. Riveting, lock seaming or spot welding should be used for strength. Rivets should be tinned to insure adhesion of the solder before driving which, of course, is done cold.

We recommend welding rather than brazing whenever possible due to the excellent welding properties of 18-8 and to the possibility of intercrystalline penetration of the brazing alloy. This lowers corrosion-resistance and causes embrittlement of the joint under wet corrosive conditions by favoring electrolytic action. Brazing must be carefully done to prevent the penetration of brazing alloy into the grain boundaries of the metal.

For brazing and silver soldering proceed in the usual manner, observing the precaution of having the metal just sufficiently hot for good adhesion. Special stainless steel brazing flux should be used.

Being an austenitic alloy, Enduro 18-8 is tough and somewhat difficult to machine. In order to overcome the machining difficulties heretofore confronted, Republic has produced a free machining 18-8 alloy which is termed ENDURO 18-8-FM. This free machining alloy, as its name suggests, simplifies to a great extent turning, milling, boring and drilling operations. Its corrosion-resisting properties are comparable to those of the regular ENDURO 18-8. Best results are obtained with slow cutting speeds and moderately heavy cuts.

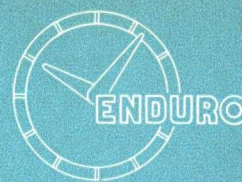
Many applications of Enduro permit the use of mill polished sheets such as No. 4 finish, No. 6 Tampico finish, No. 7 finish and No. 8 mirror finish. A few of these applications are—soda fountain and bar equipment, dairy equipment, meat packing equipment, hospital and kitchen equipment, restaurant and cafeteria equipment and for structural and decorative purposes such as used on the Empire State, Chrysler, Insurance Co. of North America Building and many others.

The polished surfaces must be carefully protected during fabrication. This is accomplished by proper lubrication or by the use of protective paper and tape in brakes.

When Enduro is used for decorative purposes in building construction it must be protected from cement, plaster, paint, rust from steel work and other "building filth." This may be done by coating with special lacquer which is removed when construction is finished, or by pasting Manilla paper over the surface.

The passivation treatment consists of immersing the material, after removing any grease film, in a 25% by volume solution of nitric acid and water at a temperature of 120-130° F. for 20-30 minutes. The purpose of the passivation treatment is to remove any trace of iron or steel which has become abraded on the stainless steel due either to shearing or contact with dies in forming operations. The nitric acid bath will remove this film of iron without affecting the surface of the polished stainless steel.

Bulletins covering in detail each of the operations and treatments which may be applied to Enduro Stainless Steels are available and will be sent gladly to any architect on request.



Characteristics and Recommended Uses of Enduro AA

ENDURO AA Enduro AA is a straight chromium alloy. It is a fairly ductile, non-hardening alloy with physical properties equal to a high grade medium carbon steel, with resistance to general corrosion and oxidation at high temperatures.

It is recommended *only for interior applications* as its resistance to corrosion is not equal to 18-8.

Fabrication in general is similar to 18-8 except it does not possess the same degree of ductility or welding properties, and does not work harden to any great extent.

All welded joints in straight chromium alloys (without the addition of nickel) have a tendency to embrittlement at and adjacent to the weld, due to the high temperatures required for welding, which causes excessive grain growth.

TYPICAL ANALYSIS AND AVERAGE PHYSICAL PROPERTIES OF ENDURO AA

Analysis	
Carbon .....	.12% max.
Chromium	14.0—18.0%
Silicon .....	.50% max.
Manganese .....	.50% max.
Sulphur .....	.03% max.
Phosphorus .....	.03% max.
Weight per cubic inch—virtually the same as steel. (.277 lbs. per cu. in.)	
Thermal Conductivity expressed in calories per centimeter cubed: .045	
Resistance to High Temperature Scaling—	
Continuous Service 1500° F	
Intermittent Service 1600° F.	
Coefficient of	
Linear Expansion—Temperature x10. ⁻⁶	
0-100° C. =	9.6
0-300° C. =	10.1

0-600° C. = 10.9
0-800° C. = 11.2

Melting Point—2650°-2700° F.

Average Physical Properties (Annealed Sheet)

Ultimate Strength	80,000 lbs. per sq. in.
Yield Point	50,000 lbs. per sq. in.
Elongation in 2 in.....	26.0%
Elongation in 4 in.....	22.0%
Elongation in 8 in.....	18.0%
Rockwell B	80

Average Physical Properties (Annealed Round Bar Stock)

Ultimate Strength	80,000 lbs. per sq. in.
Yield Point	50,000 lbs. per sq. in.
Elongation in 2 in.....	25.0%
Reduction of Area.....	60.0%
Brinell	160

SHAPES • SIZES • FINISHES OF ENDURO STAINLESS STEEL

Enduro Stainless Steel is furnished in the forms listed below. In addition to these Enduro may be cast and the architect will find many uses for which cast stainless steels are especially appropriate. All shapes are made by fabrication and either formed, rolled or drawn. In the present state of the art Enduro does not lend itself readily to the extruding operation. For detailed information consult any Enduro Stainless Steel Distributor or any of the Republic District Sales Offices listed on the back cover.

Rounds—Hot rolled, cold drawn, centerless ground and polished.

Squares—Hot rolled and cold drawn.

Hexagons—Hot rolled and cold drawn.

Flats—Hot rolled and cold drawn.

Sheets—Standard gauges and sizes, annealed and pickled, polished one side and polished both sides.

Plates in practically any size and thickness obtainable in plain steel; large size one-piece flanged and dished heads.

Strip—Hot rolled and cold rolled.

Forging Blanks—Any reasonable weight or size.

Shapes, Angles, Channels, I-beams, etc.—Sizes on application.

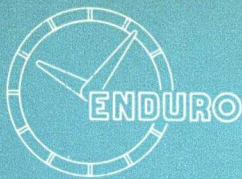
Tubing, seamless, Republic electric resistance welded. Pickled or polished.

Welding Rods, 1/8 in., 5/32 in., 3/16 in. diameter. Coated and uncoated carried in stock for electric and acetylene welding.

Castings can be furnished of Enduro 18-8 analysis by special arrangement.

Bolts and nuts, rivets, screws, nails, tacks, spikes, wire and many other items of Enduro Stainless Steel can be obtained from various sources. Names of manufacturers will be gladly furnished.

Shapes, Sizes and Finishes



Suggestions on the Selections of Finishes — Design- ations for Sheet Finishes

Enduro Stainless Steel Strip

Installation Examples

Of primary importance to the architect in designing with Enduro Stainless Steel are the many different finishes in which this unusual metal may be obtained. Unlike plated materials, Enduro is the same beautiful color throughout and has no coating to wear off. As it is proof against tarnishing and corrosive attacks when properly fabricated and installed, it can be used with every assurance that the original effect will be retained during the entire life of the building.

FINISH DESIGNATIONS

The various sheet finishes are designated as follows:

- No. 1 Hot rolled annealed and pickled
- No. 2-B Full Finish (Bright cold rolled)
- No. 2-D Full Finish (Dull cold rolled)
- No. 4 Standard Polish on one side or both sides
- No. 6 Standard Polish, Tampico Brushed on one or both sides
- No. 7 High Lustre Polish on one or both sides
- No. 8 Mirror Finish on one or both sides

Although the architect will probably select the finish to produce the special effect desired, certain restrictions should be borne in mind and the advice of Republic Steel Corporation representatives or distributors secured on any problems not covered here. For example, the finish possible on the stock will depend to a considerable extent on the amount of forming necessary. It is inadvisable to use polished sheets for extra deep drawing operations where score marks from dies are likely to occur in forming or where it is necessary to reanneal to make a second drawing operation. Our No. 1 Finish should be used under these conditions.

Numerous other applications of the No. 1 Finish may be made at points where appearance is not a primary factor but where corrosion-resistance is important, such as mail chutes, tanks, tubing and a variety of other uses.

No. 2B Finish and No. 2D Finish are the same as No. 1 except that they have a slightly higher finish due to cold roll processing.

Polished finish should be used only where stock will be employed without further working, where the degree of working is small or where finish can be protected so that excessive refinishing is unnecessary.

No. 4 Finish, being ground and polished, is very satisfactory for interior application. It possesses a ground surface appearance with a medium lustre and is considered the best commercial type of finish for such applications as bank vaults, restaurant and soda fountain equipment, sterilizers, laundry machinery, packing house refrigerators and equipment, cold storage, canning and preserving equipment, trim for cabinets and numerous other places where a fairly high lustre and ease of cleaning are desired.

No. 6 Finish has a silvery lustre and does not have as high a reflectivity as No. 4. It can often be used to blend in conjunction with finishes of higher lustre or other metals. Higher lustre finishes, such as No. 7, are obtainable and are similar to No. 4 with the exception that the lustre obtained by buffing is much brighter.

No. 8 Finish is the highest obtainable in commercial steel practice. All of the grinding lines are removed and a sheet of high reflectivity is obtained. This finish is used for mirrors and for trim where highest lustre is required.

The finishes of Enduro Stainless Steel strip are designated as follows:

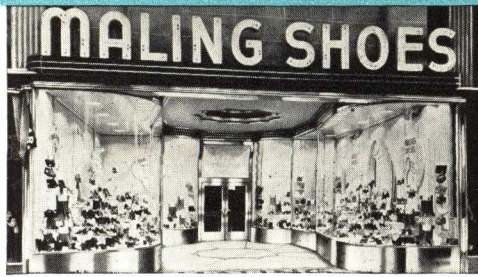
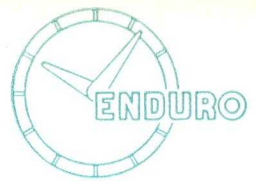
- No. 1 Standard, annealed and pickled.
- No. 2 Standard, annealed, pickled and rerolled.
- No. 3 Special bright finish.

A REVIEW OF SPECIFIC INSTALLATIONS

It may be interesting to review the processing procedure applied to the Enduro sheets used on the Chrysler and Empire State Buildings and more recently on the Richman Bros. Building, Detroit, and the Insurance Company of North America Building, New York, as these may be considered typical of such architectural applications. The sheets, which were of Enduro 18-8, after being hot rolled, annealed and pickled, were rough ground with No. 80 grit used dry, followed by successive grease wheels of 100-120, etc., until the finish desired was obtained. The Chrysler sheets received a relatively high finish followed by buffing and passivation (in nitric acid).

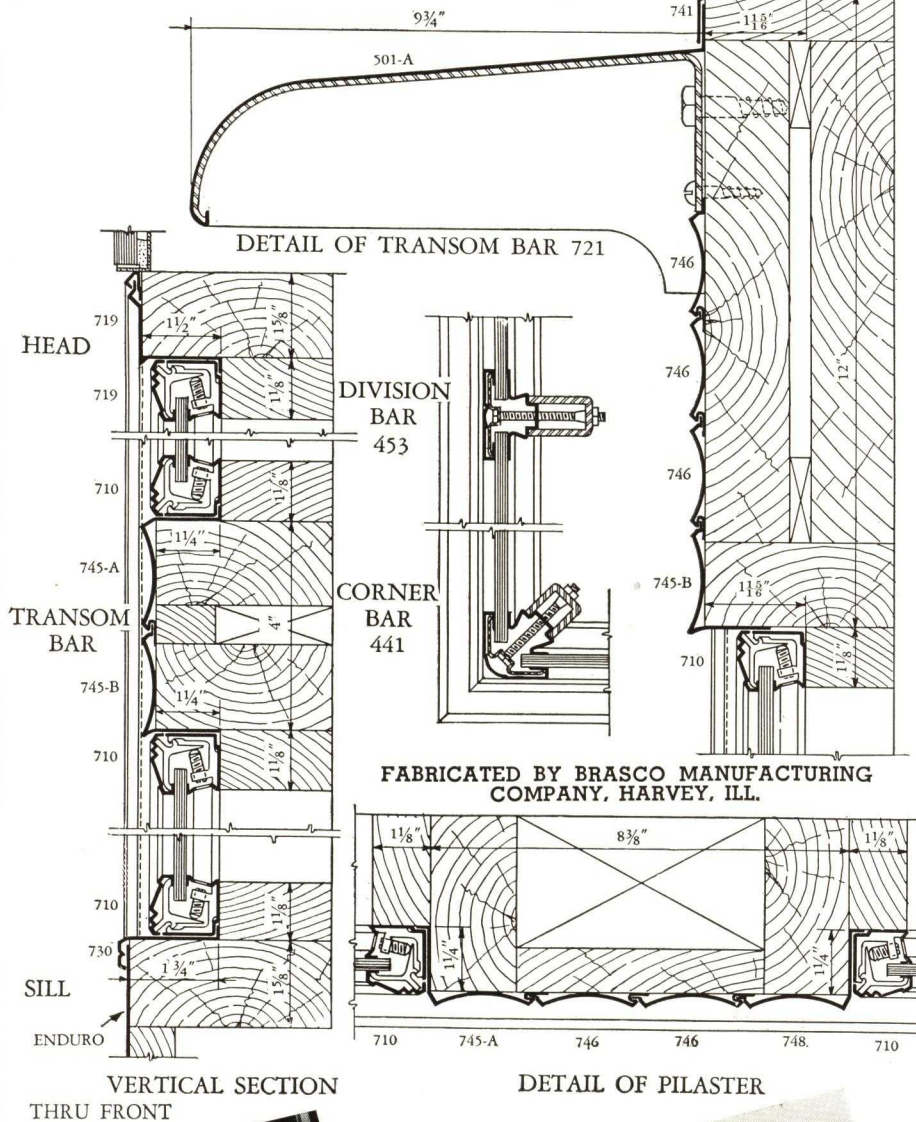
The Empire State Building, Richman Bros. Building, and the Insurance Company of North America Building sheets had a medium finish, followed by a special wheel to dull the lustre, giving a No. 6 Tampico finish. These sheets likewise were given the passivation treatment; then after being formed into panels at the fabricators' plants, they were again passivated, following the removal of the drawing compound by the use of gasoline and whiting. In the foregoing descriptions it has been impossible to give more than a general idea of the appearance of each and the differences between the various effects possible. It has also been found impossible to show these finishes by half-tone engravings. For these reasons we suggest that the architect secure samples of the various finishes from Republic District Sales Offices or Enduro Distributors before making a definite selection.

ENDURO STORE FRONT CONSTRUCTION



APPLICATION OF ENDURO
STORE FRONT CONSTRUCTION

Maling Shoe
Store
Chicago, Ill.
Archts.
Leichenko and
Esser



In the present trend toward modernism in store front design, usually involving the use of gleaming white metals, Enduro fits perfectly.

The attractive appearance, complete resistance to corrosion and tarnishing, and a wide variety of finishes of this metal, make it the ideal material for the finest of decorative effects as well as for every purpose subject to possible corrosion. Because of these qualities, it is natural that Enduro has come to occupy a most important place in modern store front construction.

In designing a store front the architect plans for a very definite effect. To accomplish this he must use materials which will be striking in appearance, which will contribute to the attention-getting character of the complete design and yet which will not detract from the principal purpose of any window, namely, the sales-influencing display of goods. Likewise, of utmost importance to the designer as well as to the store owner, is the matter of upkeep or cleaning.

It is therefore essential that the architect select a metal which will retain its original beauty as long as it is in place and one which will require only a minimum of cleaning. Enduro will withstand the corrosive action of most acids, smoke and rain water. Washing down the window glass, with its accumulated dust, cannot stain the gleaming surface of Enduro Stainless Steel.

In selecting Enduro the architect will find it a decided advantage to be able to use the same metal for glass settings, awning bars, lettering, display signs, ornamental trim, in fact, for every part of his design.

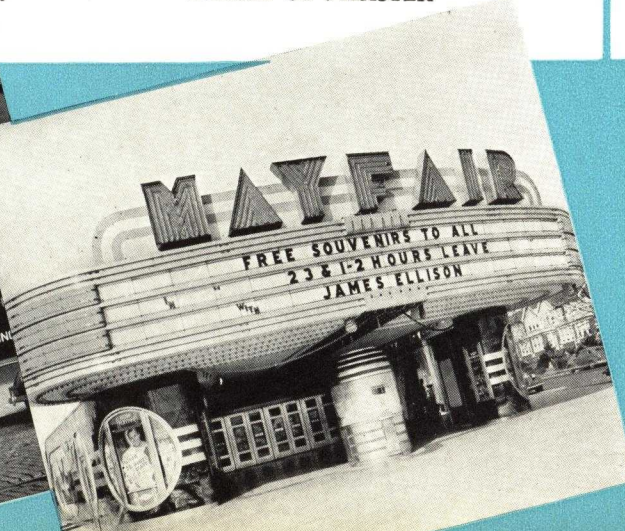
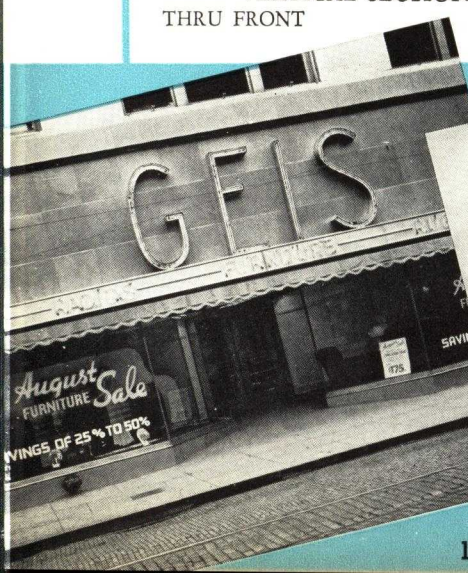


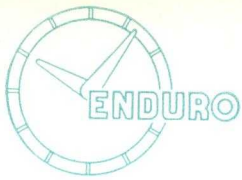
1. GEIS FURNITURE STORE
JOHNSTOWN, PENNA.
ARCHITECT—H. BAILEY

Enduro used for all metal work on this store front because of its durability and attention value.

2. MAYFAIR THEATRE
PHILADELPHIA, PENNA.
ARCHITECT—
DAVID LUPKOWITZ

Enduro used for all outside trim, marquee ceiling, doors, ticket booth and poster frames.





ENDURO STORE

"HIMCO" No. 70—The Himmel Bros. Co., New Haven, Conn.

OTHER APPLICATIONS OF ENDURO IN STORE FRONT CONSTRUCTION

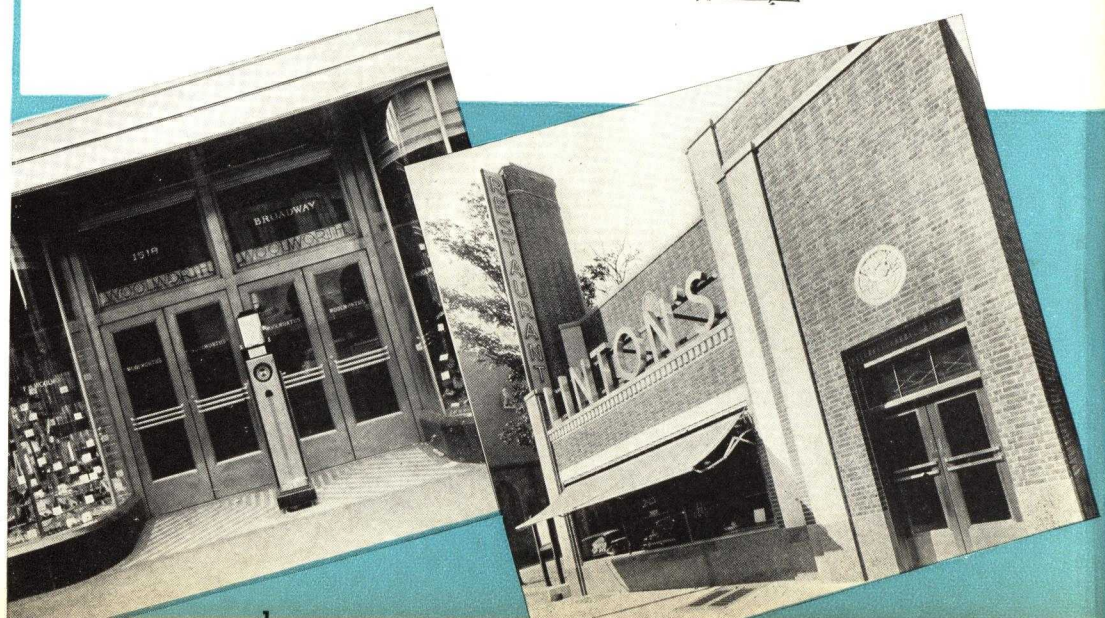
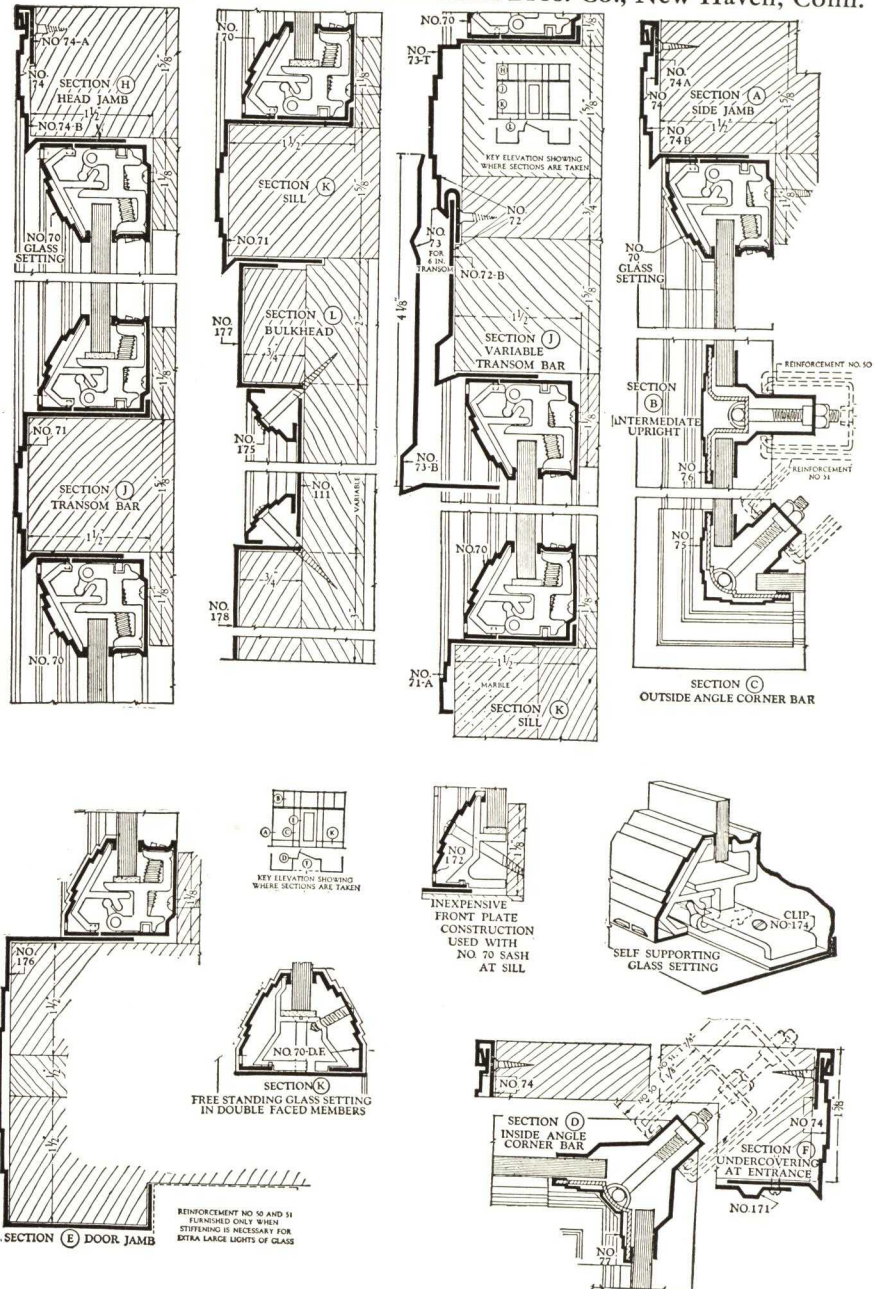
Modern design trends have made the store front increasingly prominent in influencing consumer action. Today, the modern store, to attract, must have its own individuality. Its construction materials, therefore, are required to perform a dual function.

Architects, in recent years, have discovered in Enduro this combination of ease of maintenance, remarkable durability—and unusual versatility. Enduro is no longer restricted to simple ornamental trim—but now includes such applications as embossed signs, medallions and trademarks of a highly decorative nature. In addition, Enduro is also performing a useful service in the form of ventilating louvers and grilles which possess unusual eye-appeal as well as serving their useful purpose.

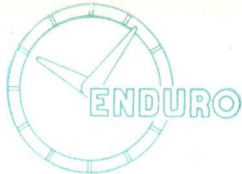
The architect will indeed be forced to exert his imagination to conceive a usage employing metal—either decorative or practical—that cannot be interpreted in Enduro. The enduring beauty of this metal—coupled with its year-after year durability—rank it as the logical choice for store fronts of outstanding sales influence.

The three store front construction drawings shown on these pages illustrate practical methods of employing Enduro to meet these conditions effectively. The drawings shown do not attempt to present minute details—but merely serve to give an idea of the typical methods employed for fabricating and installing Enduro.

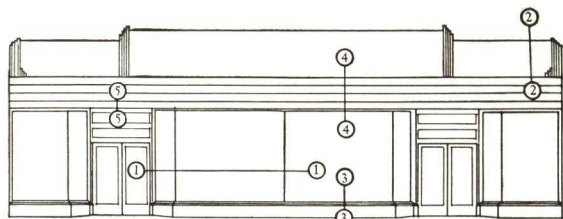
For dynamic attention value, combined with unusual durability and low upkeep cost—specify ENDURO for store front construction.



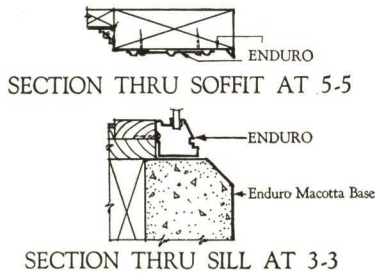
FRONT CONSTRUCTION



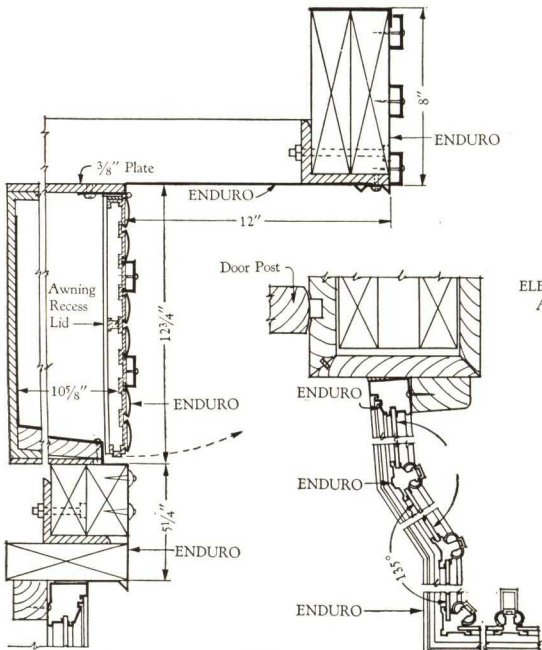
INSTALLATION DETAILS OF ENDURO Fabricated by Sioux Metal Products Co., Sioux City, Iowa



KEY FRONT ELEVATION
Scale — 1/16" = 1' 0"

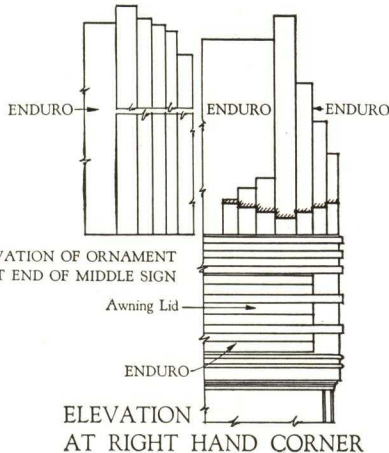


SECTION THRU SILL AT 3-3

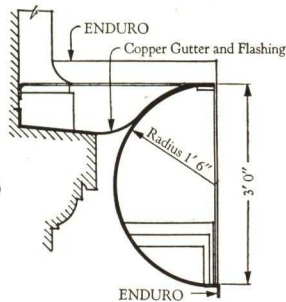


VERTICAL SECTION—SIGN TRIM,
RECESSED AWNING BOX AND
SHOW WINDOW HEAD AT 4-4

PLAN OF GLASS SETTING
FOR SHOW WINDOWS
AT 1-1 SHOWING ENDURO



ELEVATION
AT RIGHT HAND CORNER



SECTION THRU SIGN AT 2-2

DETAILS FROM NEISNER'S BROS. STORE
OMAHA, NEB.
SHOWING USE OF ENDURO

1. F. W. WOOLWORTH STORE
CRITERION BUILDING
NEW YORK CITY
ARCHITECT—
THOMAS W. LAMB, INC.

Awning box enclosure, vertical strips in windows, doors and entrances and the ornamental grille in bulkhead are Enduro.

2. LINTON'S RESTAURANT
PHILADELPHIA, PENNA.
ARCHITECT—I. DEMCHICK

Enduro used for letters in the sign, as well as on doors and window frames.

3. BUSINESS BUILDING
LOS ANGELES, CALIF.
DESIGNER—TILE SEAL
MANUFACTURING CO.

Special quarter round vertical strips and special channel liner section for horizontal strips of Enduro between glass block entirely eliminates appearance of cement at joints. Band at top also of Enduro.

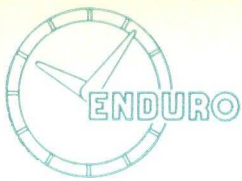
4. NEISNERS STORE
OMAHA, NEB.

DESIGNER—J. C. PIERSON
Store front, also letters and ornamental work above are all Enduro.

5. CHRYSLER INTERNATIONAL SALON
NEW YORK, N. Y.
ARCHITECTS—BARR,
IRONS & LANE

Enduro was used for the outside of the letters and for the base under the entire length of the sign.





SPANDRELS, TRIM AND ARCHITRAVES OF ENDURO

SPANDRELS, TRIM

Building construction today is taking full advantage of the many practical benefits offered by metal spandrels and trim. For not only do these spandrels and trim offer a wide range of decorative possibilities, but, because of their combined strength and light weight, they ardently follow the present-day trend toward simpler building design and construction. In addition, metal spandrels reduce the dead load on the framework and make possible a reduction in wall thickness between structural columns.

Enduro Stainless Steel, because of its many inherent characteristics, is widely used in spandrels and trim work on buildings of all varieties. This "newest of metals" lends itself to easy fabrication, intricate designing and ready installation. In addition, it is highly resistant to corrosion and will not streak adjoining surfaces. This feature is highly important to architects and building owners.

ARCHITRAVES

The characteristics that make Enduro Stainless Steel so remarkably suited to spandrels and trim, likewise enable this new metal to take its place as the finest metal for architraves. Strong, light in weight, easily fabricated and decorated, architraves of Enduro are built to withstand the ravages of the elements and years of hard wear.

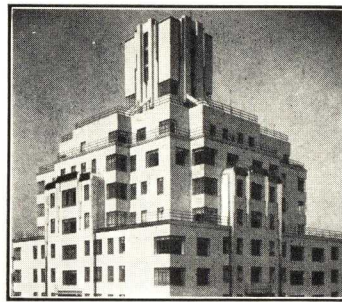


1. Canadian National Railway Station, London, Ontario
Architect—John Schofield, Esq.

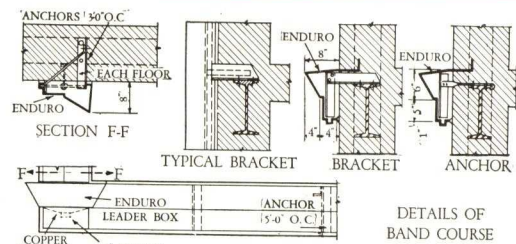
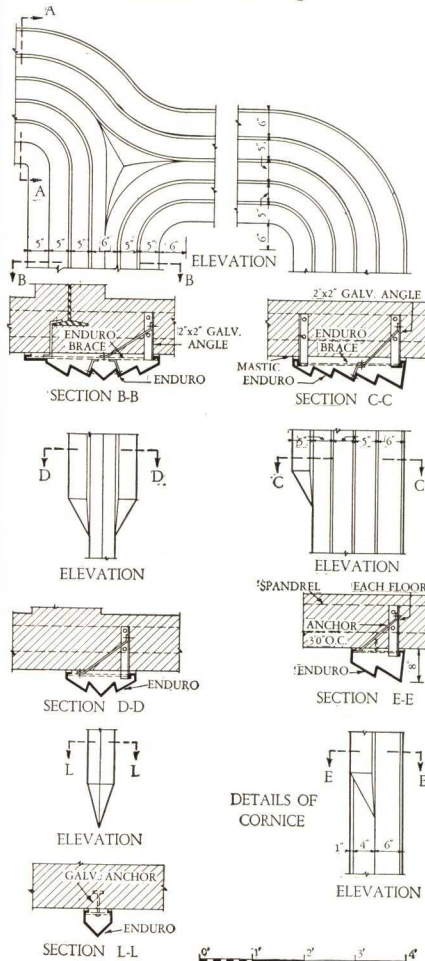
Enduro used for inner and outer door and vestibule in this modern railway station.

2. Metal Landing Rail for Apartment House
Columbus, Ohio

Fabricated Enduro Stainless Steel and Bronze, by Loeben Ornamental Metal Works, Philadelphia, Pa.

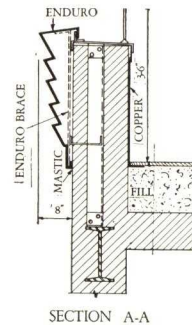


Apartment House at
West End Avenue and 80th
Street, New York City

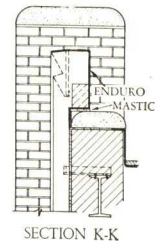


Details of
Band Course

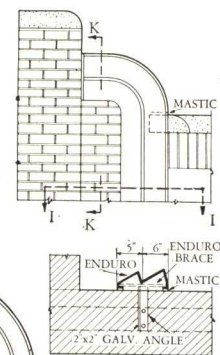
DETAILS OF
BAND COURSE



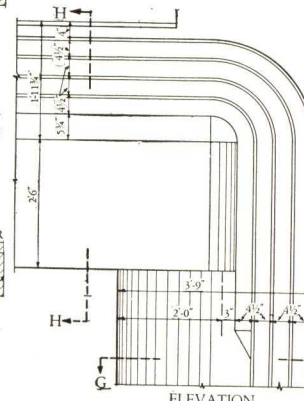
SECTION A-A



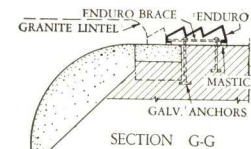
SECTION K-K



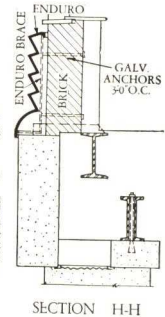
SECTION I-I
Details of
Tank Tower
Trim



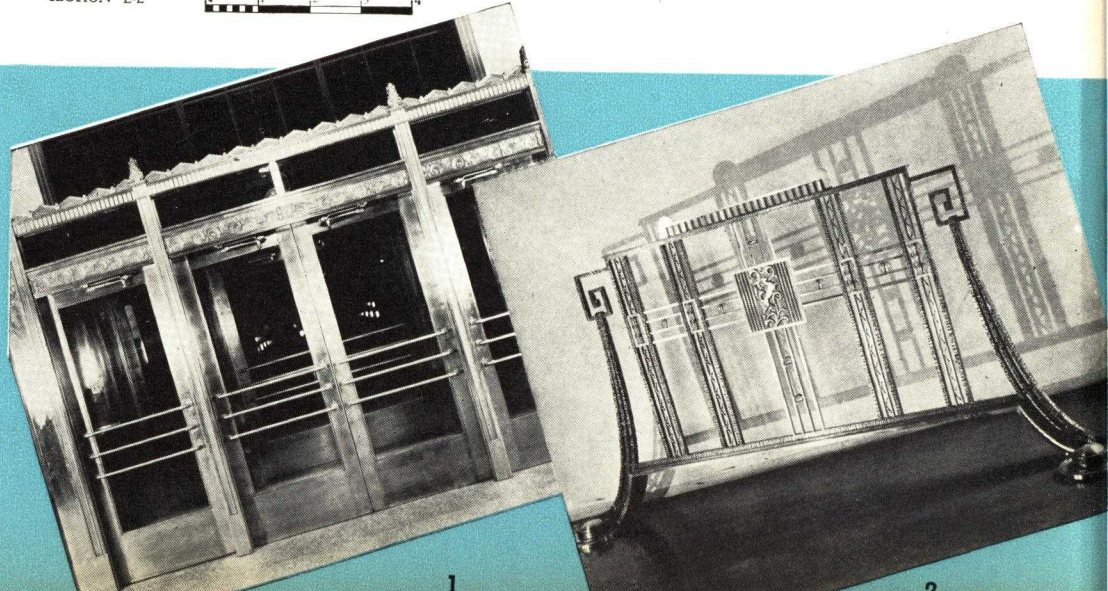
ELEVATION



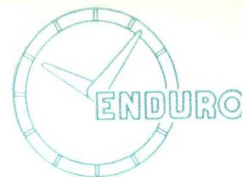
SECTION G-G
Details of Main Entrance



SECTION H-H



BARS AND FOOD EQUIPMENT



1



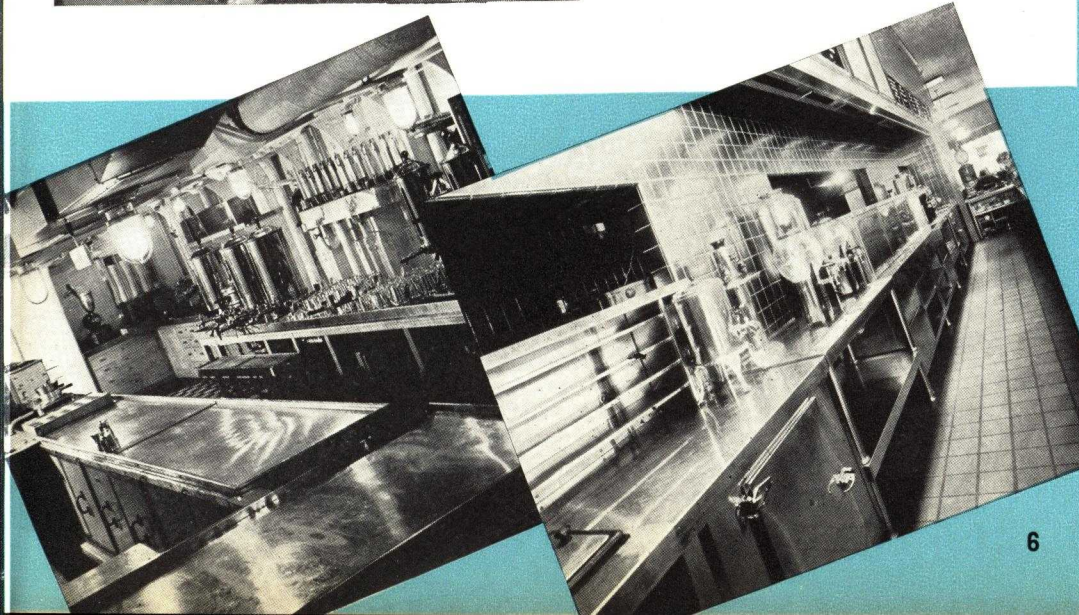
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6

Enduro has always found one of its most appropriate uses in connection with food service equipment and it was natural that, with the advent of Repeal, Enduro should become a favorite metal for bar equipment. However, the architect's attention is particularly directed to the richly decorative possibilities of Enduro's silvery lustre in modern design. A few typical installations are shown here and many more have been made during the past year. Not only does Enduro meet every requirement of the designer but, for all bar and service equipment such as sinks, tanks, drainboards, counters and table tops, Enduro assures maximum sanitation and permanent resistance to tarnishing, corrosion and general wear.

Whether the conditions called for a material having a beautiful appearance or one which would provide maximum resistance to wear and corrosion or both, Enduro has met every demand with complete satisfaction.

1. BENNY LEONARD'S CAFE NEW YORK, N. Y.

ARCHITECT—SELIG WHINSTON

The entire back-bar equipment of this smart cafe is constructed of Enduro.

2. WILLS HOSPITAL PHILADELPHIA, PENNA.

ARCHITECT—JOHN T. WINDRIM

All of the kitchen equipment with the exception of the range and kettles is Enduro.

3. KELLMAN'S SODA LUNCHEONETTE PHILADELPHIA, PENNA.

Trim on the fountain and stools, back-bar and sinks all of Enduro.

4. CHILDREN'S HOSPITAL DENVER, COLO.

ARCHITECT—BURNHAM HOYT

The equipment in this diet kitchen is Enduro throughout. Note the cabinet fronts.

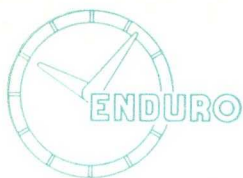
5. S.S. NIEUW AMSTERDAM HOLLAND-AMERICAN LINE

Enduro was used extensively in kitchens and pantry for table tops, sinks, shelves, bars and back-bars, utensils, etc. Also used for doors at entrance to "Grand Salon" and as trim for chairs and tables therein.

6. J. R. THOMPSON RESTAURANT PHILADELPHIA, PENNA.

ARCHITECT—BENJ. H. MARSHALL CO.

The entire back-bar of the cafeteria is constructed of Enduro.



MISCELLANEOUS APPLICATIONS

ENDURO Stainless Steel, because of its versatility, corrosion-resistance, high tensile strength and workability, has been employed for almost every decorative and utilitarian usage. The illustrations on this page (described below) show some of the almost innumerable possibilities this enduring and beautiful metal offers.

Naturally all of the various applications of Enduro do not come to our attention. Perhaps you have seen an unusual usage which has prompted you to specify "ENDURO." If this is the case—we would appreciate your contacting our main office . . . explaining the application of Enduro and where it was employed.

Enduro Stainless Steel, as may be seen in the illustrations, is not confined to exterior applications. Frequently, because of its enduring beauty, Enduro is selected for the fabrication of decorative grilles, railings and interior structural units.

When next you specify Stainless Steel—remember the name "ENDURO."

1. SKYLIGHTS IN A PACKING PLANT

Enduro because of its resistance to corrosion is being used effectively in highly corrosive conditions.

2. THE CHILDREN'S HOSPITAL DENVER, COLO.

ARCHITECT—BURNHAM HOYT

Enduro Blanket Warming Cabinet recessed in wall.

3. OUR LADY OF PERPETUAL HELP TAMPA, FLA.

ARCHITECT—FRANK FRIMMER

Enduro 18-8 No. 4 finish sheets used for the main altar, and cross and candle sticks.

4. THE EVENING BULLETIN PHILADELPHIA, PENNA.

ARCHITECT—GEORGE HOWE

A writing desk of Enduro is but one of many applications of this modern metal in this building. Other uses include: lintels and posts at fixed windows on first floor, window grilles, letters over the entrance and many other places.

5. NORRISTOWN STATE HOSPITAL NORRISTOWN, PENNA.

ARCHITECT—HOWELL

LEWIS SHAY

Enduro used for toilet partitions an unusual application—proof of Enduro's flexibility of usage.

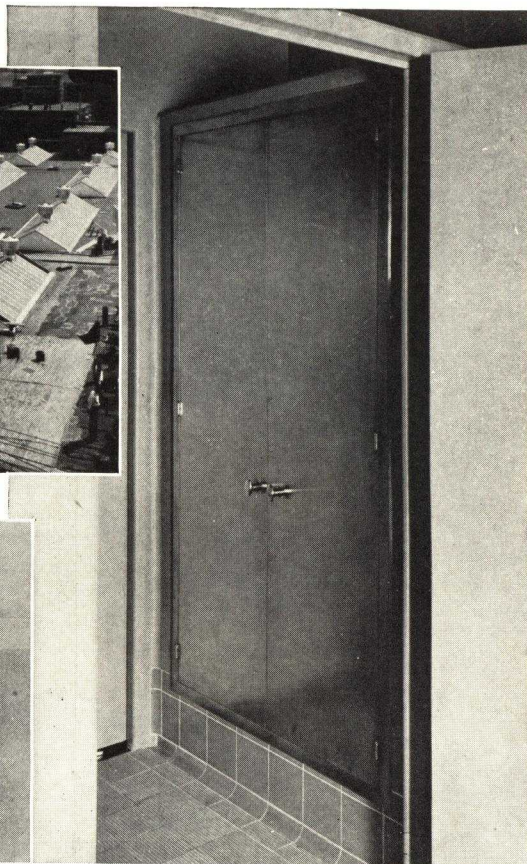
6. CHILDREN'S HOSPITAL DENVER, COLO.

ARCHITECT—BURNHAM HOYT

Enduro Equipment Cabinet and waste can. Hospitals find Enduro an ideal metal for all metal applications.



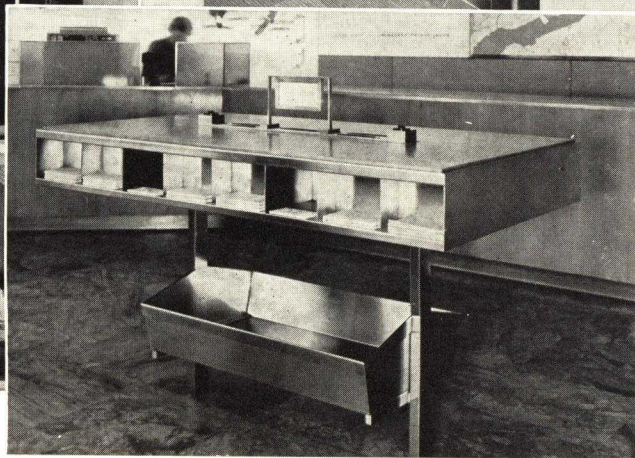
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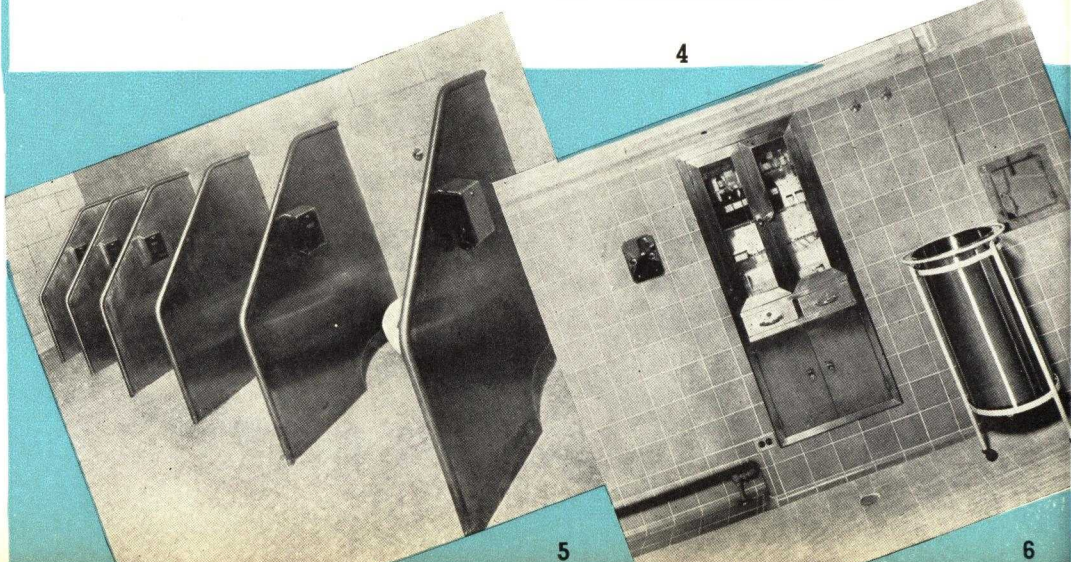
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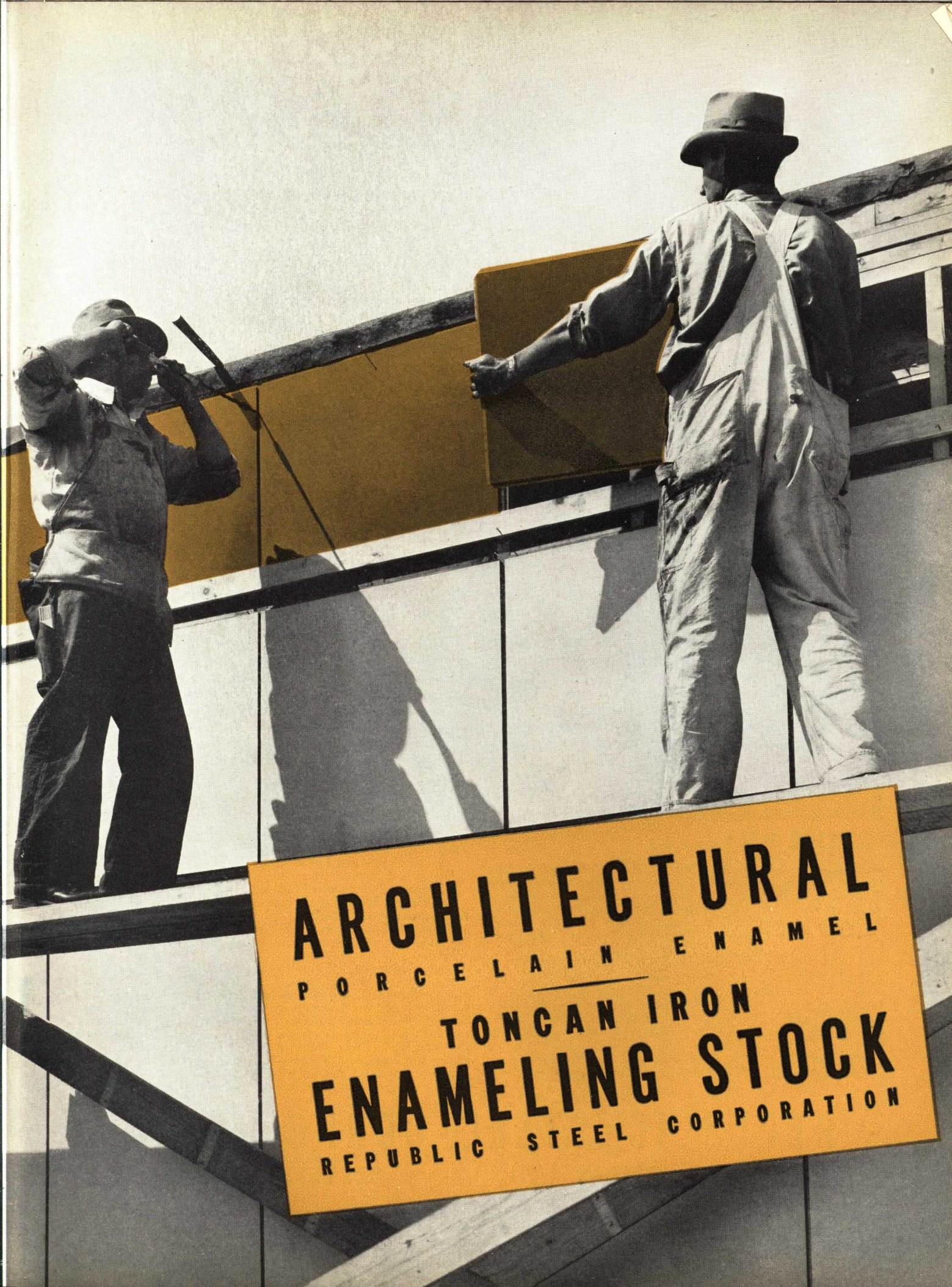


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ARCHITECTURAL
P O R C E L A I N E N A M E L
T O N C A N I R O N
ENAMELING STOCK
R E P U B L I C S T E E L C O R P O R A T I O N

An Ancient Art THE BASIS OF

A Modern Building Material



Ancient Art
Cloisonné Vase

COURTESY METROPOLITAN MUSEUM
OF ART

BEFORE the dawn of Christianity, ancient artisans found that minerals could be melted together and fused to a metal base. During the next thousand years or so, porcelain enamel was used in the creation of beautiful cloisonné vases, medallions and ornaments of various kinds. The application of porcelain enamel to cooking utensils, plumbing ware, stoves, refrigerators and other household products came as the next logical forward step.

Porcelain enamel first made its appearance in the architectural field in gasoline service stations and hamburger stands because of its cleanliness, low maintenance costs and high salvage value.

Today, architectural porcelain enamel is far more than a "novelty" material. New finishes, including soft matte finishes, new methods of fabrication allowing greater freedom in design, new methods of erection and concealed fastenings, all have combined to make architectural porcelain enamel an accepted high quality building material—one that can be classified as truly modern.

The application of porcelain enamel is steadily expanding into new fields. There are now companies all over the country that specialize in the fabrication and enameling of iron sheets for architectural purposes. Store fronts, theatre fronts and lobbies, gas stations, dairies, even entire building exteriors of porcelain enamel are almost as familiar as the porcelain enameled kitchen stove and refrigerator.

A New Freedom IN ARCHITECTURAL DESIGN

Have you ever wished for a material that would permit full expression of design and color and at the same time provide practicability at moderate costs? Porcelain enamel is one of the most versatile materials ever developed for architectural purposes. No material offers such a challenge to the creative initiative of the architect. It offers a complete range of lasting, permanent colors, embodying delicate tints and shades—in fact no color limitation. Being a vitreous material it is non-porous and non-absorbent and is as easily

cleaned as a china dish. It can be supplied in acid-resisting finishes for service in sulphur-laden atmospheres. It has unusual resistance to abrasion not found in plastics or organic coatings. It has almost unlimited possibilities of surface design, and types of finishes. It can be obtained in welded, stamped or drawn shapes. When using a panel system it is lighter in weight than most masonry products and can be quickly taken down, moved and reassembled practically without loss.

Where Architectural Porcelain Enamel IS BEING USED . . .

Porcelain Enamel has literally taken the architectural field by storm. The uses listed below will serve to show the wide range of possible applications and stimulate the architectural mind along creative lines. For lasting beauty, for attention value unhampered by design limitations . . . specify Porcelain Enamel.

Gasoline Service Stations: Exterior and interior paneling: Signs.

Food Stands: Exterior and interior paneling: Signs.

Bus Stations: Exterior and interior paneling: Signs.

Store Fronts: Paneling: Signs: Lighting Equipment.

Food Industries, such as Packing Houses, Dairies, Breweries, Bakeries, Canning Plants: Interior paneling, walls and ceiling—for sanitation; Exterior paneling—for low upkeep and publicity value.

Office Buildings: Wainscoting, Column Sheathing.

Hospital Operating Rooms: Doors, ceiling and wall paneling.

Hotel and Restaurant Wash Rooms: Walls, ceilings, doors, toilet stalls.

Theatre Fronts and Lobbies.

Dental and Medical Offices.

Kitchen and Bathroom Walls and Ceilings.

Laundries: Interior wall and ceiling paneling and doors—to resist steam and alkalies.

Chemical Laboratories: Walls, doors, ceilings, hoods and shelving—to resist corrosive chemical fumes—to increase light reflection.

Barber Shops and Beauty Parlors: Interiors.

Elevator Cabs and Lobbies.

Miscellaneous Uses: Shower bath stalls, toilet stalls, partitions for beauty parlors, hospitals, etc., shelving, restaurant table tops, formed steel plumbing fixtures, refrigerator display cases, counters, fruit and vegetable stands, kitchen cabinets, light reflectors, bar equipment, soda fountains, blackboards, kick plates, push plates, fireplaces, telephone booths, desk tops, spandrels of office buildings, prefabricated splasher panels for plumbing fixtures.

REPUBLIC STEEL CORPORATION

GENERAL OFFICES

CLEVELAND, OHIO

What is ARCHITECTURAL PORCELAIN ENAMEL?

Porcelain enamel is an inorganic material. It is composed of several minerals including feldspar, cryolite and fluorspar fused together at high temperature and then shattered into "frits" by sudden immersion in cold water. These "frits" are then ground into powder and fused again upon a ferrous metal base. Because it is inorganic, it does not fade and is im-

pervious to moisture, being non-absorbent. This tough, glass-like coating is not affected by weather or light. Recent developments have led to the production of acid-resisting porcelain enamel which repels the attack of ordinary acids frequently encountered in building service or in the atmosphere.

These pages offer the Architect . . .

INTERESTING DATA ON MODERN PORCELAIN ENAMEL

We have endeavored to acquaint the architect with some of the more common uses and application methods of porcelain enamel in present day architectural design. We have presented several systems of construction so that he may compare one with the other and select that best suited to his requirements. For additional data on any specific problem write direct to Cleveland or to any Republic District Sales Office (see list on back cover).

Enameling Terms	20
Fabricating	20
Enameling	21
Supporting Structures	21
Systems of Construction	21
Macotta Load Bearing	25
Snap-on Moulding	25
Metal Furring Strip and Screw Clamp	26
Spring Clip	26
Lock Joint; Vee Clamp	27
Pan and Lug	28

THE IMPORTANCE OF TONCAN IRON ENAMELING SHEETS

To meet the requirements of modern architectural applications of porcelain enamel requires a high grade sheet. The physical properties of the sheet are, of course, of an importance equal to its ability to accept a satisfactory coating of porcelain enamel. The widespread use of enameled products prior to their application in the architectural field has involved some of the most difficult fabrication operations which are encountered anywhere in the use of sheet metal.

Experience of many years has demonstrated that open hearth irons are most suitable for porcelain enameling. Toncan Iron is one of the oldest open hearth irons in the market, having been produced for thirty years. The high ductility of Toncan Iron lends itself to exceedingly difficult forming operations which are becoming increasingly popular with the widespread use of Porcelain Enamel in architectural design.

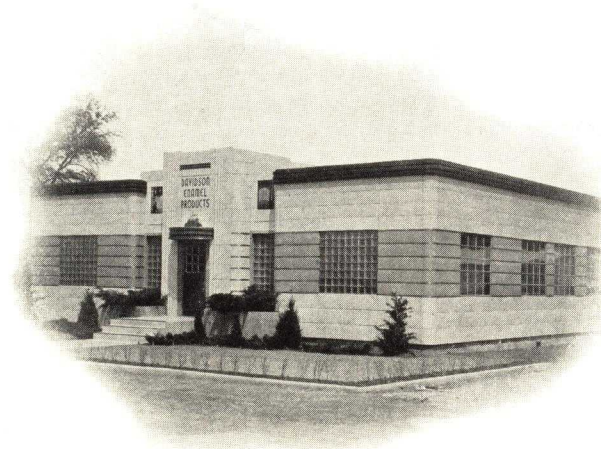
Toncan Iron Enameling Sheets, therefore, combine the physical properties required for difficult fabrication and the ability to accept a high grade coat of porcelain enamel.

Before and after enameling, Toncan Iron Enameling Sheets are unusually flat, free from waves and buckles and, in addition, have the highly desirable properties of an open hearth iron for enamel adherence and for freedom from segregated impurities which might react with the porcelain enamel during firing.

Constant research is conducted by Republic in an effort to keep Toncan Iron at all times suitable for all types of porcelain enamel. Close cooperation with the manufacturers of frits, as well as with those plants which produce their own frit, enables us to work out with the enameler any problem in connection with the use of our product.

Republic's METALLURGICAL and ARCHITECTURAL SERVICE

Republic Steel Corporation maintains a special engineering and research department devoted to the development of enameling iron. Another department in the Product Development Division is devoted to the study of the application of porcelain enameled iron. Republic engineers are ready to assist architects and designers in the selection of the proper type of porcelain enamel construction for any specific job. For further information regarding this service, write direct to the main office or any of our district offices.



Davidson Enamel Products, Inc., Lima, Ohio
Douglas Andrews, Architect

This modern building is entirely covered with porcelain enamel. Trim is stainless steel.

Design Material FOR BEAUTY



Base Metal—Enamellers, referring to base metal, usually mean the sheet iron or cast metal base to which enamel is applied.

Blackboard Enamel—A special type of black enamel designed to give a matte surface finish to blackboards.

Black Edging—A further coat of enamel applied to the fired or unfired ground coat around the edges of the article thus producing an edging blacker than the ground coat.

Blank—A term widely used in sheet metal working to denote the piece cut from the sheet that is to be used in forming the finished article. The blank ordinarily contains exactly the right amount of metal to form a piece of the desired size. The operation which consists of punching the blanks from the original sheet of metal is called blanking.

Burning—Referred to in the enamel industry as the process of fusing vitreous or porcelain enamel on a metal surface.

Cleaner—Usually a mixture of alkalis reinforced with other ingredients and used at a concentration of 6-8 oz. per gallon at a temperature of about 200-212 degrees F. in the pickle room to clean rust, grease and dirt from metal parts prior to enameling.

Color Oxide—A mixture of inorganic materials used in the mill addition to color porcelain enamels.

Cover Coat—A porcelain enamel coating applied over the ground coat and from which it usually differs in color.

Crazing—Almost invisible lines in a finished enameled surface, extending down to the base metal. This condition should not be confused with "Hair-lines."

Crimping—An operation wherein the metal around or along the edge of the piece is shaped into the form of a roll or curl.

Decalcomanias or Decals—Are designs printed on tissue paper in refractory enamel colors rather than in ordinary printer's ink. These designs may be transferred to a burned enamel surface and fired thereon becoming an integral part of the coating.

Drawing—Drawing proper consists in cupping a blank (that is, taking a sheet metal blank and producing a cuplike shape) during which process a flowing of the metal takes place.

Edging—The process of removing dried cover coat from the edge of a piece of ware to expose an underlying enamel. Edging may also denote the application of colored enamel to the edge after brushing.

Egg-Shell Finish—An enameled surface similar in appearance to the shell of an egg. A desired physical condition in some ground coats.

Flecked—A variation in the solid color secured on enameled ware by mixing into an enamel, sized particles of frit of a different color.

Frit—Small, friable pieces of enamel glass resulting from the quenching and shattering of the molten enamel as it is discharged from the smelter into tanks containing cold water.

Fusion—The union or blending of enameling ingredients with the base metal or previously fired enamel coating to produce a uniform surface using heat as the medium.

Graining—The production of an enamel finish resembling wood grain. Similar to the printing of small etchings except that the ink is picked up from the etched plate on a special roller and transferred to the enamel surface to be grained.

Ground Coat—A coat of enamel applied directly to the metal surface and differing in composition from the cover coats to be applied later.

Hair-Lines—Hair-Lines are lines appearing in an enameled surface, which are slightly depressed below the surface in the shape of a groove and not extending to the base metal. In white enamel the lines appear white, but in colored or dark enamels, the lines nearly always appear darker than the surrounding surface.

Marble-ized—An enameled surface color-grained to give the appearance of variegated marble. The color may be applied on either the fired or unfired enamel ware.

Matte—A slightly roughened surface almost, or entirely lacking in lustre.

Opacity—The degree of whiteness of a white enamel, calculated by its ability to cover black or blue-black ground coats.

Pickling—The practice of cleaning sheet metal to properly prepare it to receive the enamel coatings.

Printing—Printing on the enamel is done with a rubber or composition stamp having raised letters or design. The ink for this work is composed of a suitable mixture of oils as a vehicle and a ceramic printing oxide.

Semi-Matte Finish—An enameled surface not altogether rough to the touch but having a slight glossy appearance may be known as a semi-matte finish.

Shading—A pleasing effect produced in enamel by applying, usually by spraying, an area of dark enamel to a lighter background, the thickness being tapered off in one or more directions.

Speckled Ware—An enamel finish having a background of uniform color into which an enamel of different color or shade is applied in very small specks.

Stain-Proof—An enameled surface is considered "stain-proof" if it is not stained, discolored or otherwise affected by acids (except Hydrofluoric), chemicals, dyes or fruit juices, under atmospheric conditions.

Stencil—A design which may be cut from either cardboard or sheet zinc and placed on the dry enamel coating. A stencil brush is used to remove the dry enamel from the stencil openings.

* Reproduced by permission of the Ferro Enamel Corporation.

Fabricating THE PANELS

Sheets for porcelain enameling work usually are fabricated in the enameling shop. Drawings with accurate dimensions are necessary since all panels are prefabricated and must fit together on the job. As a general rule, No. 16 or 18 gauge sheets of enameling iron are used, but No. 20 gauge may be employed if the finished panel is carefully backed up or veneered. Unless exceedingly careful backing up is done the 20 gauge sheets will buckle. It is advisable to keep the size of the sheets down to 36 in. wide by 48 in. long to minimize distortion.

Before enameling the sheets are sheared, bent, drawn and punched in the usual manner. These sheets may also be fab-

ricated into special shapes such as flutings, reedings, louvres, etc. Usually the holes in the panel are of predetermined size and location and are punched or cut in the panels before enameling. However, in emergencies the holes can be sawed through the finished porcelain enameled panel on the job by means of a portable, electric ceramic hole saw. Sawing should be avoided when possible.

As a general rule, all connections are welded, including flanges, clips, corners, etc. These are then filed smooth before all dirt and grease is removed from the sheets. The sheets are then pickled in acid to remove rust and scale.

Following the pickling process, which prepares the surface of the panels for bonding with the porcelain enamel, they are given a dark colored base or ground coat. This ground coat is applied either by dip or spray process. This coat is so compounded that it has an affinity for and fuses with the metal itself. Successive coats are usually sprayed on. Each coat is fused in a furnace at 1500 to 1550 deg. F. A standard enameling furnace accommodates panels up to about 4x10 ft., thus limiting the size of panels that can be safely fired. Following the applications of the

porcelain enamel, all sheets are carefully inspected for imperfections.

For all exterior work, acid-resisting enamels should be specified. Porcelain enamel is available in glaze, semi-matte and matte finishes; the latter two having fewer high lights and reflections than in a glaze finish. Texture can be obtained by covering a glaze enamel with a semi-matte enamel of the same color and stencilling a design so that the glaze enamel shows through. Stippled effects and designs printed by screen process can also be obtained.

SUPPORTING STRUCTURES AND INSTALLATION OF PANELS

For remodeling work where the panel type of construction is used, the old structures are frequently leveled off with wood or metal furring strips located where the panel joints are to be. Care should be exercised to insure an accurate spacing of the furring strips and a level support for the panels.

On new buildings, if the supporting structure is to be masonry or wood studding, it is necessary that extra caution be taken to hold supporting structures to accurate dimensions and to keep the buildings plumb.

Steel frames are being used for small buildings such as gas stations, food stands, etc. These frames are often made of light gauge "U" channels welded into rectangular sections. These rectangular sections are bolted to the foundations and fastened together on

the job. These steel frames offer a dependable, accurate, supporting structure for the pre-fabricated porcelain enameled panels.

When interlocking panel systems are used, the starting points and the end points must be determined for the fastening of the panels to the supporting structure. In remodeling work where custom fitting is involved, each panel should be numbered on the drawing and this number marked on the back of the panels before shipping.

On certain types of construction, caulking can be simplified by "buttering" the flanges of the panels with a knife grade caulking compound. When the panels are fastened in place, excess caulking is squeezed out and trimmed off with a tuck-pointing tool.

Systems of Construction

There are two general types of construction employing porcelain enamel materials: the load-bearing type and the sheet or panel type. Both types are widely used and their use depends upon the conditions to be met, designs required, cost, etc.

On the following pages are shown details of several of the more commonly used systems of construction. These are not the only practical systems, however, but are typical of the meritorious devices which are constantly being developed.

In the load-bearing type, porcelain enamel sheets or fabricated forms are backed with light weight, load-bearing, concrete units. The panel edges may be trimmed with narrow stainless steel edging to protect these edges from corrosion or the panel may be flanged on all sides. In the sheet or panel type of construction, the porcelain enamel sheets are anchored to a supporting construction by various methods. Some of those in more common use are shown on the following pages.

The danger of warpage in porcelain enameled panels can be reduced greatly by using heavy gauge sheets of enameling iron and by keeping the panel sizes within certain dimensions. Fluted and heavily embossed panels usually have enough rigidity to prevent any noticeable warpage.

The normal warpage in porcelain enameled panels can be removed *after* the panels are enameled by backing up the panels with concrete, plywood, or insulating boards. This backing on the porcelain enameled panels has the additional advantages of removing metallic sound, reducing the transmission of sound, providing insulation against heat and cold, as well as preventing "sweating" on the back of the panels.

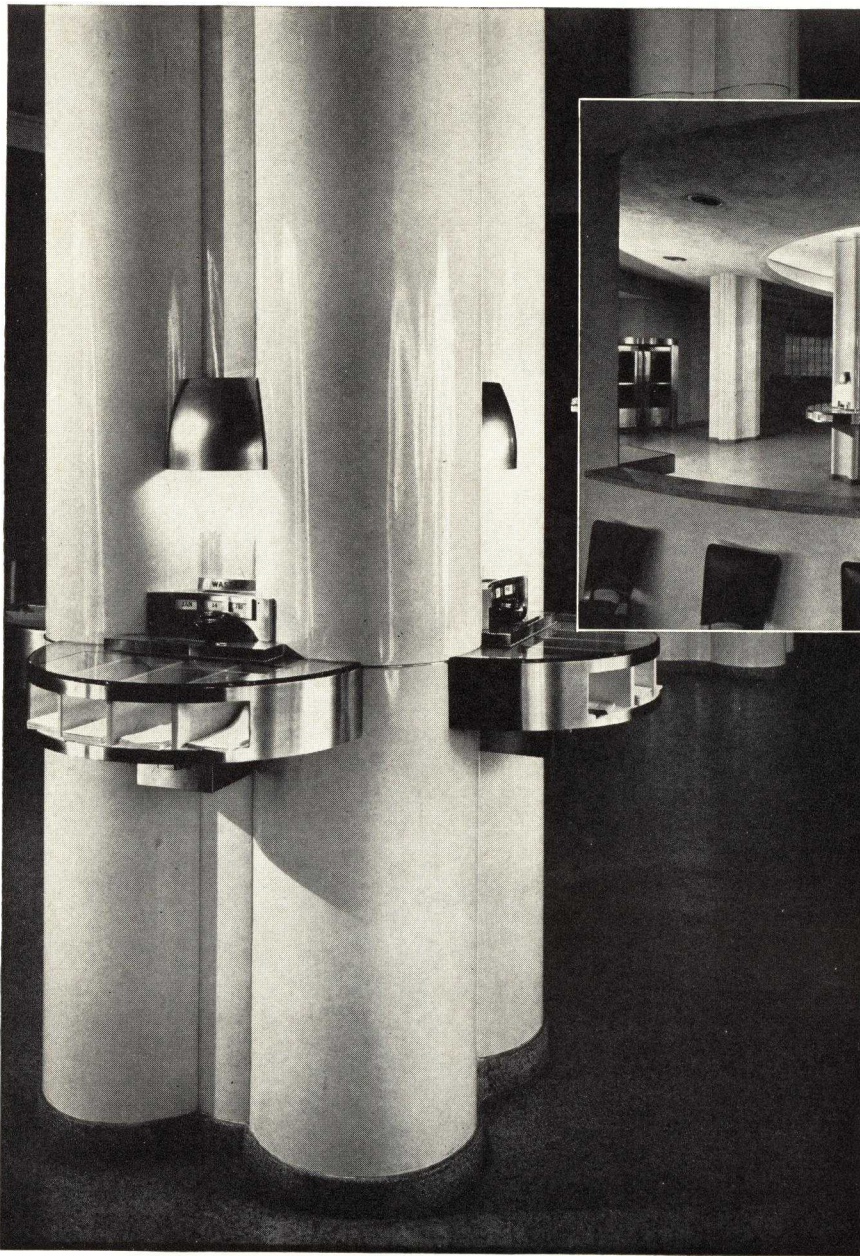
When backing up the panels with insulating board or plywood, the material is usually veneered to the panel under pressure, using water-proof casene glue or synthetic resins as adhesives. It is necessary as in the case in most veneered constructions to balance the veneering with another piece of steel on the back of the insulating board or plywood.

Republic Galvannealed Sheets of 26 or 28 gauge are a good material for this purpose. A galvannealed sheet is one which is hot dipped galvanized in the customary manner but which, before cooling, is heat treated. Thus, the protective zinc is made to combine with the steel sheet. The silver matte surface of the galvannealed sheet is a series of zinc-iron alloys bound to the sheet because it is an integral part of the sheet. The zinc coating prevents a chemical reaction from taking place between steel and adhesives. This galvannealed sheet is a better sheet for veneering than is a galvanized sheet because the matte surface of the galvannealed sheet assures a mechanical bond uniformly stronger than the smooth, greasy surface of the galvanized sheet.

Of the many types of caulking compounds that have been tested, those that contain slow drying oils such as tung oil or China wood oil and long Canadian asbestos fiber, seem to have the longest life, adhering to the porcelain enamel the best and remaining plastic the longest, thus taking care of the thermal expansion of the porcelain enameled panels.

For interior uses, especially between panels on working surfaces a self-vulcanizing rubber putty has been found to bring good results. One of these is made by a leading rubber company and is called "Plastikon Putty."

Modern Architectural Design EMPLOYS THE



Photos by F. S. Lincoln

Chase National Bank, Rockefeller Plaza, New York City

Reinhard and Hofmeister, Architects
Enameling by Ace Porcelain Steel Corp. (branch of
Lansdale (Pa.) Porcelain Enamel Corp.) New York City
*Porcelain enamel sheathing for columns gives this
bank interior a note of dignified smartness. This is said
to be the first time porcelain enamel has been used for
this type of application.*

Faurot Building Lima, Ohio

Douglas Andrews, Designer
Enameling by Davidson Enamel
Products, Inc., Lima, Ohio
*The background of this build-
ing is cream colored porcelain
enamel trimmed in brown.*

J. Austin Oil Co. Station Wayne, Michigan

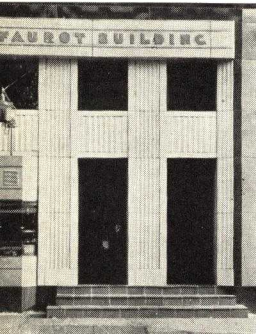
Peter Brender, Designer and Engineer
Wayne, Michigan
Enameling by Wolverine Enameling Co., Detroit, Mich.
*Porcelain Enamel Tiles, cream field, black and red
trim. Letters in bright red.*

Perry Theater Pittsburgh, Pa.

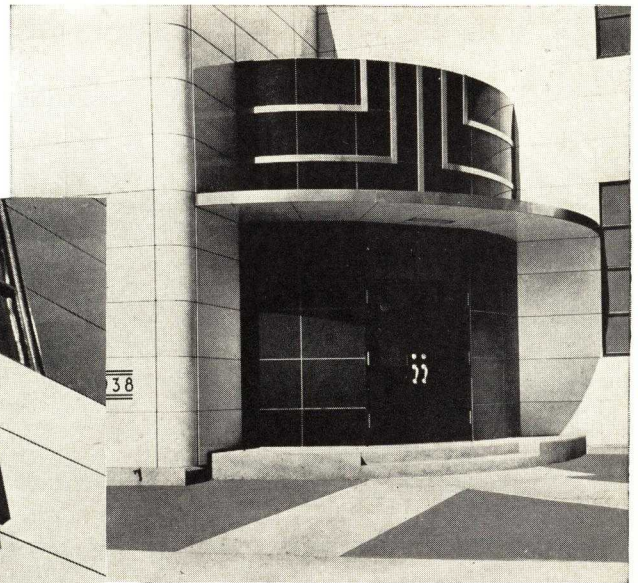
Architect—John Ebersohn
New York City
Enameling by Porcelain Metals,
Inc., Long Island City, N. Y.

Weber Dairy Joliet, Illinois

Designed by B. & M. Sign Co., Joliet, Ill.
Enameling by Porcelain Products Co.,
Cicero, Ill.
*An unusual porcelain enamel installation
featuring combination of glass block and
light trough with block letters.*



Below: Detail of sign Girardville High School, Girardville, Pa. Notice louvres in the porcelain enamel. Architects—Grootenboer and Knobloch. Enameling by Enamel Products Company, Cleveland.



Above: Main Entrance Girardville High School. Blue Porcelain Enamel with Enduro Stainless Steel Trim.

Right: The Marlyn Apartments, Washington, D. C.

A very unusual application of Porcelain Enamel. Over 100 Spandrels (beneath the windows—finished in cream with two vertical stripes in maroon) were used in conjunction with yellow brick to make an attractive structure.

Enameling by The Toledo Porcelain Enamel Products Co., Toledo, Ohio

1. Stouffers Park-n-dine Washington, D. C.

Spandrels erected by Structural Porcelain Co., Washington, D. C.

Enameling by Toledo Porcelain Enamel Products Co., Toledo, Ohio

An interesting combination of brick and porcelain enamel.

2. Baker's Shoe Store Memphis, Tenn.

Emil W. Forman, Architect,
St. Louis, Mo.

Enameling by Davidson Enamel Products Co., Lima, Ohio

The background of this porcelain enamel installation is cream with trim and letters of bright red.

3. Union Pacific Ticket Office Denver, Colo.

T. H. Buell Company, Denver, Colo.,
Architects

R. C. Williams, Chicago, Ill.,
Associate Architects

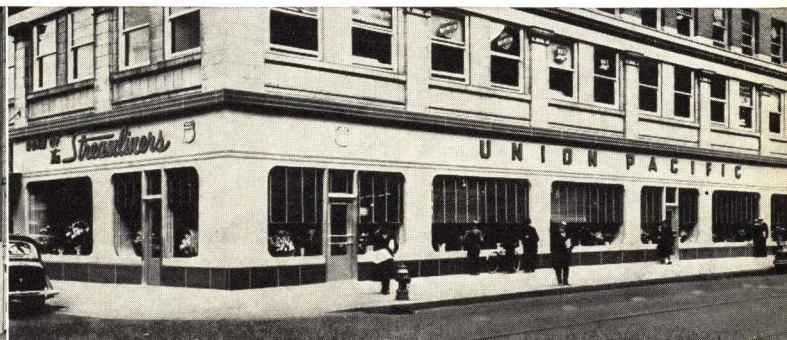
Enameling by Porcelain Products Co.,
Cicero, Ill.



1

2

3



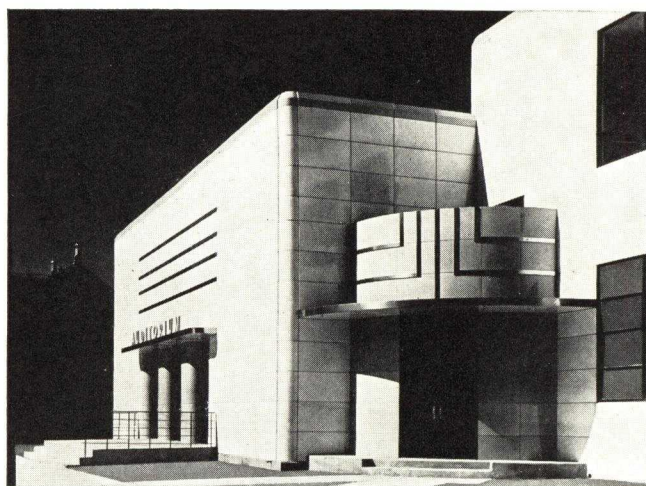
Design Material FOR FLEXIBILITY



Conclusive Proof OF THE ADAPTABILITY OF PORCELAIN ENAMEL



Girardville High School, Girardville, Pa.
Architects—Grootenboer and Knobloch
Enameling by Enamel Products Company, Cleveland



Why PORCELAIN ENAMEL WAS SPECIFIED IN THE GIRARDVILLE, PA. HIGH SCHOOL

Statement of D. H. Grootenboer and Philip G. Knobloch,
Archts., Pottsville, Pa.

"In this locality (Girardville, Pa.) we encounter a very unusual condition brought about by underground mining activities. Subsidence of the ground is experienced and at times a slipping or pull causes buildings to lean precariously and finally to collapse. In the Girardville, Pa., High School, a light steel frame covered with architectural porcelain enamel has solved this problem and obtained other benefits as well.

"Briefly, we find that architectural porcelain enamel construction has the following advantages:

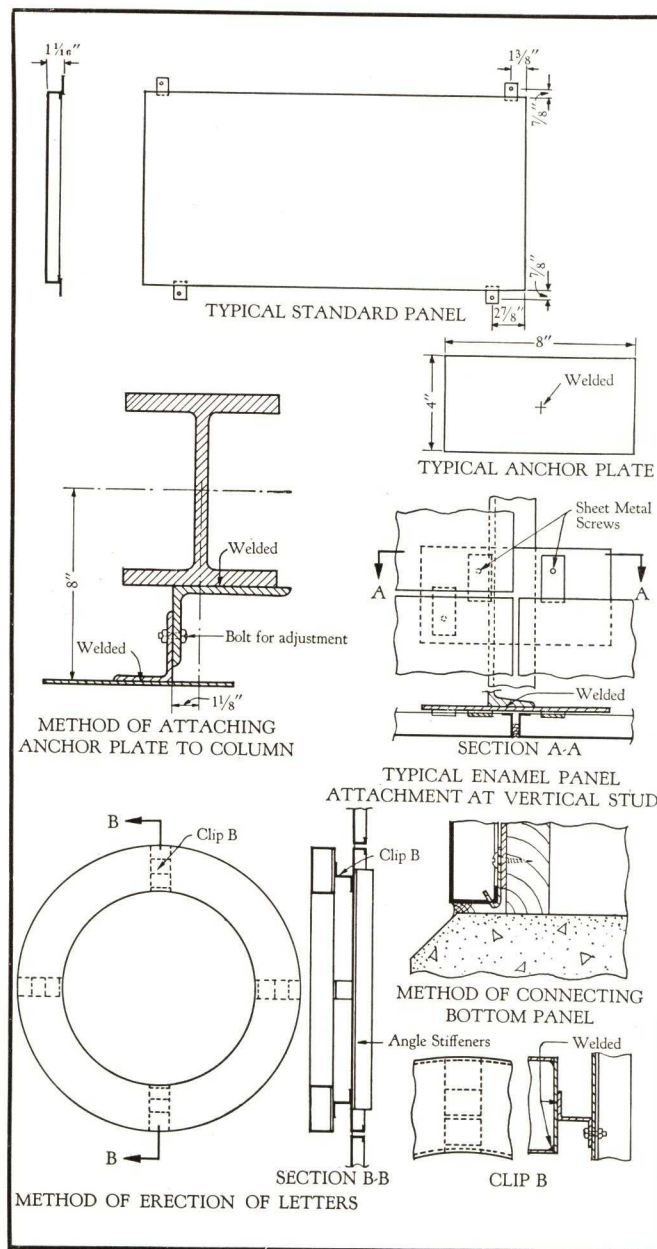
"(1) It permits a flexible construction which is little affected by sub-surface conditions because the exterior surface and the steel frame are integral parts. The porcelain enamel panels are attached to steel plates welded to the steel frame. In this way we obtain a truss action and the steel will bend rather than collapse.

"(2) The finish is permanently attractive and rain keeps the surface clean. At Girardville a color combination of white and blue was selected, but the use of this material imposes no restrictions as to color combinations.

"(3) Weight is another factor that must be considered. The low weight per unit of exterior surface makes it safely possible to use less structural steel and less foundation. The resulting thinner walls provide for more interior floor space.

"(4) The surface of porcelain enamel, being impervious to moisture, prevents frost damage. Maintenance costs are reduced to a minimum because painting is unnecessary.

"(5) Installation costs compare favorably with other types of construction."



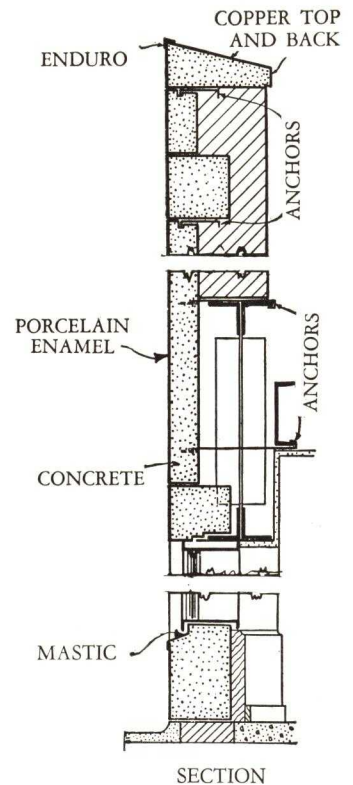
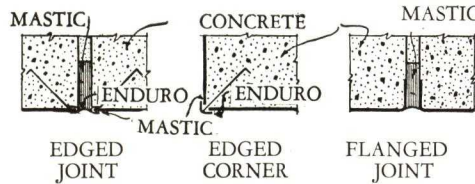
Macotta LOAD BEARING SYSTEM



Riviera Theater, Port Huron, Michigan

Fabricated by Maul Macotta Corp., Detroit, Mich.
Enameling by Wolverine Enameling Co., Detroit, Mich.

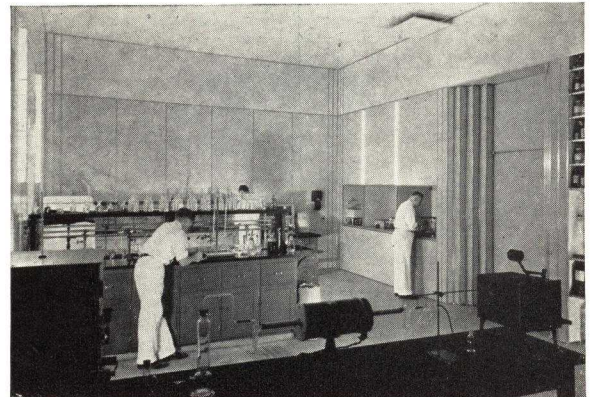
Macotta is a load bearing, fire-resisting structural unit applied to the masonry by mastic. It is built into, and becomes a part of the structure itself like stone or any similar material. The range of colors is unlimited and the enamel facings are supplied either with protective stainless steel edges or with enamel flanges. Erection is simple and rapid as Macotta is set on a mortar bed and joined in a manner similar to limestone or other masonry units. No special tools are required.



Snap-on Moulding SYSTEM

This system is used chiefly on interior work. Stainless Steel mouldings may be used as a part of the design. When run vertically they impart a feeling of height, and when run horizontally one of spaciousness. The mouldings are in two parts. The lower portion or track is fastened to the wall or furring strip by screws and overlaps the edges of the panels holding them securely. When in place the cover or finish moulding is snapped in place. In chemical, food and beverage plants and wherever sanitation is important the strips should run vertically so that water used in washing the walls will not settle in the joint. Where the walls are to be washed frequently, caulking compound is placed between the track or lower portion of the moulding and the panel. Where special flatness is important the sheets should be backed with insulation board with Republic Galvannealed Sheets on the reverse side.

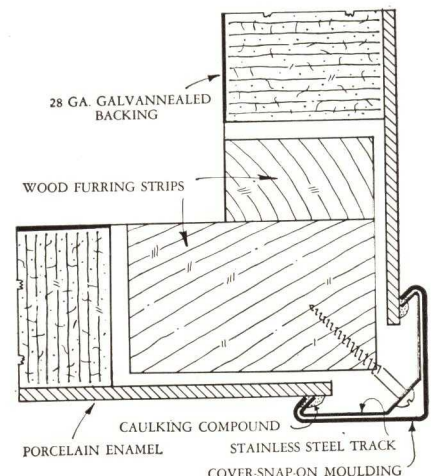
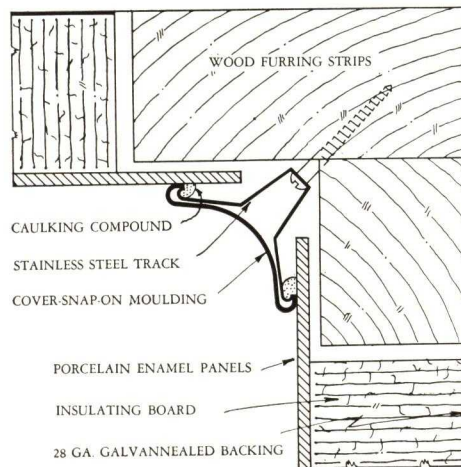
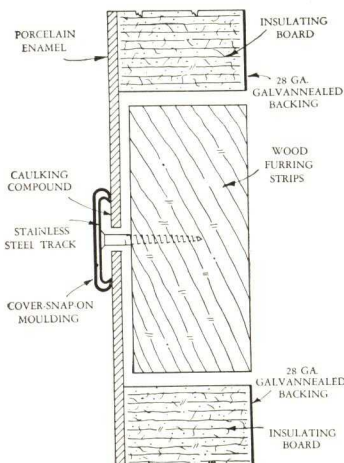
The sheets do not interlock and any panel may be removed without disturbing the others.



Laboratory of Chicago Vitreous Enamel Product Co.

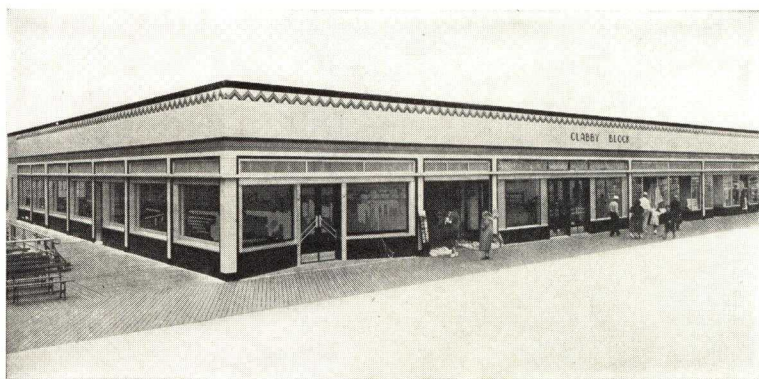
Harold R. Zook, Architect.

The walls, ceiling, door, shelving and exhaust hood are all porcelain enameled. Panels are held in place by snap-on mouldings.



Metal Furring Strip AND Screw Clamp SYSTEM

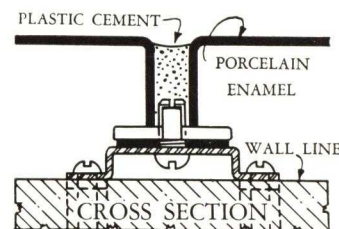
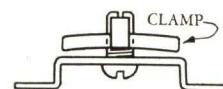
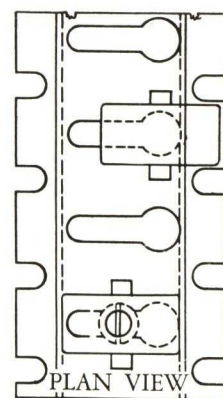
A special metal furring strip is used in this system in place of the wood strips used in many systems. These strips are secured to the wall by screws in the slots on the sides. Panels are fastened to the strips by means of special screw clamp, which extends through slots in the sides of the panels. Head of the screw is slipped into the keyhole slot in the furring strip and tightened by a slot for screw driver in the end of the screw. Clamps are single or double used at border panels or adjoining panels respectively. Joints are filled with mastic or may be covered with "snap-on" metal moulding which is held by a special stud. An extension bracket is used to line up irregularities in the under surface.



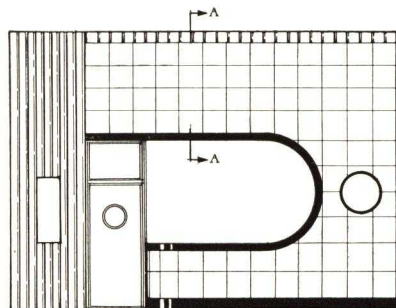
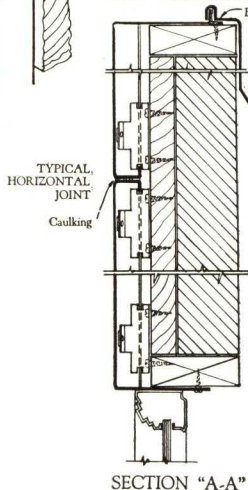
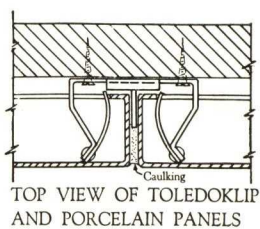
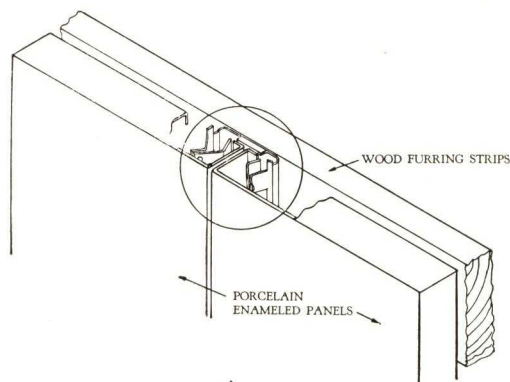
Clabby Block, Atlantic City, N. J.

Howard A. Scott, Atlantic City, N. J., Architect
Enameling by Enamel Products Co., Cleveland, Ohio

Main portion of the building is in ivory, base is black. Two shades of green used in the chevron trim at the top. Porcelain enamel applied by the metal furring strip and screw clamp system.



Spring Clip SYSTEM

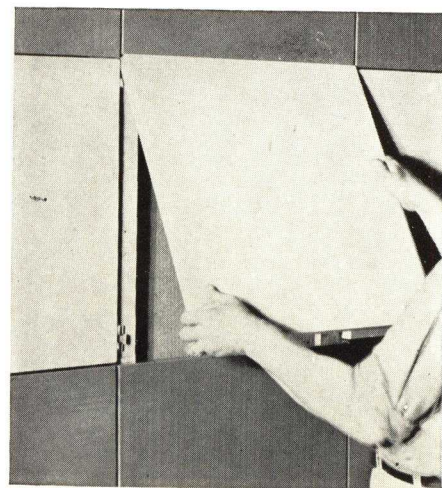


ELEVATION



PLAN

This is a non-interlocking system and any panel may be removed without disturbing adjacent panels. Indentations in the flanges of the panels snap over special spring clips which have previously been fastened to the wall. The clips give a floating panel construction which allows for expansion and contraction and for absorbing vibration shocks. For exterior work the joints are filled with mastic. For interior work the joints are narrow and require no filler.

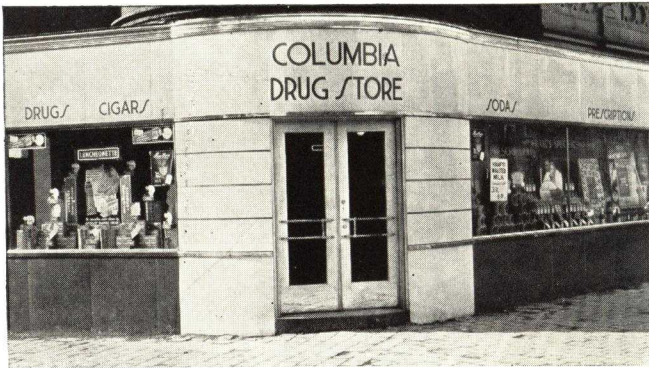


Lock Joint SYSTEM

This lock joint construction makes it possible to attach the panels directly to the old walls without the use of furring strips, adding only about $\frac{3}{8}$ in. to the old walls.

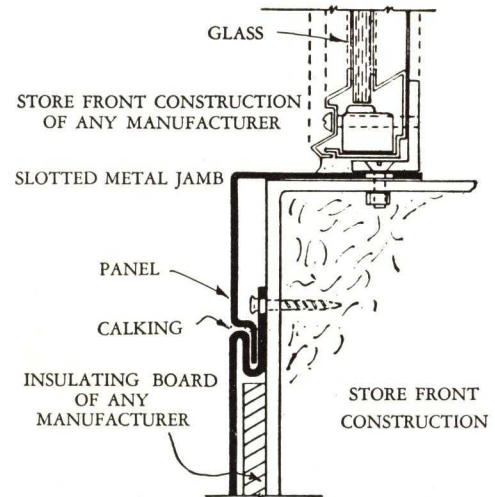
The edges of the panels are formed to dovetail together as shown. The lower panel is fastened to the

building by screws on wooden structures or expansion bolts on concrete. The next panel is then dovetailed into the first. The joint is filled with mastic which not only makes it watertight but also prevents any vibration. As the joints are narrow only a small amount of mastic is required in this system.



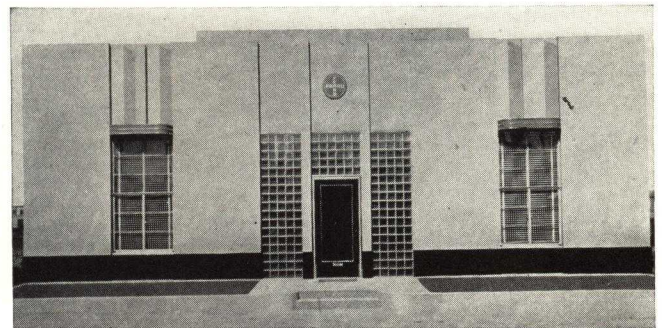
Columbia Drug Store, Washington, D. C.

The lock joint system here solved a difficult problem of modernization. The building was already 2" over the building line and the building commission refused to allow further encroachment on the sidewalk until it was explained that the porcelain enameled panels would add only $\frac{3}{8}$ " to the walls. Fabrication and enameling by Toledo Porcelain Enamel Products Co., Toledo, Ohio.



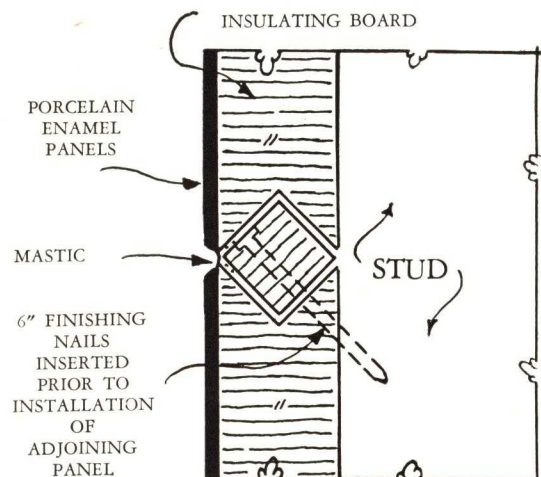
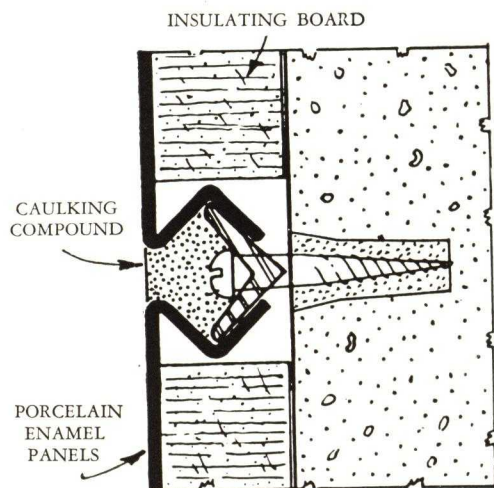
Vee Clamp SYSTEM

On concrete structures the edges of the panels are formed to fit under the sides of a special vee clamp which is secured to the structure by screws which are tightened into expansion plugs after the panels are in place. The joints are then filled with caulking compound. On wooden structures a square strip of wood is fitted into a recess in the edge of the insulating backing sheets. The strips are nailed to the structure before the adjoining panel is set in place after which the joint is filled with mastic.



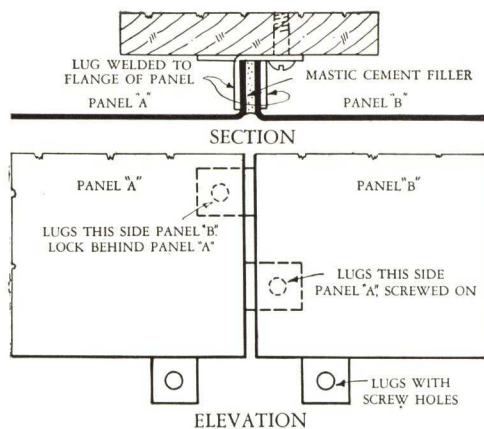
Office Building, Ferro-Enameling Company, Oakland, Calif.

Sheets applied by the Vee clamp system. An impression of depth was created by using two tones of one color to obtain the illusion of shadows in the wall panels above the windows.



Pan and Lug SYSTEM

Lugs are welded to each side of the panel before enameling. After one panel is fastened in place by screws through the lugs, those on the adjoining panel are interlocked under the edge of the first panel and the other sides held by screws. On exterior work the joint is filled with mastic. On interior work the joints may be made so narrow no filler is required. This simple system is used largely on remodeling work.



Pennzoil Gas Station, Erie, Pa.

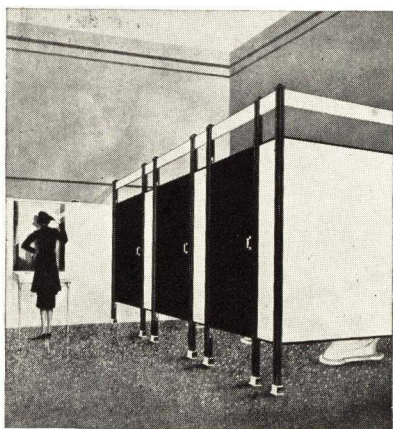
Porcelain enamel used on this smart service station designed and built by The Erie Enameling Co., Erie, Pa.



**Left: Firestone Super Service Station
Los Angeles, Calif.**

Enameling by U. S. Porcelain Enamel Co.,
Los Angeles, Calif.

A typical auto supply and service store utilizing the permanent beauty and attention value of porcelain enamel.



**Left: Toilet Partition
and Wainscote**

Manufactured by The Sany-
metal Products Co., Cleve-
land, Ohio

Enameling by The Enamel
Products Company, Cleve-
land, Ohio

A typical application of
porcelain enamel in schools,
institutions, etc.

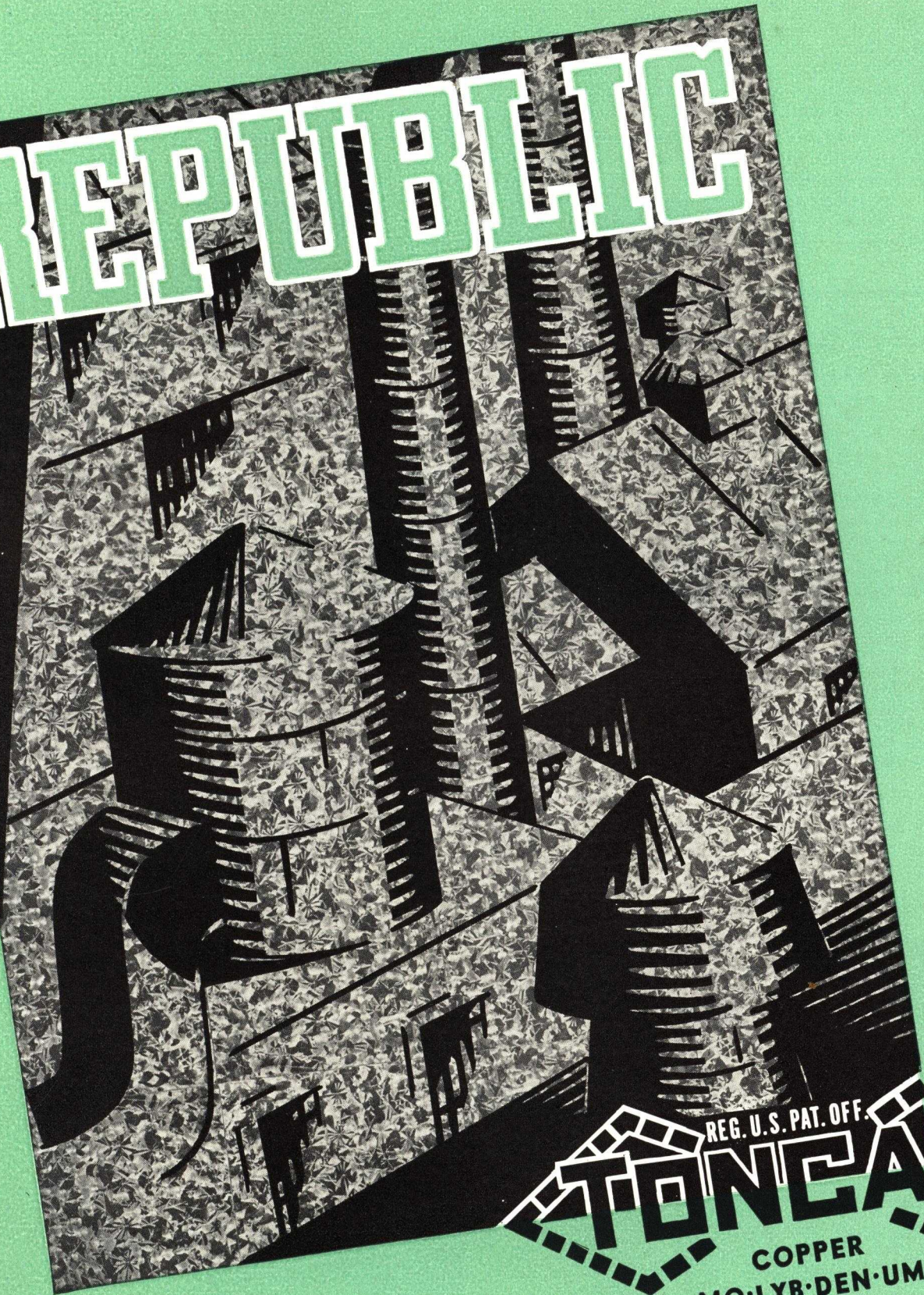


Above: Standard Oil Service Station

Enameling by General Porcelain Enameling and Mfg. Co., Chicago, Ill.

Typical of buildings erected in many states. Entire building is covered with porcelain enamel, including cut-out letters and curved canopy. All porcelain panels furnished with Celotex backing applied at factory with acoustical adhesive compound. Panels applied with special spring clips.

REPUBLIC



REG. U.S. PAT. OFF.

TONGAN

COPPER
MO·LYB·DEN·UM
IRON

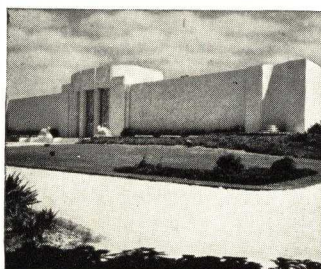
What is TONCAN IRON?

AS originated over 29 years ago, Toncan Iron was a highly refined iron, unalloyed with other elements but containing a minimum of rust promoting impurities. Subsequent changes resulted from continuous research and relentless testing. Copper, in proper proportion, was alloyed with iron to form a new iron-copper alloy which was more resistant to rust than the original iron. Then followed the addition of molybdenum which produced an iron-copper-molybdenum alloy with resistance to rust never before attained. Experience has demonstrated that neither copper nor molybdenum alone can contribute its full individual properties to

the iron—it is only through the addition of *both* in correct proportion that these can be realized. Such is Toncan Iron of today . . . an open hearth iron, scientifically refined to reasonable limits, in which not less than .40% copper and .07% molybdenum are uniformly dissolved . . . an alloy with a proved superior resistance to rust among the ferrous metals in its price class. Time and tests have conclusively proved that Toncan Iron brings to users of *sheets, plates, finished products, and pipe*, certain outstanding advantages which are briefly enumerated on the following pages.

HOW TONCAN IRON COMBATS RUST *in...*

Monumental Buildings



Seattle Art Museum

For all interior sheet metal work.

Stores



House of Flowers

For standing seam roofing and siding.

Residences



Residences

For Corinthian Columns.

Factory Buildings



Miles Laboratories, Inc.

For a major portion of the duct work.

Toncan Iron is a rust resistant ferrous material chiefly because it is an alloy of iron, copper, and molybdenum—the alloy that possesses the most inherent resistance to solution, and hence to rust, of any commercial ferrous material in its price class—the alloy that is most noble, and hence most rust resistant.

Toncan Iron is rust resistant also because it is chemically uniform.

Chemical uniformity is essential for maximum rust resistance, as otherwise chemical differences would create electro-potential differences which hasten the rate of solution in a harmfully localized and selective manner.

Furthermore, Toncan Iron is structurally uniform. The proper combination of the alloying elements, copper and molybdenum, under the influence of proper furnace and rolling practice, creates and maintains a fine equi-axed grain structure which contributes additional rust resistance.

It should be pointed out that under conditions favoring rust formation, a protective film may be found on the surface of Toncan Iron. This film is not of the loose, flaky type usually associated with rusted metals but is darker, more inert, denser and more adherent. It is, in fact, so adherent that it actually protects the uncorroded surface beneath it.

Where TONCAN IRON CAN BE USED

Toncan Iron offers to the architect the highest degree of resistance to rust and corrosion obtainable among ferrous metals in its price class. It also assures unsurpassed ductility and working qualities. Because of its versatility, Toncan Iron has met with broad

usage and has proved itself in countless installations under severe conditions.

The list below will serve to show some of the more common applications of Toncan Iron in the building field.

Air conditioners	Clothes chutes	Ducts, heating, ventilation and air conditioning	Hotel and restaurant equipment	Pilasters	Skylights
Airplane hangars	Clothes dryers	Dust collectors	Humidifying pans	Playground equipment	Smoke pipe
Awning covers	Coal chutes	Eaves trough	Incinerators	Radiator shields	Stand pipe
Balustrades	Condensation pans	Electric heaters	Kitchen cabinets	Range boilers	Stationary tubs
Bathroom cabinets	Conductor pipe	Electrical terminal boxes	Laboratory equipment	Ranges	Switch boxes
Blower ducts	Coping	Fan housing	Laundry tubs	Reflectors	Tanks
Boiler breechings	Cornices	Fire doors	Lighting fixtures	Refrigerators	Underground garage holders
Boiler jackets	Corrugated culverts	Flashing	Lockers	Registers	Urns
Bridge arches	Dampers	Furnaces and pipes	Louvers	Roofing	Vats
Brine tanks	Dishwashers	Gas radiators	Mail boxes	Roof flashings and valleys	Ventilators
Bulletin boards	Doors (exterior)	Gas and oil pipe	Marquees	Rubbish burners	Waste paper boxes
Cabinet heaters	Downspouts	Gravel strips for roofs	Metal ceilings	Septic tanks	Water tanks
Cabinets	Drainboards	Gutters	Metal doors	Shingles (metal)	Window frames
Canopies	Drinking fountains	Hospital equipment	Metal lath	Siding	Window sash
Catch basins	Dryers		Metal partitions	Signs	Window ventilators
Chimney tops			Oven lining	Sinks	

TONCAN IRON IS *Easy to Form*

Toncan Iron is exceedingly ductile and can be formed into any commodity which is ordinarily made up of sheet steel or iron. It is much softer than mild steel and, because of its workability, it can be deep drawn, formed, bent, flanged, stamped or spun. It is easy to cut or shear and requires less power and less labor for working. Toncan Iron can be annealed at a temperature of 1200° to 1250° F., to relieve strains caused by working and can be normalized at a temperature of 1700° F., followed by cooling in air to improve the grain structure of the iron after working. It can be

welded, soldered, brazed, riveted, etc., and may be protected with various coatings or galvanized, galvannealed, sherardized, etc. The remarkable rust-resistance of Toncan Iron extends uniformly throughout the entire thickness of the metal—not on the surface only—and it is the only commercial ferrous material with rust-resistance practically unaffected by cold-working or deformation. Other ferrous sheet materials ordinarily first dissolve and rust most rapidly at or adjacent to parts which have been cold-worked—such as seams, cut ends, bends and punched holes.

OFFERS *Excellent Welding Properties*

The excellent welding properties and smooth-flowing behavior of Toncan Iron are valuable in that they make Toncan Iron the ideal metal for work where all joints are to be welded. Toncan Iron lends itself equally well to welding by either the electric arc or gas process. In gas welding, a slight reducing flame should be maintained in order to reduce oxidation to a minimum. In electric arc welding, the use of coated Toncan Iron Welding Rod is recommended.

In gas welding, the deposited metal is practically as resistant to corrosion as the metal itself. This is due to the fact that there is no change in the alloy during the welding operation, for the copper and molybdenum remain unaffected in their relation to the iron with which they are alloyed. Practically the same results can be obtained by the electric arc method, but the use of Toncan Iron electrodes is recommended. The use of Toncan Iron Welding Wire insures a completed job of uniformly high resistance to rust and corrosion throughout.

Physical Properties AND *Constants*

The analysis and the chemical and structural uniformity of Toncan Iron assure satisfactory and dependable physical properties. Toncan Iron is unique in that it combines with its remarkable rust- and corrosion-resistance, physical properties not found in the best grades of open-hearth steel. Many of these properties are due to the alloy addition of molybdenum. This element entirely dissolves without loss in the iron and thereby has a positive and beneficial effect. It produces a

grain refinement which results in an improvement in strength and ductility, as well as greater rust-resistance. It increases the ability of the metal to withstand shock. It increases the susceptibility of the metal to heat treatment. It increases the elastic ratio, that is, the ratio between elastic limit and tensile strength. These advantages are reflected in the following figures, showing a range for all Toncan Iron Products.

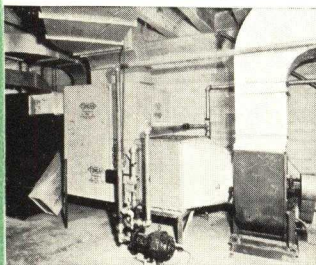
Physical Properties

Tensile Strength—45,000-58,000 lbs. per sq. in.
Elastic Limit, 30,000-40,000 lbs. per sq. in.
Elongation in 2 in., 30-40%.
Reduction of Area, 60-80%.
Rockwell Hardness, 36-46 (B scale).
Brinell Hardness, 90-120.
Specific Gravity, 7.88 approximately; about 2% greater than that of unalloyed iron or steel.
Electrical Conductivity, about 12½% that of copper.
Thermal Conductivity, slightly better than steel or iron products.
Co-efficient of Expansion, .00000674 in. per degree F. melting point, 2775° F.

Physical Constants

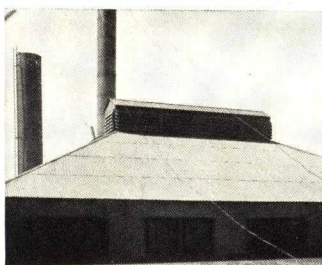
Weight—283 lb./cubic inch.
Specific gravity—7.88 or approximately that of iron or steel.
Melting point—2775° Fahrenheit.
At room temperature (20° C. or 68° F.):
Electrical resistivity—eight times that of copper or approximately .0000137 ohm/cm. cube = 13.7 microhm/cm. cube = 77 ohm/circular mil foot.
Electrical conductivity—12½% that of copper or approximately 73,000 reciprocal ohm/cm. cube = .013 ohm/circular mil foot.
Thermal conductivity—Slightly better than iron or steel or approximately .18 cal/cm. cube/sec/degree C = .7 watt/cm. cube/sec/degree C.
Linear co-efficient of thermal expansion—.0000121 cm./cm./degree C., 0-100° C. = .00000674 inch/inch/degree F., 32-212° F.

Office Buildings



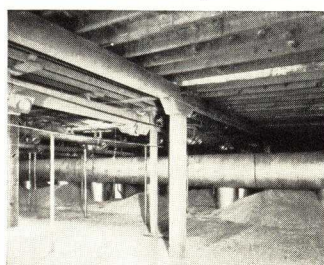
Associated Telephone Co.
For air conditioning ducts.

Industrial Buildings



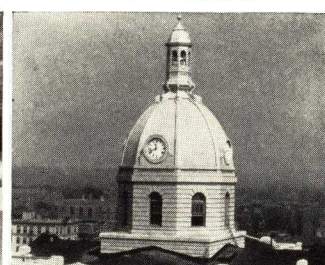
Grand Rapids Malleable
Iron Works
For roofing.

Food & Beverage Plants



A. Coors Company Brewery
For air conditioning ducts in fermentation cellar.

Public Buildings



County Court House
For covering of dome.

TONCAN IRON *for* PERMANENCE



TONCAN IRON *Sheets*

Forms AND Finishes

Hot-Rolled, Galvanized, Galvannealed, Terne Coated Flat Sheets, in all the usual gauges and various popular forms of roofing, galvanized or painted, are available at all times. Roofing may be had in 1¼, 2,

Sizes AND Gauges

COMMERCIAL GALVANIZED AND SPECIAL TIGHT COAT, as well as formed roofing products. 12 to 28 U. S. Gauge, inclusive. Width range, 24 in. to 48 in. Length, 60 in. to a maximum of 144 in.

HOT-ROLLED SHEETS—8 to 26 U. S. Gauge, inclusive. Width range, 12½ in. to 60 in. Length, 30 in. to a maximum of 192 in.

HEAVY COLD ROLLED AND LIGHT COLD ROLLED. 7 to 24 U. S. Gauge, inclusive. Width range, 24 in. to 63 in. Length, 60 in. to a maximum of 120 in.

2½ and 3 in. corrugated; Triple Drain, in Pressed Standing Seam; in 2, 3, 4, 5 and 6 V-Crimp; Pressed Standing Seam; Double Cross Lock Roll Roofing; Roll and Cap Roofing; Weatherboard Siding; Cross Corrugated; and in Plain and Rock Face Brick and Stone Siding.

LONG TERNES—14 to 28 U. S. Gauge, inclusive. Width range, 24 in. to 49 in. Length, 60 in. to a maximum of 144 in.

TONCAN IRON OVEN LINING AND TONCAN IRON GALVANNEALED—Gauges 16 to 28, inclusive. Width up to 54 in. Lengths to 144 in.

CORRUGATED ROOFING AND SIDING—

(a) Galvanized—Present standard widths and corrugations. In all lengths, 5 ft. 0 in. to 12 ft. 0 in. in 28 gauge and heavier.

(b) Painted —Present standard widths and corrugations. In all lengths, 5 ft. 0 in. to 12 ft. 0 in. in 26 gauge and heavier, even gauges.

Rolling Limits TONCAN IRON SHEETS

This table indicates the rolling limits of Toncan Iron Sheets in hot rolled, galvanized, heavy hot rolled annealed and special finishes—with the exception that hot rolled, annealed Toncan Iron Sheets are not made lighter than 26-gauge, while galvanized sheets are not supplied in greater length than 144 in. nor wider than 48 in. *Uncoated sheets can be furnished in widths and lengths greatly in excess of those shown here. Details upon application.*

GAUGE	LENGTH IN INCHES																			
Width.....	24"	26"	28"	30"	32"	34"	36"	38"	40"	42"	44"	46"	48"	50"	52"	54"	56"	58"	60"	
No. 28.....	144	144	144	144	144	144	144	144	120	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 27.....	144	144	144	144	144	144	144	144	120	120	.....	.....	.....	.....	.....	.....	.....	.....	.....
No. 26.....	144	144	144	144	144	144	144	144	144	144	120	120	120	.....	.....	.....	.....	.....	.....
Nos. 25 and 24..	144	144	144	144	144	144	144	144	144	144	144	120	120	.....	.....	.....	.....	.....	.....
No. 23.....	144	144	144	144	144	144	144	144	144	144	144	144	144	120	.....	.....	.....	.....	.....
Nos. 22 and 21..	144	144	144	144	144	144	144	144	144	144	144	144	144	.....	.....	.....	.....	.....	.....
No. 20 & heavier	144	144	144	144	144	144	144	144	144	144	144	144	144	120	120	120	120	120	120	

TONCAN IRON *Plates* TONCAN IRON *Strip*

Rust-resisting Toncan Iron Plates are made in thicknesses ranging from No. 10 BWG to 2 in. Sizes range from 24 to 150 in. in width and from 190 to 640 in. in length, depending upon thickness. Hot-rolled plates are also available in Steel, Republic Double Strength Steel and Enduro Stainless Steel.

Hot-rolled Toncan Iron Strip is available in widths from 3½ in. to 36 in. Through special arrangements, it can be made in widths narrower than 3½ in., in which case the lightest limit is 16 gauge.

The lightest gauge in which cold-rolled Toncan Iron Strip is offered is 22 gauge. It is available in all widths.

How to Specify TONCAN IRON SHEETS

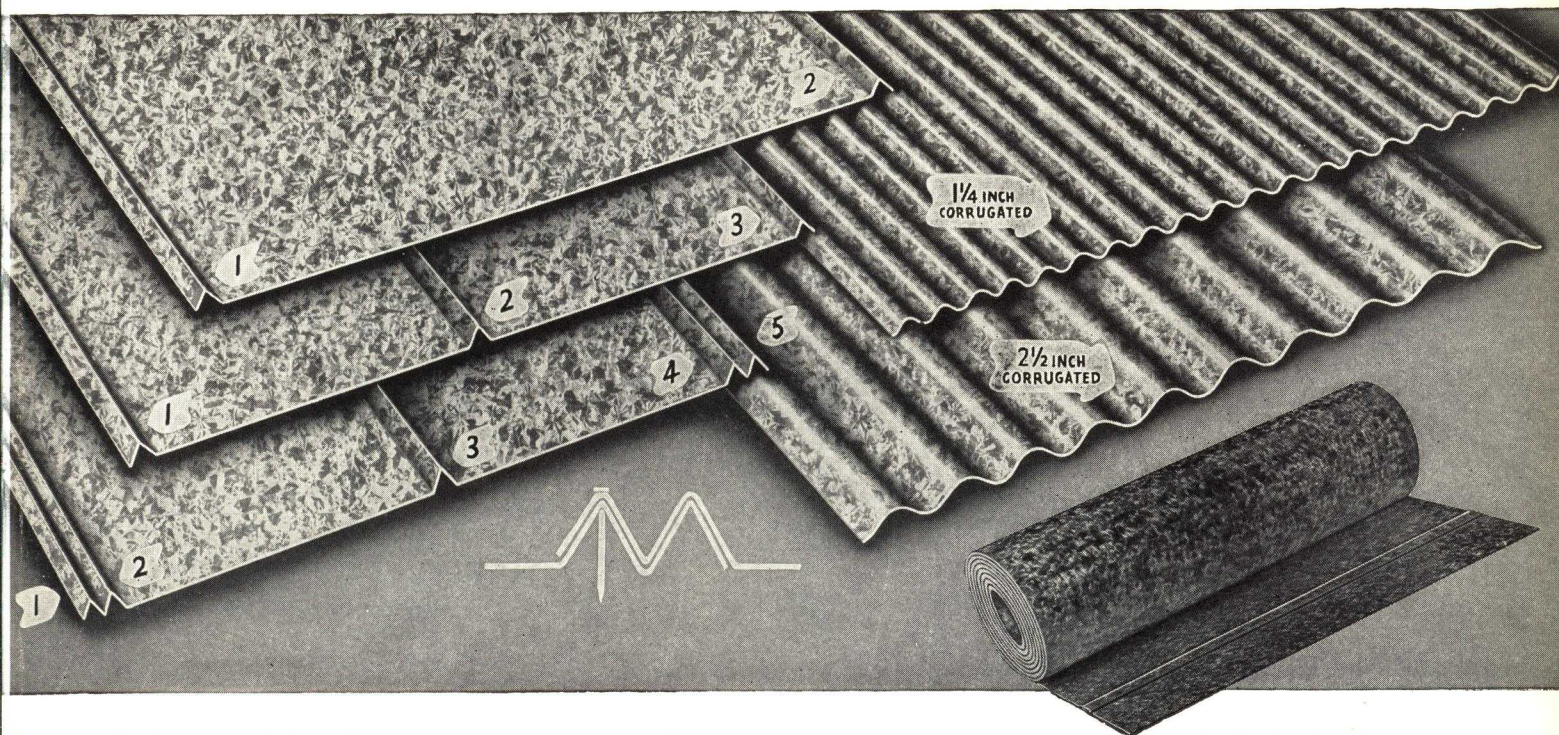
Toncan Iron Sheets are stocked by jobbers in all large cities. Be sure to specify: "All sheet metal work shall be rust-resisting Toncan Copper Molybdenum Iron manufactured by Republic Steel Corporation." In cases where public institutions do not use trade-names in specifications, Toncan Iron Sheets may be specified as: "Alloyed iron sheets of open hearth iron, copper and molybdenum produced by the basic open hearth process, containing no less than .40 per cent copper and .05 per cent molybdenum."

For your protection, every Toncan Iron galvanized sheet is stenciled at approximately two-foot intervals with the Toncan Iron trade-mark in green. Smaller formed products are die stamped with the trade-mark and maker's name. The gauge also is clearly shown.

Look for the green Toncan Iron trade-mark—it's your assurance of longer sheet life, easier working quality, and greater economy.



TONCAN IRON *for* LONG LIFE



V-Crimped Roofing

V-crimped is the oldest form of roofing, and has been used extensively. Simple in construction, reasonable in cost, can be applied over close sheathing to strips spaced four or five inches apart or over old shingles. The 3 V-crimped is a pleasing variation from the standard and makes a stiffer sheet, while 5 V-crimped is still stronger. All three styles are supplied in lengths of 5, 6, 7, 8, 9, 10, 11 and 12 ft. and in gauges 24 and lighter. Actual covering width of each style is 24 inches.

Corrugated Sheets

Corrugated sheets offer the advantage of light weight with great lineal rigidity. This advantage, plus the fire protection offered accounts for their almost universal use in roofing and siding for industrial buildings, warehouses, mine buildings, and other large structures in the vicinity of railroads. Corrugated sheets are also an ideal material for barns, garages, sheds, and a wide variety of other buildings. The 1 1/4-in. style is supplied in gauges 20 and lighter; the 2, 2 1/2 and 3-in. style in gauges 10 and lighter. Both styles are 26 or 27 1/2 in. wide; lengths, 5, 6, 7, 8, 9, 10, 11 and 12 ft.

Roll Roofing

Especially useful where pitch of roof is slight and for wide areas. Cross seams are double locked. Each roll contains 50 lineal ft. Covering width is 24 in. Gauges 26, 28 and 29. Also available in Roll and Cap (with caps and cleats), and Self-Capping Roll Roofing.

Pressed Standing Seam Roofing

Strong and attractive, this is one of the most perfectly watertight of all metal roofings when properly applied, as no nails are driven through the roofing sheets. Covering width, 24 in. Lengths, 5, 6, 7, 8, 9, 10, 11 and 12 feet. Galvanized; gauges 28, 26 and 24. Painted; gauges 26 and 24.

Ridge Roll—Plain and Corrugated

The plain is made with or without nailing flange; length, 10 ft. Size of rolls, 1 1/4, 1 1/2, 2, 2 1/2 and 3 in. Size of aprons, 1 3/4, 2, 2 1/4, 3 and 3 1/2 in. Girths, 7, 8, 10, 12 and 14 in. Gauges 28 and heavier.

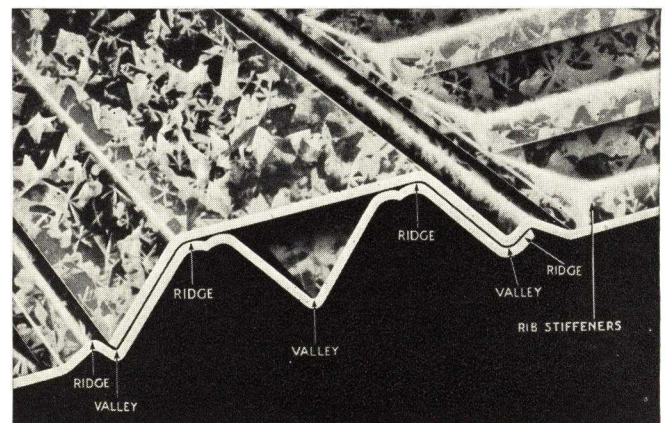
The corrugated ridge roll is used with corrugated roofing. Lengths, 28 and 96 in. Made with 2 1/2 or 1 1/4-in. corrugations with 2-in. roll; 4-in. apron; 12-in. girth.

Republic Triple Drain Roofing

Republic Steel's new Triple Drain Roofing is the ideal non-syphoning drain roofing. Not just a single drain, not merely a double drain—there are actually three drains. With this vastly improved design, neither driving rain nor capillary attraction (syphonage or seepage) can cause leaks. For convenience in erection, blue lines clearly indicate proper nailing areas. Galvanized Lock, Drive Screw Lead Seal Nails are recommended. For roofs of 1/4-in. pitch or more, covering width—24 in. Lengths, 5 to 12 ft., inclusive. Triple Drain adjustable ridge roll, end wall flashing, gambrel roof joints, overhanging eaves drip and gable end starters are also available.

Cross Corrugated Sheets

Used for elevators and other high buildings where there is some motion of the building in the wind or where the structure may settle. The nails in each sheet are driven 2 in. above the edge of the sheet below, which allows the building to settle or move without loosening the sheets. The standard size for this type of sheet is 26 x 32 in., providing for a covering width of 24 in., with a 2-in. lap.



TONCAN IRON PRODUCTS *in Air Conditioning*

Corrosion has long been a major problem in the field of air conditioning—corrosion affecting both central station systems and air conditioning ducts. Toncan Iron Sheets having already established records for long life under severe conditions were used with marked success for ducts and other sheet metal applications. The marked superiority of Toncan Iron

Pipe for water supply, circulating and effluent lines, ammonia cooling coils and steam coils has been amply demonstrated. The reason for this outstanding performance lies in the base of the metal itself—an alloy of refined open hearth iron, copper and molybdenum which possesses greatest corrosion-resistance among ferrous metals in its price class.

Corrosion Is Major Problem

In the selection of ferrous materials for air conditioning systems, the architect and the engineer are faced with a definite problem of combating corrosion in (1) central station air conditioning units and (2) ducts through which the conditioned air is carried to different parts of the building. Replacement of failed metal parts in air conditioning installations is an extremely costly matter. Hence, insurance of maximum life for these parts is a fixed responsibility of the architect or engineer.

Corrosion in Central Station Systems

In this type of air conditioning system, impurities are removed from the air in varying degrees by passing it through water sprays. The impurities which are thus removed by washing are mainly acidic in character, such as carbon dioxide, sulphur dioxide and, to a lesser degree, sulphur trioxide. The system also acts as a humidifier or dehumidifier according to outside weather conditions.

Both the water supply lines and the circulating or effluent lines are subject to corrosive conditions—the supply lines from raw water and the circulating lines from water containing impurities removed from the air. In many cases the water supply is treated to remove impurities which tend to attack the pipe. Such treatment, however, is not fool-proof. The pipe which carries the water to the sprays must be able to withstand corrosive attack during any period when conditions are *abnormal* and when all impurities are *not* removed. Even though the water may be satisfactorily treated for six days out of the week, provision must be made to combat corrosion on the seventh day when treatment may not remove all impurities.

Superiority of Toncan Iron Pipe for these lines is due to the

high corrosion resistance of the metal demonstrated in both laboratory and field.

Corrosion in Air Conditioning Ducts

The life of galvanized ferrous sheets in duct systems is affected by the following:

(1) Moisture originally present in the air as water vapor, or moisture held in mechanical suspension deposits out on the sheet as a result of temperature changes. This applies to *both* the interior and exterior of the duct. A cold air duct passing through a warm room will "sweat" on the exterior.

(2) Moisture deposits out in certain critical areas of the ducts as a result of the circuitous, angular paths often necessary. Air flow obstructions cause deposit of moisture mechanically and electro-mechanically.

(3) Moisture deposits out as a result of the presence of dust particles or hygroscopic products of corrosion.

(4) Improperly or insufficiently washed or filtered air contaminates the moisture with sulphurous acid, sulphuric acid and hydrogen sulphide.

THESE TESTS SHOW WHY TONCAN IRON SHOULD BE USED

Test 1 —Air conditioning system operates 8 hours a day for 5 days a week. Test specimens immersed in *untreated* water in dehumidifier.

Test 2 —Air conditioning system operates 24 hours a day, 7 days a week. Test specimens immersed in *treated* water spray in dehumidifier. Results at top of next page.



Purdue University, Lafayette, Indiana

Toncan Iron Sheets used for Air Conditioning Ducts. Architect—Walter Scholer

CORROSION LOSS

Material	Milligrams per sq. in.		Appearance	
	Test No. 1	Test No. 2	Test No. 1	Test No. 2
Plain Open	73.2	.93	Deep, scattered pits	Few shallow pits
Hearth Steel	71.8	.80	Deep, scattered pits	Fewer shallow pits
Copper-Bearing Steel	67.7	.67	Shallow scattered pits—uniform attack	No pits—uniform attack
Toncan Iron				

The above results of scientifically conducted tests show the

REPUBLIC TAYLOR *Roofing Ternes* — “Target and Arrow Brand”

Taylor Roofing Ternes are steel sheets coated with a tin-lead alloy for protection against corrosion. Roofing ternes are frequently referred to as tin roofing by the trade. Since 1810 the Taylor name has identified roofing ternes of the high quality obtained only by coating the sheets by means of the so-called “old style” process. This process calls for craftsmanship of the highest order and insures perfect amalgamation of the three

Advantages

1. Durable.
2. A time-tried, long-established material.
3. Easily applied.
4. Adaptable to any surface.
5. Moderate first cost.
6. Low maintenance cost.
7. High salvage value.
8. Easily and quickly repaired if damaged.
9. Neat, attractive appearance.
10. Retains good appearance with age.
11. Light weight.
12. Not affected by heat or cold.
13. Properly grounded, is protection against lightning.
14. Fire-proof.
15. Weather-resisting.

Forms, Sizes and Gauges

Republic Taylor Copper Bearing Roofing Ternes are available in standard flat sheets and in rolls of 100 sq. ft. and 50 and 100 lineal ft.

Flat sheets are available in two thicknesses, IC (approximately 30 Gauge, U. S.) and IX (approximately 28 Gauge, U. S.). Standard sheet sizes are 14 in. x 20 in. and 20 in. x 28 in. Coating weights are 8, 15, 20, 25, 30 and 40 pound and the famous Target and Arrow Brand.

Rolls are available in the two thicknesses, IC and IX. Rolls are made in 100 sq. ft., 50 and 100 lineal ft. sizes. Widths are 14 in., 20 in. and 28 in. Painted or unpainted. Single or double locked seams. Soldered or unsoldered.

Specifications — “Tin Roofing Work”

“All tin used on this building shall be Republic Taylor Roofing Ternes as manufactured by Republic Steel Corporation. No substitute for this brand will be allowed. Use IC thickness for the roof proper, decks, etc., and IX thickness for valleys, gutters, and spouts, as required by design. One coat of red lead, iron oxide, metallic brown or Venetian red paint, with pure linseed oil, shall be applied to the under side of the tin before laying.

“For flat-seam roofing, edges of sheets to be turned ½-in.; all seams to be locked together and well soaked with solder. Sheets to be fastened to the sheathing-boards by cleats spaced 3 in. apart, cleats locked in the seams and fastened to the roof with two 1-in. barbed wire nails; no nails to be driven through the sheets.

“For standing-seam roofing, sheets to be put together in long lengths in the shop, cross seams to be locked together and well soaked with solder; sheets to be made up the narrow way in the rolls and fastened to the sheathing-boards by cleats spaced 1 ft. apart.

“Valleys and gutters to be formed with flat seams well soldered, sheets to be laid the narrow way.

“Flashings to be let into the joints of the brick or stone work, and cemented. If counterflashings are used, the lower edge of the counter-part shall be kept at least 3 in. above the roof.

“Solder to be of the best grade, bearing the manufacturer's name, and guaranteed one-half tin and one-half lead, new metals. Use rosin only as a flux.

“CAUTION—No unnecessary walking over the tin roof or using same for storage of material shall be allowed. In walking on the tin care must be taken not to damage the paint or break the coating of the tin. Rubber-soled shoes or overshoes should be worn by the men on the roof.

“PAINTING TIN WORK—All painting of the tin work to be done by the roofer, using red lead, iron oxide, metallic brown, or Venetian red paint, with pure linseed oil—no patent dryer or turpentine to be used.

ability of Toncan Copper Molybdenum Iron Sheets and Pipe to resist corrosive action of both treated and untreated water used in air conditioning. Toncan Iron justifies its use in air conditioning applications because:

(1) It affords highest degree of resistance to corrosion, thus assuring longest service performance.

(2) It will save much replacement cost, especially when ducts are built-in or are otherwise inaccessible. This is true even though best operating control of treated water and air is assured.

metals. Consequently, Republic Taylor Roofing Ternes offer unexcelled durability.

To assure maximum service life, the base metal of these ternes is rust resisting copper bearing steel. Thus, to the highly efficient protective terne coating is added the ability of the base metal to resist to a high degree the attacks of corrosion, resulting in a roofing material of easy workability and long life.

Where to Use

Republic Taylor Roofing Ternes are widely used for the roof proper, valleys, gutters, flashing and similar applications. A terne roof, properly applied, is waterproof and fire retarding. It does not require the heavy supporting structures necessary for bulkier, heavier types of roofing. It expands and contracts with temperature changes less than any other metal roof. Republic Taylor Roofing Ternes in rolls are well adapted for residence, factory, mill and business building construction. Government investigation of roofs reveals that many owners whose buildings are now roofed with terne plan to re-roof with terne when re-roofing is necessary.

Coating Weights are identified as follows:

- 8 lb.—Saxon
 - 15 lb.—Avalon
 - 20 lb.—Old Method and Fire Protection
 - 25 lb.—Old Method
 - 30 lb.—Old Method
 - 40 lb.—Old Method and Taylor Extra Coated
- Target and Arrow Brand

Sheets are stamped with weight of coating, grade and brand. This is also stenciled on boxes.

“All paints to be applied with a hand-brush and well rubbed on. Tin to be painted immediately after laying. A second coat shall be applied in a similar manner, two weeks later.

“No deviations from these specifications shall be made unless authority is given in writing by the architect. Only a first-class roof will be accepted.”

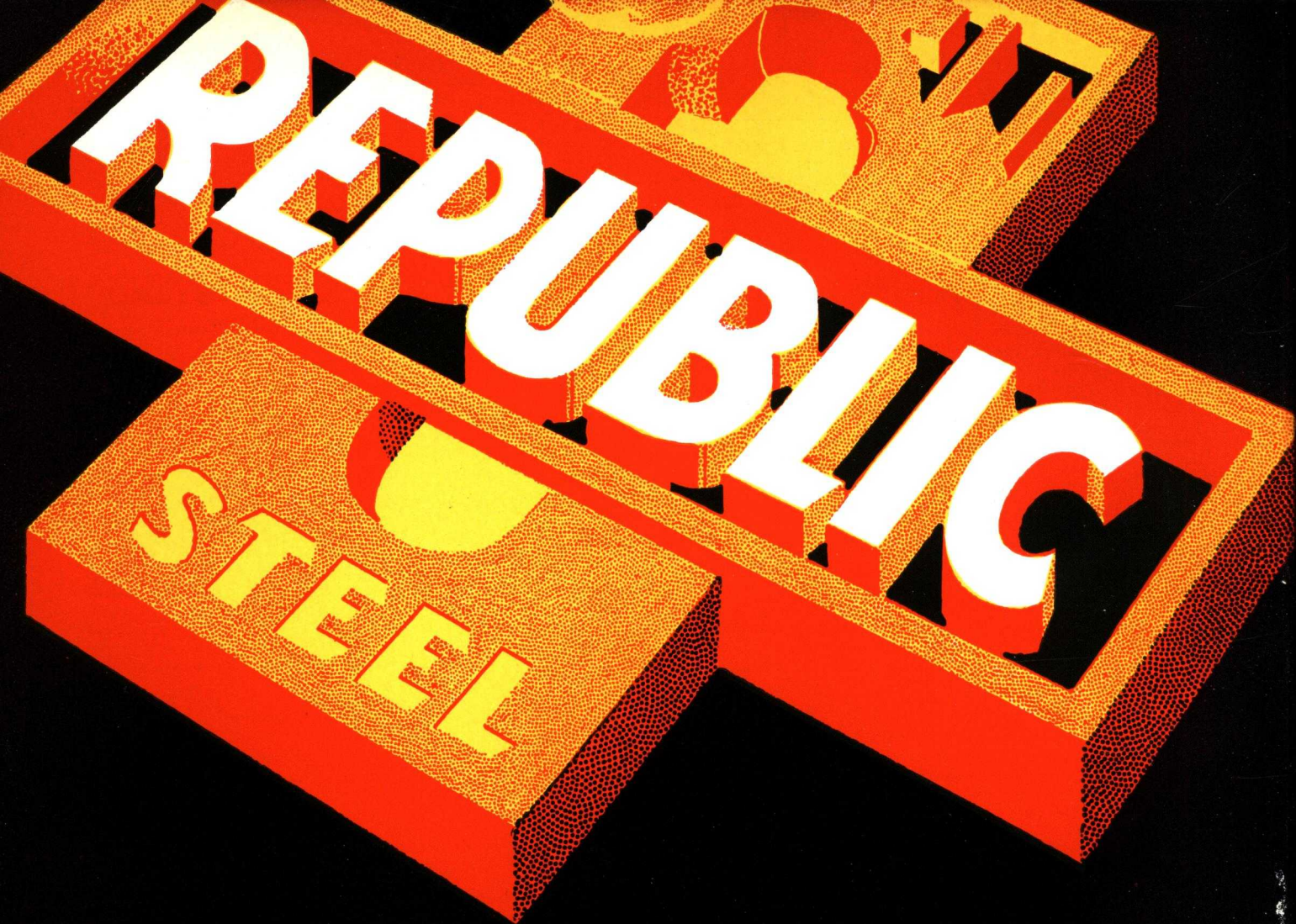


Tioga County Court House, Wellsboro, Pa.

Target and Arrow Taylor Ternes on dome built in 1835. As far as records indicate, except for paint, no repairs have been made.

TAYLOR ROOFING TERNES SINCE 1810





REPUBLIC STEEL CORPORATION

DISTRICT SALES OFFICES

BIRMINGHAM, ALA., Empire Bldg.
 BOSTON, MASS., Consolidated Bldg.
 BUFFALO, N. Y., Liberty Bank Bldg.
 CHICAGO, ILL., McCormick Bldg.
 CINCINNATI, OHIO, Carew Tower
 CLEVELAND, OHIO, Republic Bldg.
 DENVER, COLO., Continental Oil Bldg.
 DETROIT, MICH., Fisher Bldg.
 GRAND RAPIDS, MICH., Grand Rapids Trust Bldg.
 HOUSTON, TEX., Petroleum Bldg.
 INDIANAPOLIS, IND., Circle Tower
 KANSAS CITY, MO., Fairfax Bldg.
 LOS ANGELES, CALIF., Edison Bldg.

MILWAUKEE, WIS., First Wisconsin National Bank Bldg.
 NEW YORK, N. Y., Chrysler Bldg.
 PHILADELPHIA, PA., Broad Street Station Bldg.
 PITTSBURGH, PA., Oliver Bldg.
 ST. LOUIS, MO., Paul Brown Bldg.
 ST. PAUL, MINN., First National Bank Bldg.
 SALT LAKE CITY, UTAH, Atlas Bldg.
 SAN FRANCISCO, CALIF., Rialto Bldg.
 SEATTLE, WASH., White-Henry-Stuart Bldg.
 TOLEDO, OHIO, Ohio Bank Bldg.
 TULSA, OKLA., Thompson Bldg.
 WASHINGTON, D. C., Shoreham Bldg.
 YOUNGSTOWN, OHIO, Republic Bldg.

Canadian Representative, Toronto, Ont.

EXPORT DEPARTMENT, Chrysler Bldg., NEW YORK, N. Y., U. S. A.

Warehouse Stocks of Enduro Stainless Steel, Republic Steel Pipe and Toncan Copper Molybdenum Sheets and Pipe are carried in stock in principal cities. For Local Distributors contact the nearest Republic Sales Office

Revere¹³

**COPPER, BRASS, BRONZE
AND NICKEL SILVER**

**Architectural
Shapes & Sheets**

REVERE

PROVIDES

dependable copper and copper alloy products for building construction and maintenance, and . . .

OFFERS

competent technical assistance in the selection and application of these materials to all building requirements.

FOUNDED BY
PAUL REVERE



REVERE BUILDING PRODUCTS

Sheet Copper and Leadtex (lead-coated copper) . . .

for roofing, gutters, conductor pipes, flashings, skylights, spandrels, decorative applications and termite proofing, also for range boilers.

Cheney and Revere Thru-Wall Flashing . . .

for protecting buildings against seepage, leaks and efflorescence.

Copper Water Tube, Brass Pipe, Red-Brass Pipe and Copper Pipe (S.P.S.) . . .

for water supply, hot and cold water lines, heating lines, drainage lines, oil burner, air conditioning and refrigerant lines, lawn irrigation and industrial piping.

Herculoy

for range boilers and hot water storage tanks, chemical containers and unfired pressure vessels.

Extruded Shapes of Architectural Bronze, Aluminum and Nickel-Silver, also Panel Sheets . . .

for the construction of doors, windows, grilles, store fronts, screens, pilasters and the like; Panel sheets of architectural bronze and other alloys for use with extruded shapes in the construction of the above.

Round, Square and Special Shaped Tubes in various alloys . . .

for door stiles and grilles in color match with Architectural Bronze Extruded Shapes and Panel Sheets.

Revere products can be safely written into any specification with assurance of quality and prompt delivery from Revere's Mills or through Revere's Distributors. Further information on any Revere Products supplied on request to any of the offices listed on rear cover.

SHEET METAL FOR DECORATIVE USES



This completed store front is for the "Edison Wonder House" exhibited on the main floor of the Brooklyn Edison Company Building, 380 Pearl Street, Brooklyn, N. Y. It was constructed with Revecon System standard extruded structural sections and Revere standard flat sheet building materials.

Revere Sheet Metals offer the architect many opportunities for producing unusual ornamental effects both for interiors and exteriors of all types of buildings. Their fabricating qualities adapt them to a variety of design applications — from the most ornamental to the simplicity of plane surfaces required by modern design.

Color and finish may be selected to harmonize with any building material or to produce the required contrast. Revere Copper, Brass, Bronze and Leadtex may be used in their natural color or may be modified in a variety of tones by chemical treatment, or if used outdoors by weathering. In addition, Leadtex is available with several different surface textures which range from the commercial to the sophisticated—ultra modern.

The illustrations on these pages are given to suggest some of the possibilities for producing decorative effects with Revere Sheet Metals.

Theatre and office building lobbies, stores and shops, and restaurants are a few of the places where the decorative value of sheet metals is recognized for interior use.

For exterior ornamental use, in addition to a warmth of color, ease of fabrication and light weight, Revere Sheet Metals also possess the all-important quality of durability.

Few building materials offer the flexibility in application, the workability, the color and texture range, and the long-life found in Revere Sheet Metals.



PELLI BUILDING, LOS ANGELES, CALIFORNIA

Morgan, Walls and Clements, Architect; William Simpson Company, General Contractor; National Cornice Works, Sheet Metal Contractor; Los Angeles Cornice and Stamping Works, Stamping, all of Los Angeles, Calif.
10,000 lbs. of Leadtex was used for spandrels, frieze and miscellaneous brackets, bands, etc.



REVERE COPPER AND BRASS INCORPORATED



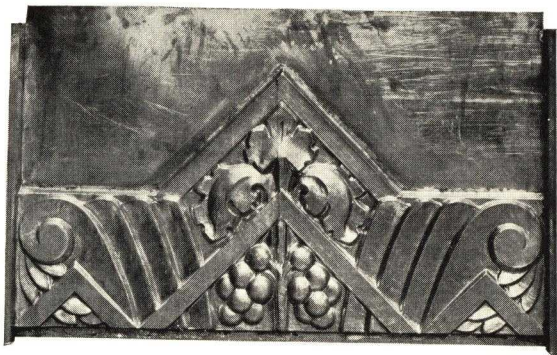
St. Joseph's Church, Seattle, Washington. Revere Sheet Copper was used for exterior ornamentation including massive, studded doors. A. H. Albertson in association with J. P. W. Wilson and Paul Richardson, Architects. Sheet Copper Work by Builders Sheet Metal Works.



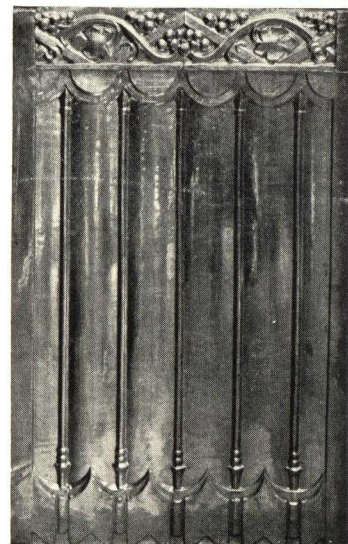
Leadtex Leaders and Leader Heads, St. Pascal's Church, Chicago, Ill. E. J. Hotton, Architect; Raymond Gregori, Associate Architect; Sheet Metal Work by Wagner Bros. Cornice Co.; Stampings by Friedley-Voshardt Co., all of Chicago, Ill.



ABOVE: Decorative Frieze showing the possibilities of reproducing delicate ornament in Revere Sheet Copper. Produced by Forderer Cornice Works, San Francisco, Calif.



RIGHT: Some of the stamped copper details used on the Psychopathic Hospital, City and County of San Francisco, Calif. Martin Rist, Architect; B. C. Metal Stamping Co., Metal Stampings; Guilfooy Cornice Works, Sheet Metal Contractor. All of San Francisco, Calif.



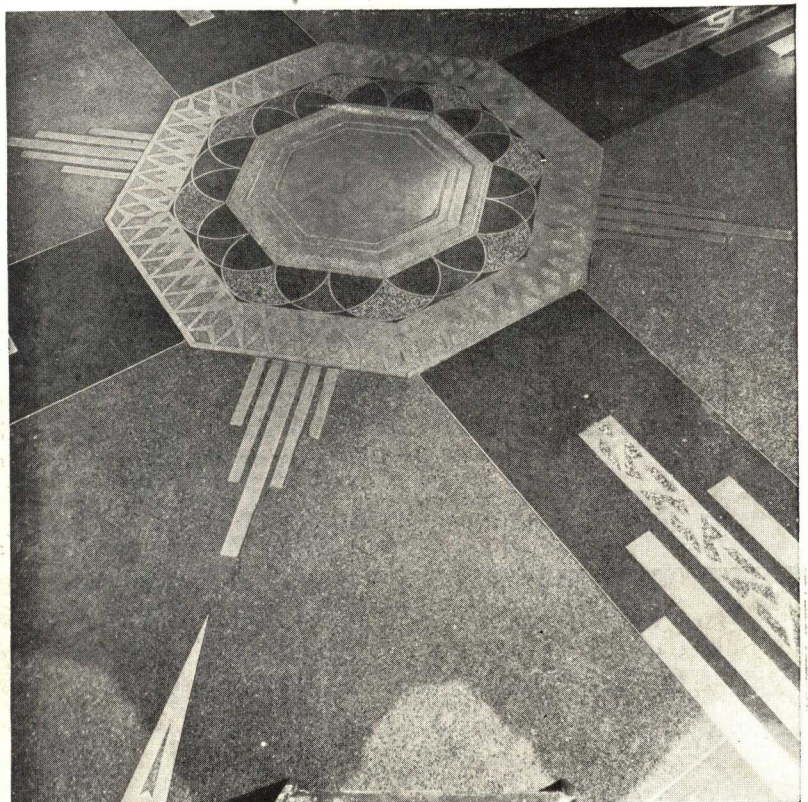


Strikingly effective ceiling decoration in the Fifth Avenue Office of J. S. Bache and Company, New York stockbrokers, was achieved through the use of Revere Sheet Copper. Designed by E. H. Faile, New York City, Engineer.

LEFT: Exotic new bar in the King Cole Room of the Hotel St. Regis in New York City. Designed by Anne Tiffany in rich colorful Revere bronze with the background and other appointments also of Revere bronze panels. The work was executed by Charles F. Biele & Sons Co., New York City.



Revere Sheet Copper produced the unusual decorative effect of Philadelphia's Copper Bar in the Hotel Adelphia.



Effective inlays of copper, bronze, brass and nickel silver in a terrazzo floor.

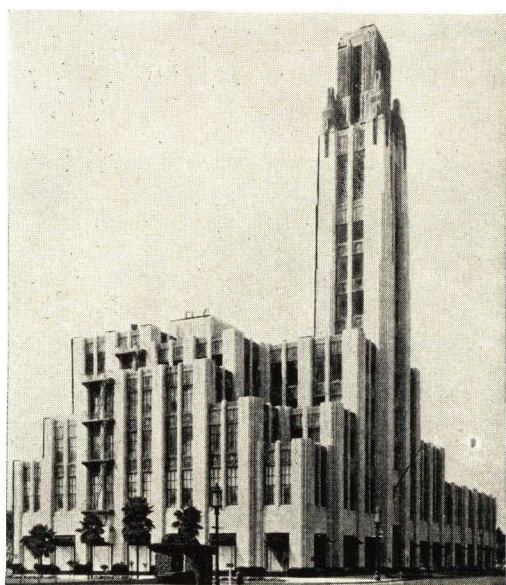




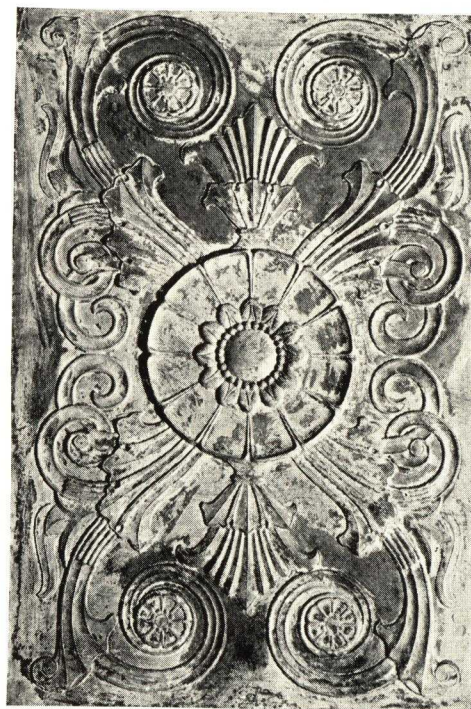
Some of the stamped copper details used on the Psychopathic Hospital, City and County of San Francisco, Calif. Martin Rist, Architect; B. C. Metal Stamping Co., Metal Stampings; Guilfooy Cornice Works, Sheet Metal Contractor. All of San Francisco, Calif.



A symbolic and beautiful bronze organ screen hides the pipes of the organ in St. Catherine's Church, Cincinnati, Ohio. Designed and executed by the Andrew Messmer Company, Cincinnati, Ohio.



Revere Sheet Copper was used for the ornamental portions including spandrels and tower of the Bullock's Wilshire Building, Los Angeles, California. One of the spandrels showing details and patina produced by chemical treatment is illustrated. John and Donald B. Parkinson, Architects; P. J. Walker Co., General Building Contractor; Forderer Cornice Works, Sheet Metal Contractor.



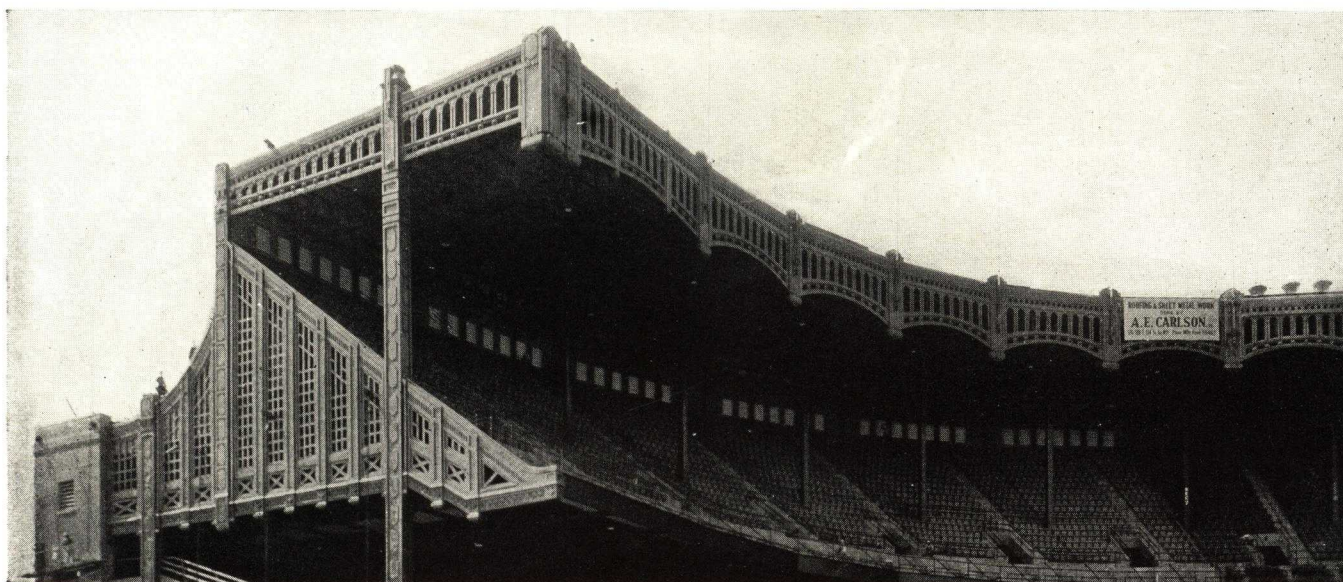
Revere Leadtex provides the possibilities of reproducing delicate ornaments. This Frieze was produced by Forderer Cornice Works, San Francisco, Calif.



The iron portions of the globe on top of the New Orleans Post Office were replaced after twenty years with Revere Copper and Bronze. The original copper figures showed no signs of deterioration. Reconstructed by the Blattman Weeser Sheet Metal Works.



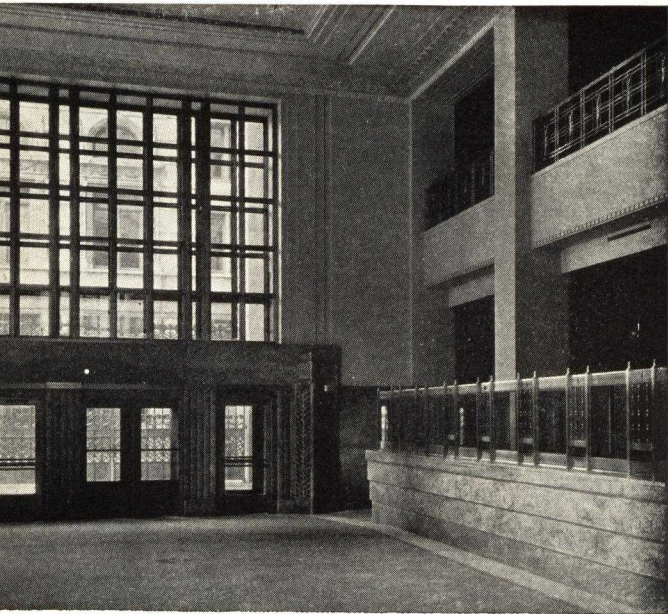
This copper canopy of Revere Sheet Copper extends around the entire Bon Marché Department Store, Seattle, Washington. John Graham, Architect; Seattle Cornice Works, Sheet Metal Contractor; B. C. Metal Stamping Works, Stampings.



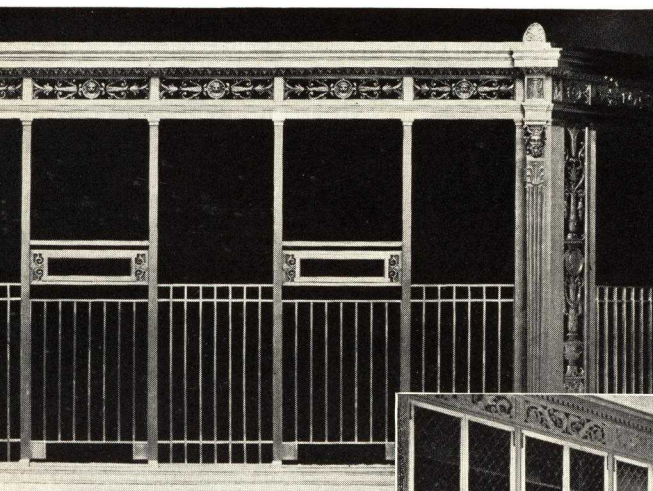
Revere Sheet Copper was used for siding and ornamental work on the addition to The Yankee Stadium, New York, N. Y. A. E. Carlson, Inc., Sheet Metal Contractor.



ARCHITECTURAL SHAPES AND SHEETS



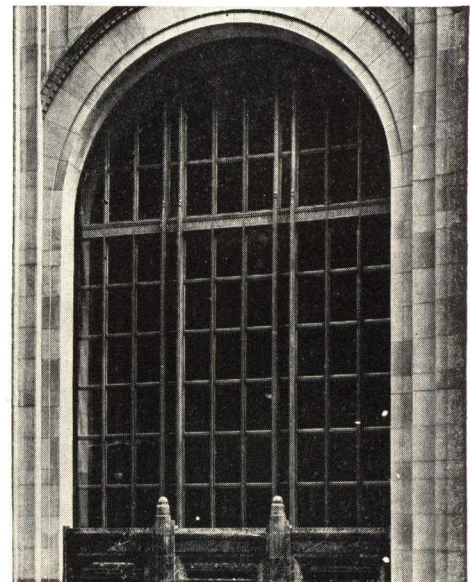
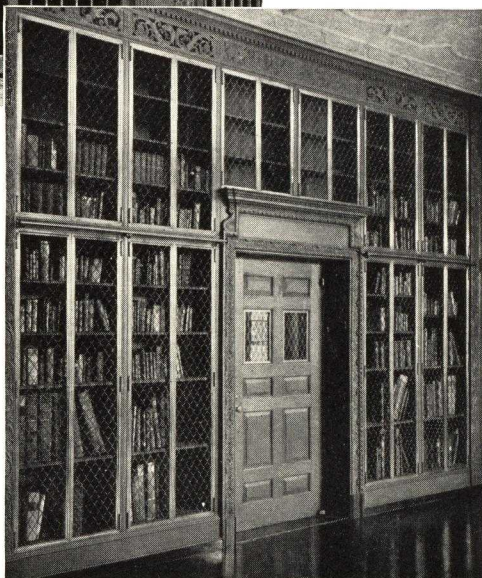
Main Banking Room, Metropolitan Life Insurance Company, New Home Office Building, New York City. D. Everett Waid and Harvey Wiley Corbett, Architects. Windows, grilles and counters by General Bronze Corporation, Long Island City, New York.



Bronze Counter Screen, Astor Trust Company, Charles E. Buge, Architect.

AT RIGHT:
Bronze Grille Doors fabricated from Revere Architectural Bronze Extruded Shapes and Wire in the Rare Book Room, New York Academy of Medicine, New York City. York and Sawyer, New York City, Architects. Fabricated by Suburban Bronze Works, Inc., Richmond Hill, N. Y.

AT FAR RIGHT:
Metropolitan Life Insurance Co., New Home Office, New York City. D. Everett Waid and Harvey Wiley Corbett, Architects. Double windows fabricated from Revere Nickel Silver (13%) Extruded Shapes, by General Bronze Corporation, Long Island City, New York.



REVERE EXTRUDED ARCHITECTURAL SHAPES

Extruded Architectural Shapes are particularly adapted for the construction of entrances, doorways, store fronts, grilles and windows, base and trim, wainscots, pilasters, rails, thresholds, nosings and other applications.

These shapes are produced by forcing metal, previously heated to a semi-plastic state, through a die by hydraulic pressure. They are uniform and accurate in size and constant in cross section. They are stronger and lighter than castings. Fabricating and finishing costs are reduced because of their smooth surfaces and accurate dimensions.

Revere has facilities and experience for producing these shapes in plain or intricate design. Great care is exercised in the straightening of Revere shapes, which is a time-saver in fabrication.

MATERIALS Revere Extruded Architectural Shapes are produced in Architectural Bronze, Nickel Silver, and in pure and Architectural Aluminum.

ARCHITECTURAL BRONZE SHAPES The majority of Revere shapes are made in Extruded Architectural Bronze, which has a rich, warm color, producing a good color match when used with Revere 60-40 Bronze (Muntz Metal) Panel Sheets. The average tensile strength of the bronze shapes is in excess of 50,000 pounds to the square inch. These shapes can be produced in commercial sizes up to and including 10 inches over-all width, depending on the area of the cross section, and in lengths up to 20 feet. A selection of Revere Architectural Bronze Shapes is shown on the following pages.

NICKEL SILVER SHAPES Where a white metal with unusually fine surface and finish is desired, Revere Nickel Silver serves a definite architectural purpose. This material is furnished in both sheet and shape form, making possible an excellent match in color and finish.

ALUMINUM SHAPES Revere Extruded Shapes are also available in both pure and architectural aluminum.

DRAWN SHAPES Where light weight mouldings and shapes are required for use in interior trim, show cases, store fronts and other places, Revere drawn shapes are recommended.

RODS Revere Rods for architectural purposes are furnished in the same mixtures and to match colors of Revere sheet metals and extruded shapes.

TUBES Revere 85-15 Bronze is made in round, square, rectangular and special tube forms for architectural purposes such as stiles, railings, and balustrades.

SPECIAL SHAPES While usually desirable both from the standpoint of cost and time of delivery to utilize standard shapes, Revere makes dies and supplies special shapes to order. Requests for estimates should be accompanied with fully-dimensioned drawings. Revere has facilities and experience for producing these shapes in plain and intricate designs in commercial sizes up to and including 10 inches overall width and lengths up to 20 feet.

CATALOG Some of the many standard Revere Extruded Architectural Shapes are shown on the following pages. A catalog showing a more extensive selection is available on request to any Revere Sales Office.

REVERE PANEL SHEETS

Revere panel sheets are characterized by their flatness, fine finish and uniform color. They are offered in Revere 60-40 Bronze (Muntz Metal), Revere 85-15 Bronze and Revere 90-10 Bronze.

60-40 BRONZE SHEETS Revere Copper and Brass Incorporated has more than a century of experience in the production of sheet metals. Revere 60-40 Bronze Sheets enjoy the highest reputation, have no superior and are preferred by fabricators because of their flatness, fine finish, uniformity of surface and color as well as the ease with which they are formed. Sharp or acute bends can be made without danger of cracking the sheets. Each step of their manufacture is closely checked and controlled by men of long experience in their production.

Another advantage of Revere 60-40 Bronze Sheets is the close color match obtained when they are used in connection with Revere Extruded Architectural Bronze Shapes.

Ample stocks of these sheets are carried in a large range of sizes and thicknesses for prompt shipment. In addition, Revere has facilities for producing sheets of extreme width and length, depending on the thickness required.

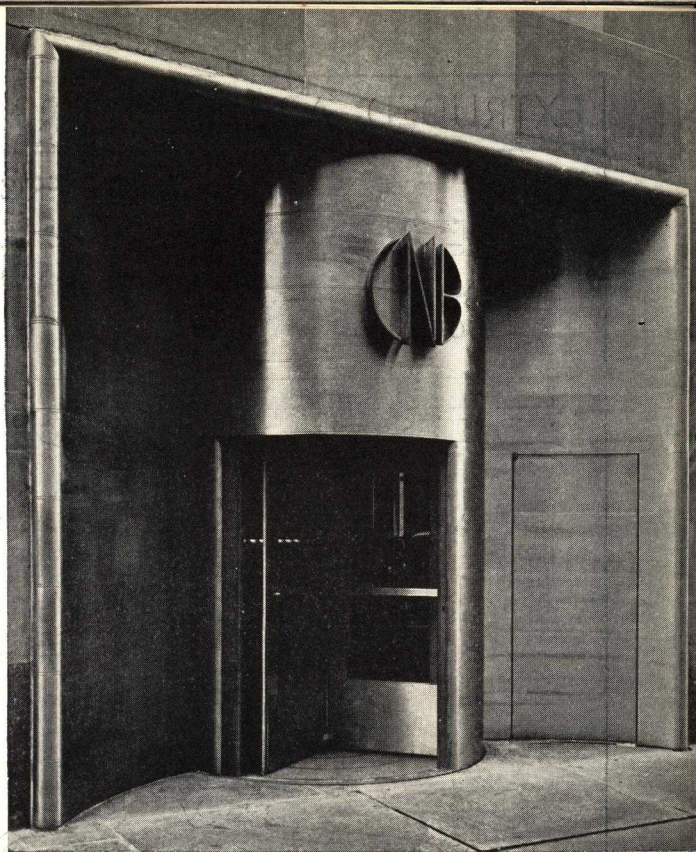
85-15 AND 90-10 BRONZE SHEETS These sheets are recommended for use with drawn shapes and tubular sections of the same alloy as the sheets, color match being thus assured.

NICKEL SILVER SHEETS Nickel Silver Sheets are available in the same material as used for Revere Extruded Shapes and match well in color and finish when used together.

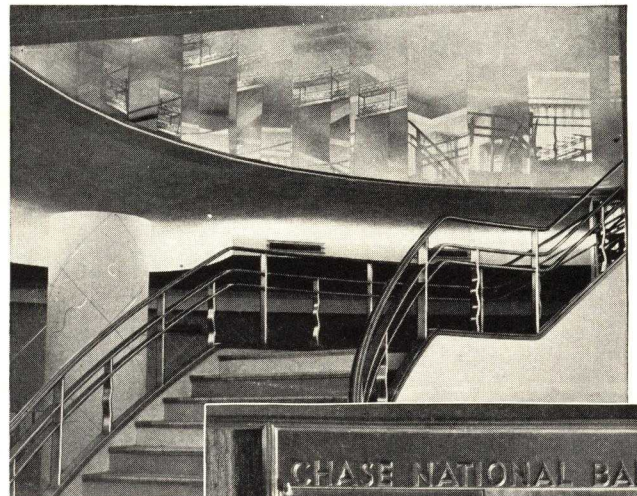
SAMPLES AND COOPERATION Samples of the various architectural metals described above gladly sent upon request. As a further service to those engaged in the design and fabrication of architectural metals, specially trained Revere representatives are available for consultation.



Revere Extruded Shapes and Panel Sheets are extensively used for escalator installations.

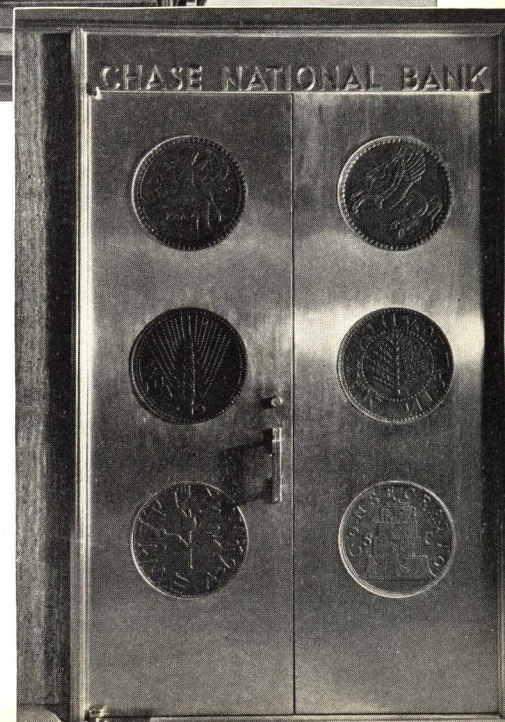


Revere Nickel-Silver Revolving Door and Entrance to the Chase National Bank, Rockefeller Plaza, New York, N. Y. Architect: Rheinhard & Hofmeister, New York City. Fabricated by Superb Bronze and Iron Co., Brooklyn, N. Y.



ABOVE: Revere Nickel-Silver Stair Rail in Longchamp's Restaurant, Empire State Building, New York, N. Y. Fabricated by the Allied Bronze Company, Long Island City, N. Y.

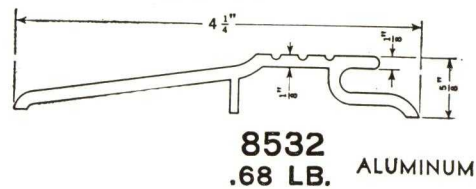
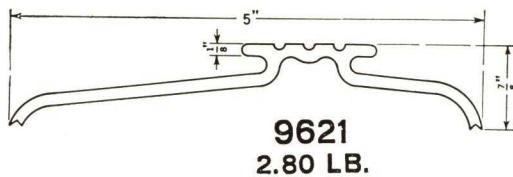
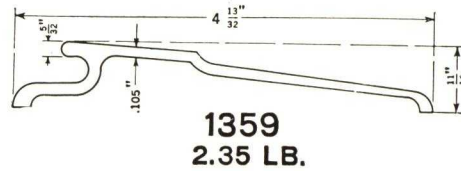
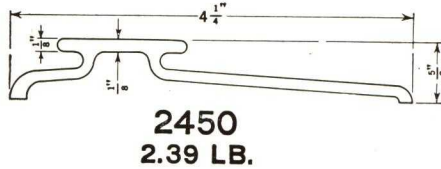
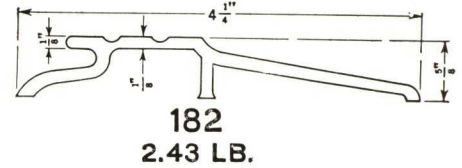
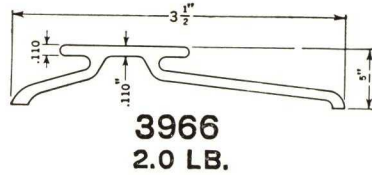
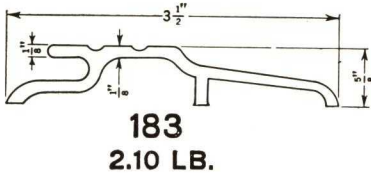
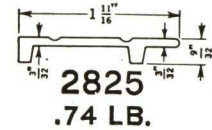
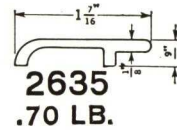
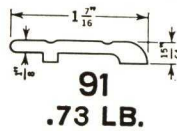
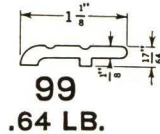
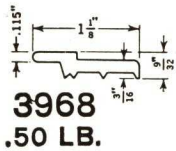
RIGHT: Revere Nickel Silver Interior Doors with translucent glass inserts in the Chase National Bank, Rockefeller Plaza, New York, N. Y. Architect: Rheinhard & Hofmeister, New York City. Fabricated by Superb Bronze and Iron Co., Brooklyn, N. Y.



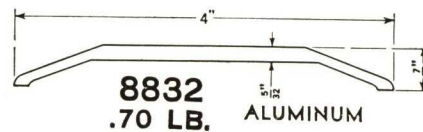
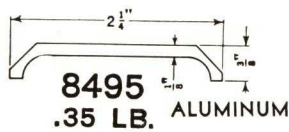
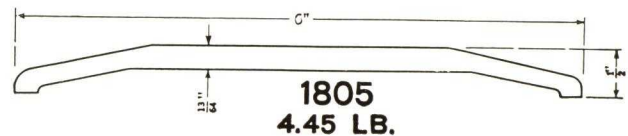
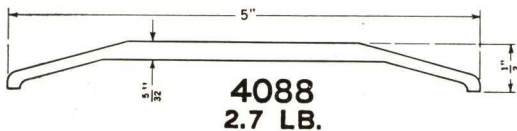
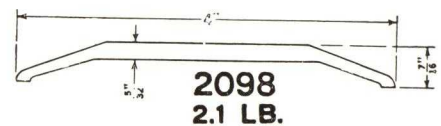
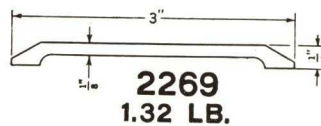
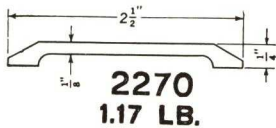
EXTRUDED ARCHITECTURAL SHAPES

HALF FULL SIZE SCALE
FULL SIZE BLUE PRINTS UPON REQUEST

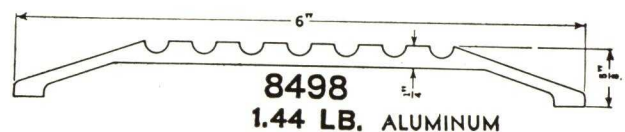
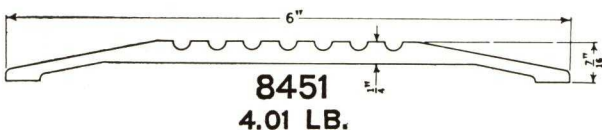
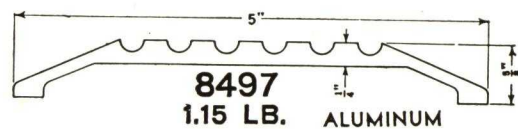
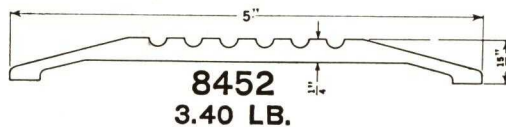
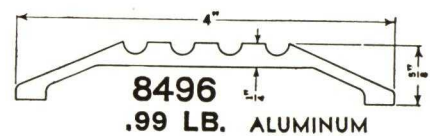
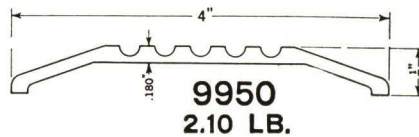
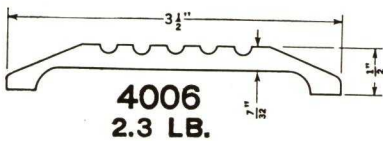
UNDERCUT THRESHOLDS



FLAT TOP THRESHOLDS



CORRUGATED TOP THRESHOLDS



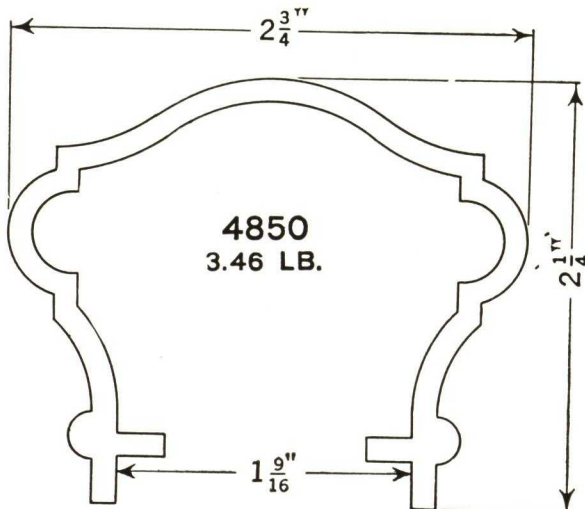
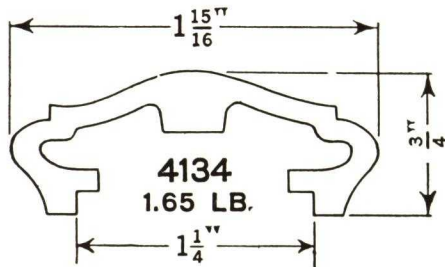
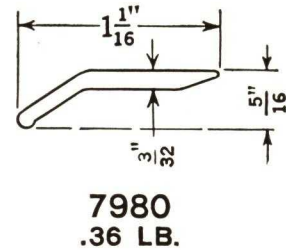
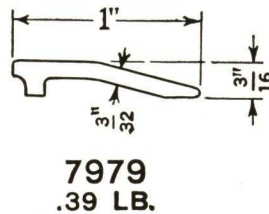
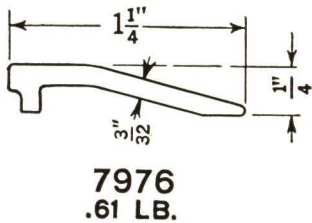
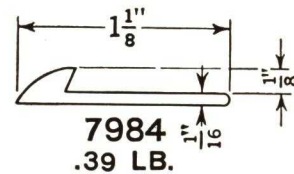
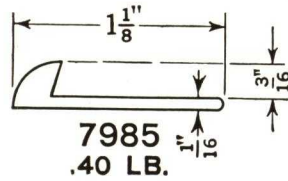
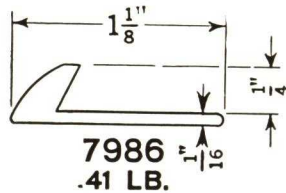
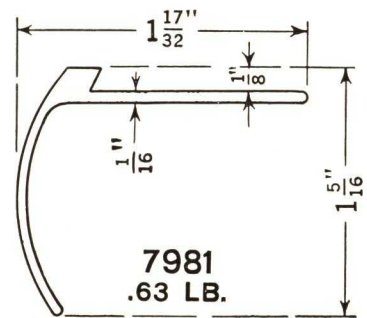
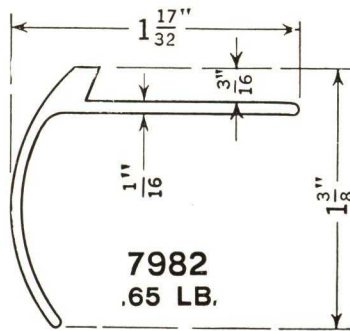
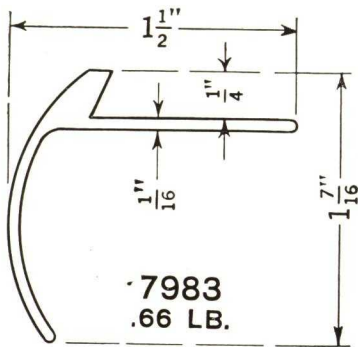
WEIGHTS GIVEN ABOVE ARE IN POUNDS PER LINEAR FOOT

REVERE COPPER AND BRASS INCORPORATED

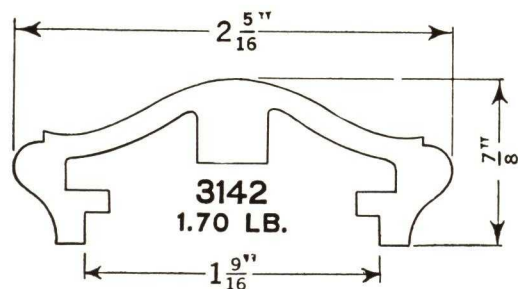
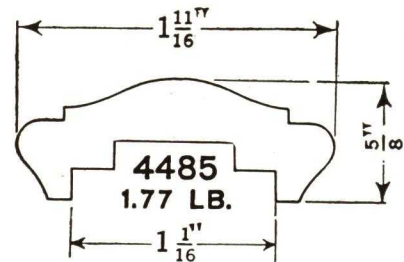
EXTRUDED ARCHITECTURAL SHAPES

FULL SIZE SCALE
FULL SIZE BLUE PRINTS UPON REQUEST

NOSINGS AND EDGINGS



HAND RAILS



WEIGHTS GIVEN ABOVE ARE IN POUNDS PER LINEAR FOOT

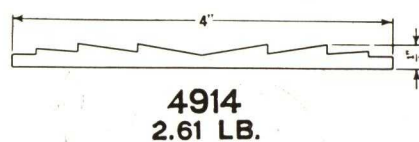
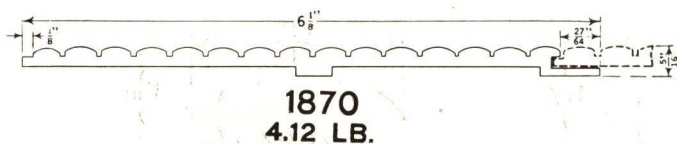
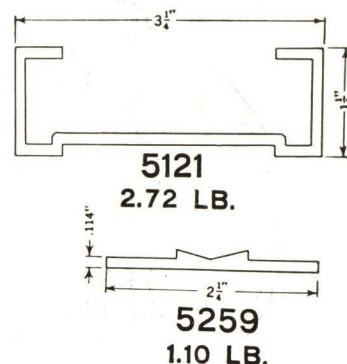
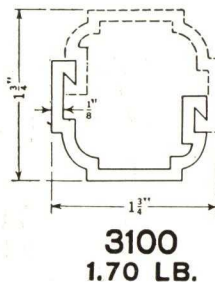
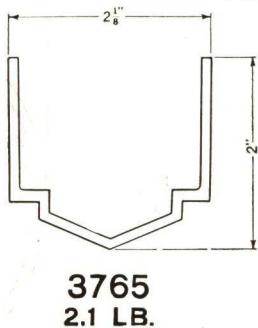
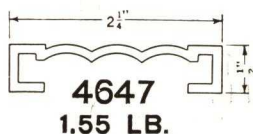
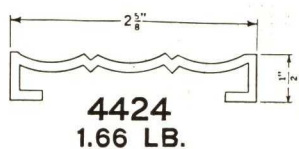


REVERE COPPER AND BRASS INCORPORATED

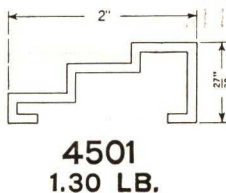
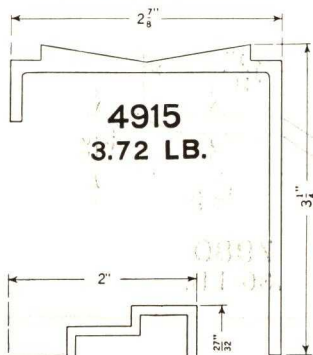
EXTRUDED ARCHITECTURAL SHAPES

HALF FULL SIZE SCALE
FULL SIZE BLUE PRINTS UPON REQUEST

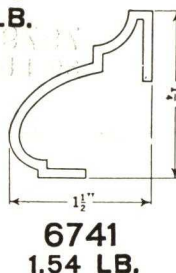
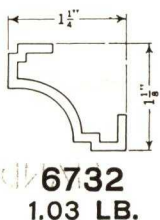
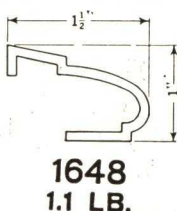
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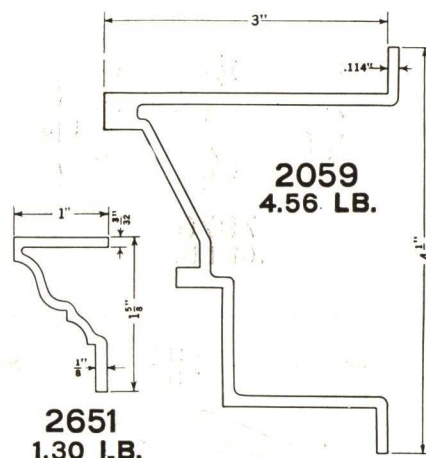
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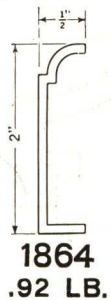
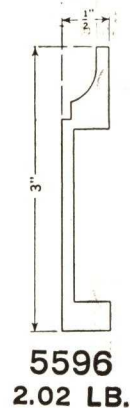
SCRIBE MOULDINGS



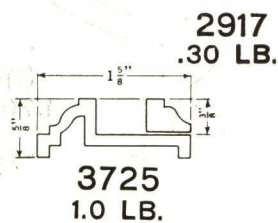
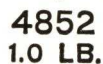
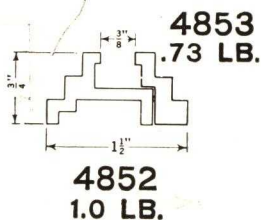
CORNICES



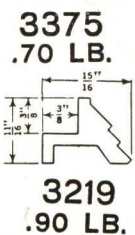
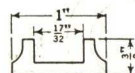
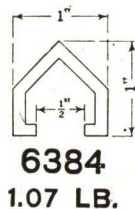
BASE MOULDINGS



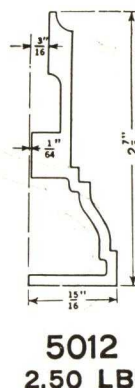
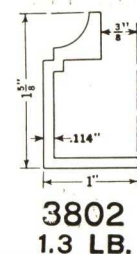
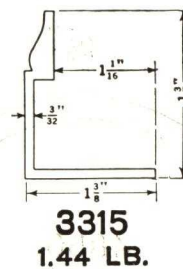
GLASS MOULDINGS



GRILLE FRAMES



DIRECTORY FRAMES

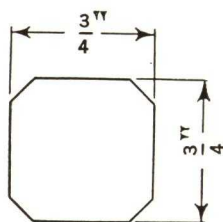


WEIGHTS GIVEN ABOVE ARE IN POUNDS PER LINEAR FOOT

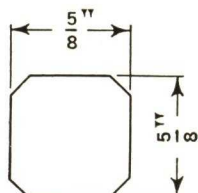
EXTRUDED ARCHITECTURAL SHAPES

FULL SIZE SCALE
FULL SIZE BLUE PRINTS UPON REQUEST

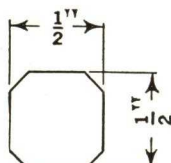
GRILLE AND RAILING BALUSTERS



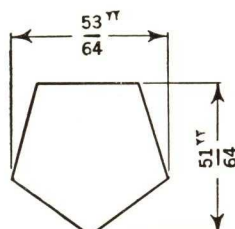
1392
1.99 LB.



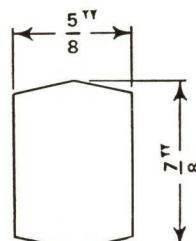
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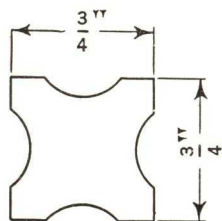
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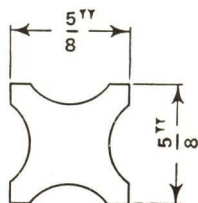
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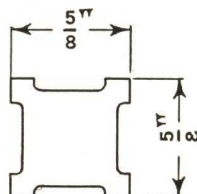
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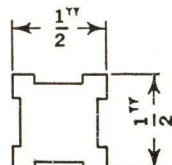
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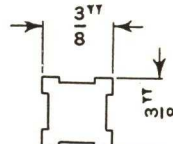
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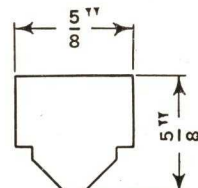
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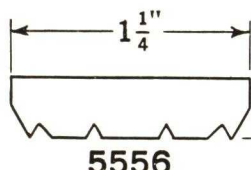
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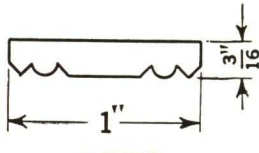
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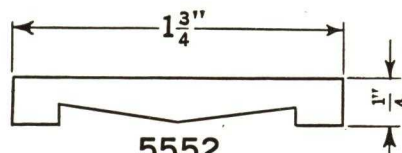
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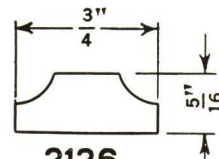
5556
1.25 LB.



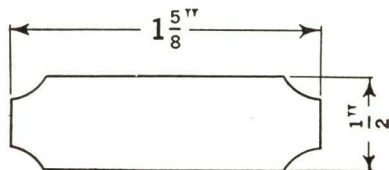
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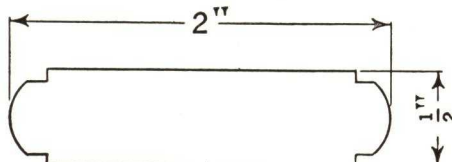
5552
1.36 LB.



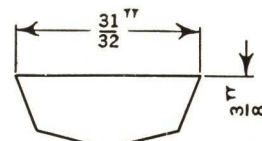
2126
.66 LB.



1370
2.84 LB.

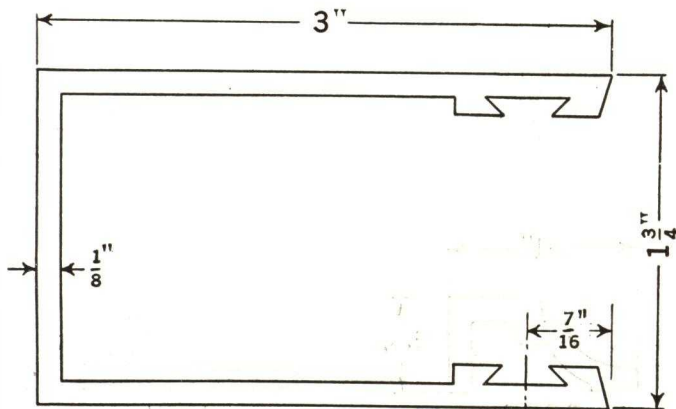


5140
3.61 LB.

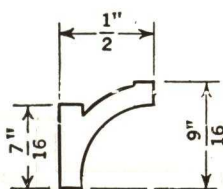


2852
.99 LB.

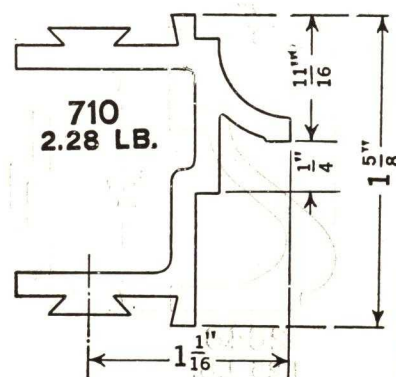
DOOR STILES AND RAILS



711
4.05 LB.



709
.44 LB.



710
2.28 LB.

WEIGHTS GIVEN ABOVE ARE IN POUNDS PER LINEAR FOOT

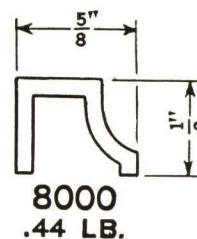
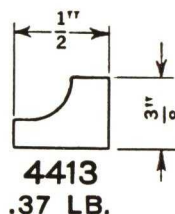
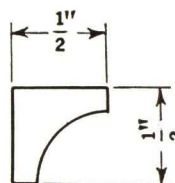
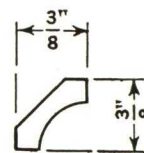
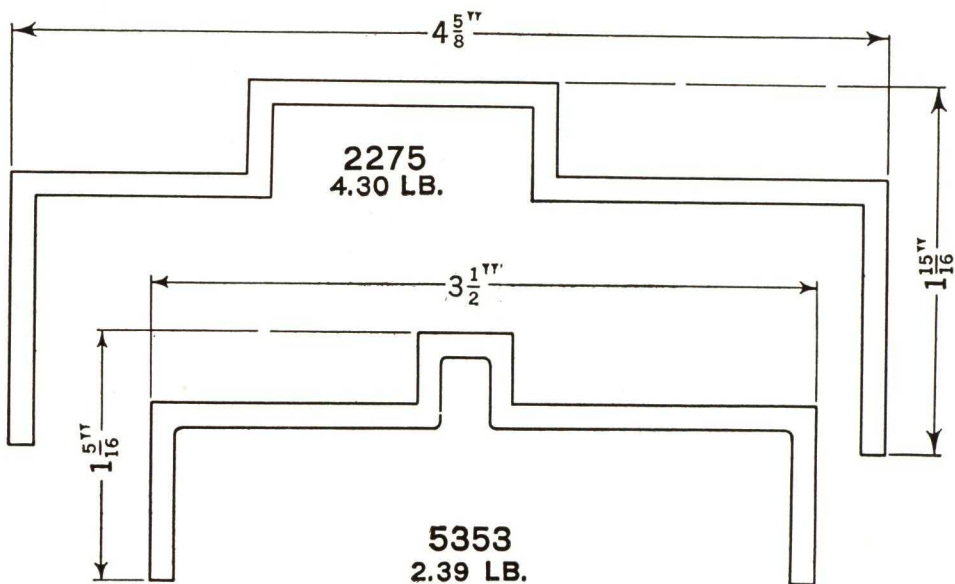
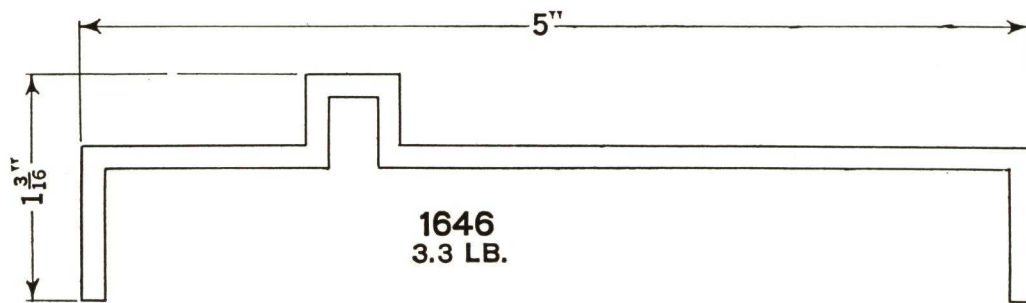


REVERE COPPER AND BRASS INCORPORATED

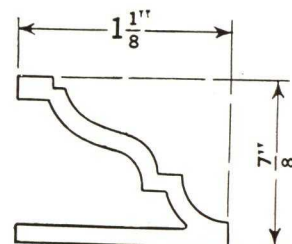
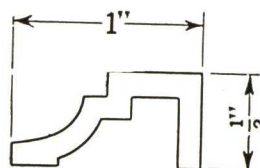
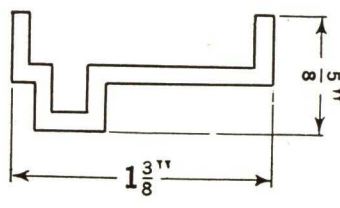
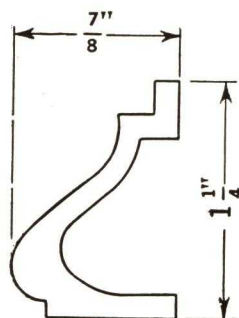
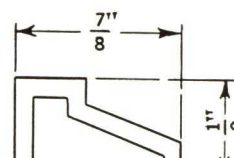
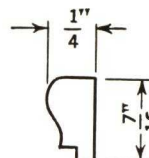
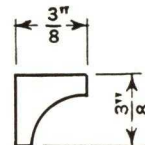
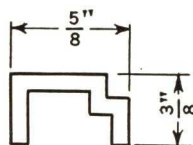
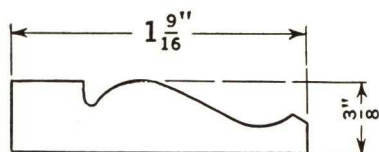
EXTRUDED ARCHITECTURAL SHAPES

FULL SIZE SCALE
FULL SIZE BLUE PRINTS UPON REQUEST

DOOR JAMBS



FRAME SECTIONS

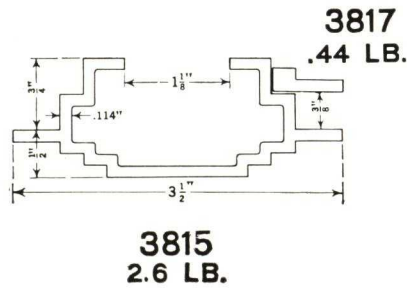
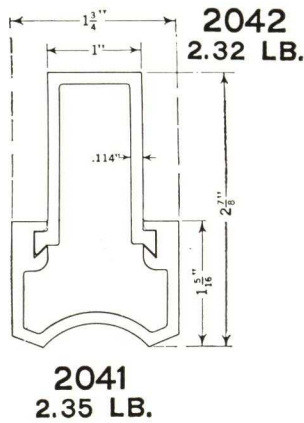


WEIGHTS GIVEN ABOVE ARE IN POUNDS PER LINEAR FOOT

EXTRUDED ARCHITECTURAL SHAPES

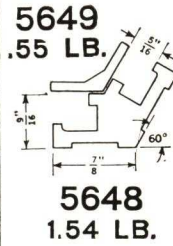
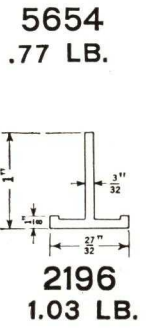
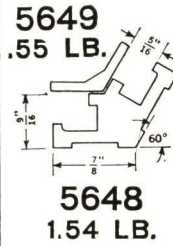
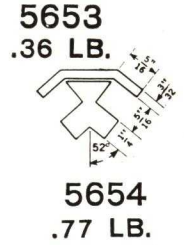
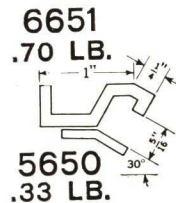
HALF FULL SIZE SCALE
FULL SIZE BLUE PRINTS UPON REQUEST

MULLIONS



3815
2.6 LB.

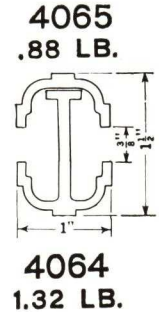
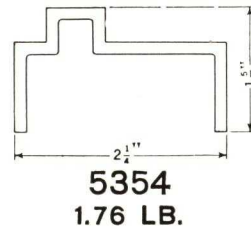
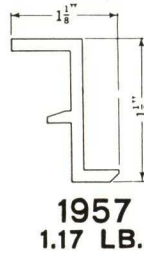
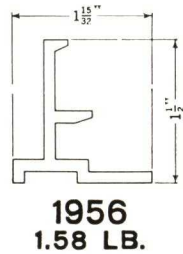
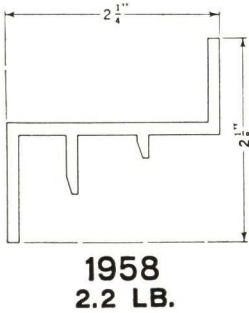
MUNTINS



5648
1.54 LB.

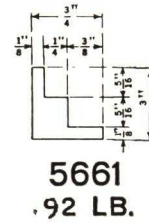
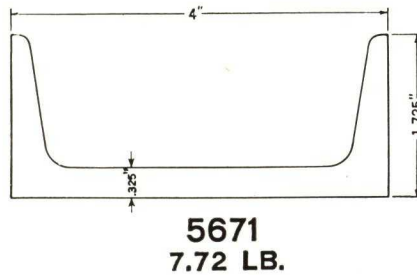
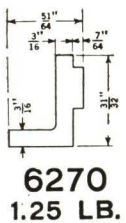
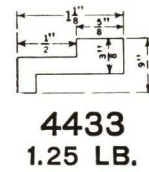
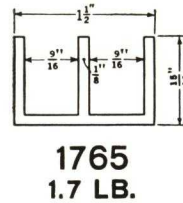
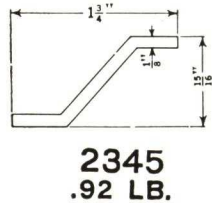
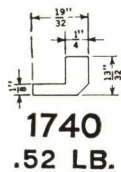
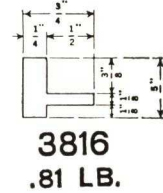
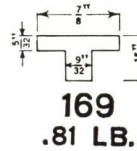
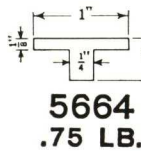
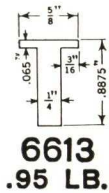
2196
1.03 LB.

WINDOW



4064
1.32 LB.

MISCELLANEOUS EXTRUDED BRASS SHAPES



WEIGHTS GIVEN ABOVE ARE IN POUNDS PER LINEAR FOOT



REVERE COPPER AND BRASS INCORPORATED

DIVISION OFFICES AND MILLS

BALTIMORE DIVISION

1301 Wicomico Street
Baltimore, Md.

DALLAS DIVISION

2200 No. Natchez Avenue
Chicago, Ill.

ROME DIVISION

Rome, New York

MICHIGAN DIVISION

5851 West Jefferson Avenue
Detroit, Mich.

TAUNTON-NEW BEDFORD DIVISION

24 North Front Street
New Bedford, Mass.

ROME MANUFACTURING COMPANY DIVISION

Rome, New York

DISTRICT SALES OFFICES

New York, N. Y.

New York Central Bldg.
75 East 45th Street

Providence, R. I.

1215 Industrial Trust Bldg.
111 Westminster Street

Pittsburgh, Pa.

727 Gulf Bldg.

Philadelphia, Pa.

1201 Architects Bldg.
17th and Sansom Streets

Milwaukee, Wis.

626 E. Wisconsin Avenue

Atlanta, Ga.

911 Rhodes-Haverty Bldg.

Cleveland, Ohio

1110 Midland Bldg.

Cincinnati, Ohio

2616 Carew Tower

Grand Rapids, Mich.

922 Grand Rapids National Bank Bldg.

New Orleans, La.

425 Decatur Street

Los Angeles, Calif.

124 W. Fourth Street

San Francisco, Calif.

562 Russ Bldg.

Houston, Texas

Second National Bank Bldg.

Boston, Mass.

United Shoe Machinery Bldg.
140 Federal Street

Hartford, Conn.

209 Capitol National Bank Bldg.
410 Asylum Street

Minneapolis, Minn.

724 Metropolitan Bank Bldg.

St. Louis, Mo.

955 Telephone Bldg.
1010 Pine Street

Dallas, Texas

1314 Tower Petroleum Bldg.

Seattle, Wash.

317 Pioneer Bldg.

Revere Copper *and* Brass

FOUNDED BY
PAUL REVERE



INCORPORATED

Executive Offices: 230 PARK AVENUE, NEW YORK CITY

UNITED STATES STEEL CORPORATION SUBSIDIARIES

PITTSBURGH, PA.

CARNEGIE-ILLINOIS STEEL CORPORATION
PITTSBURGH and CHICAGO

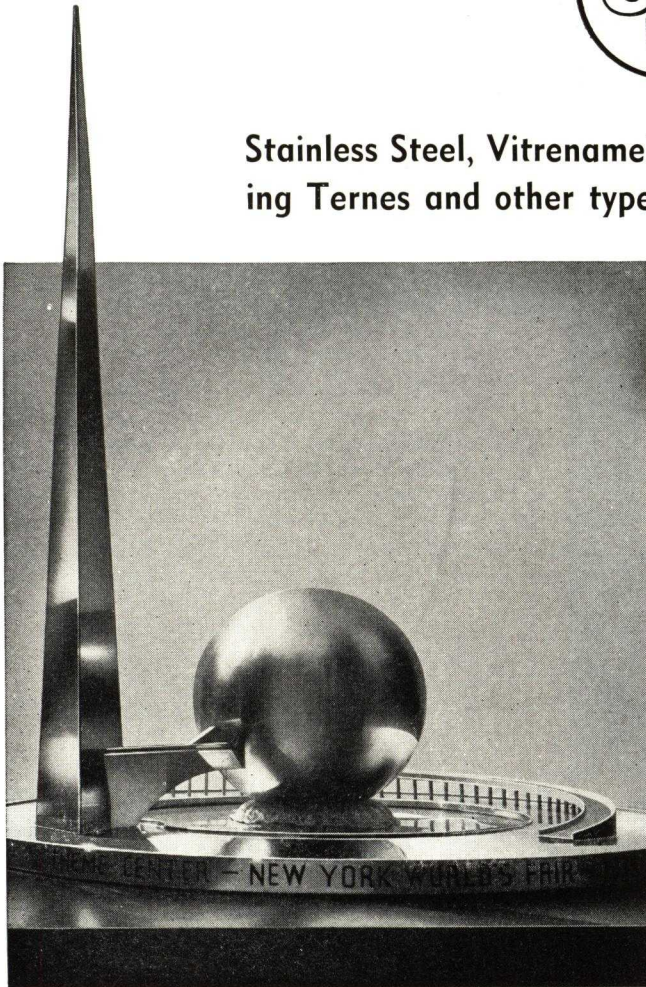
COLUMBIA STEEL COMPANY
SAN FRANCISCO (Pacific Coast Distributors)

TENNESSEE COAL, IRON & RAILROAD COMPANY
BIRMINGHAM

UNITED STATES STEEL PRODUCTS COMPANY
NEW YORK (Export Distributors)



Stainless Steel, Vitrenamel Sheets, Copper Steel Sheets, Roofing Ternes and other types of steel for the Building Industry



SOMETHING NEW IN STRUCTURES

A three-sided tower rising 610 ft. into the air and a globe standing as high as an 18-story building. Both structures are built of steel manufactured by subsidiaries of the United States Steel Corporation.

Says L. A. Paddock, president of the American Bridge Company, fabricators of the Trylon and Perisphere, "Never in our many years of experience constructing buildings, bridges and other steel structures in practically every country of the world have our engineers met with a problem more unique and interesting."

The skill and resourcefulness with which this problem was solved is typical of how any structural problem you might have would be successfully handled by the various divisions of the United States Steel Corporation.

Model of Trylon and Perisphere,
Theme Center of New York World's Fair

What it Means to you to Specify "United States Steel"

... You will receive the fruits of the best thinking of more than 1,700 of the nation's leading steel research engineers and metallurgists.

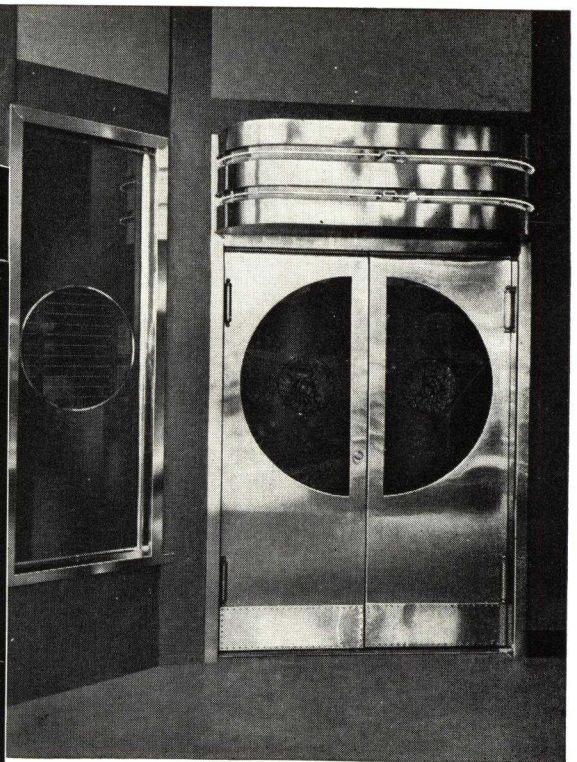
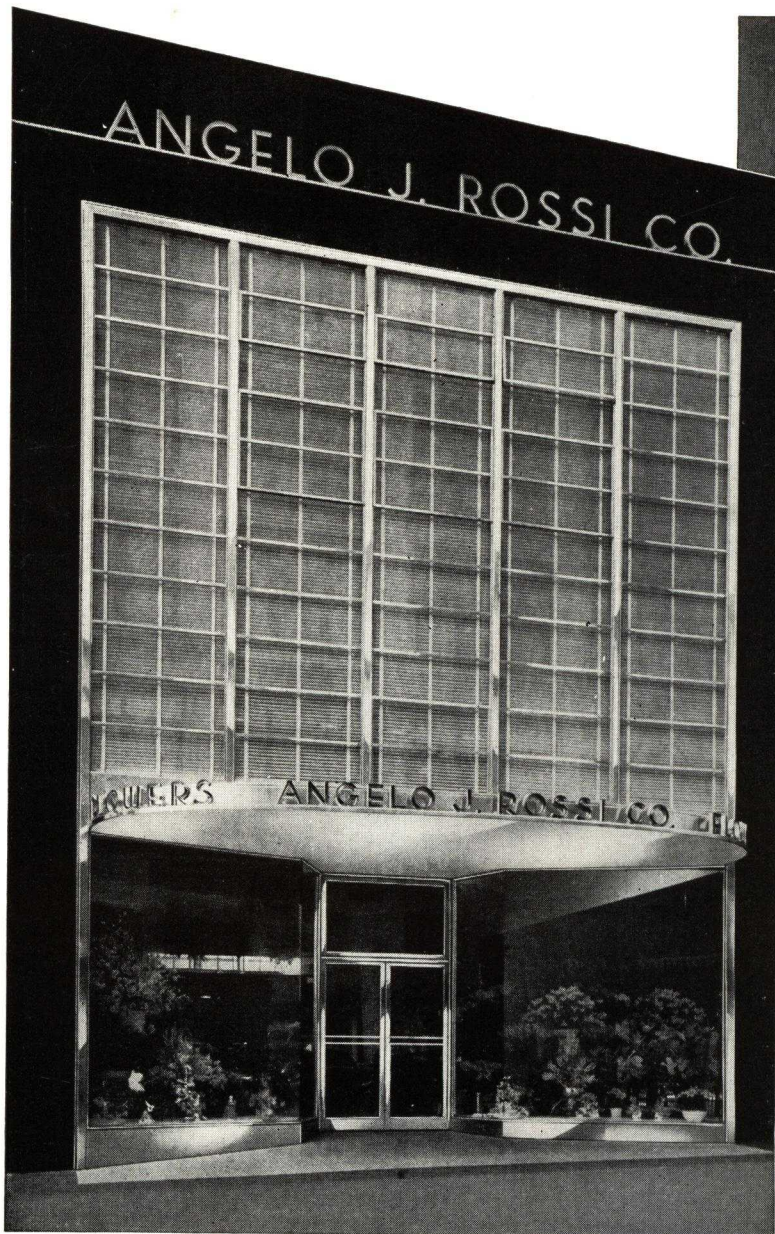
... You will receive a product that was proved completely satisfactory before being placed on the market. It will live up to all claims made for it.

... You will get quick delivery when you want it, where you want it and in any quantity.

... Your judgment of steel will be respected by owners and contractors without question.

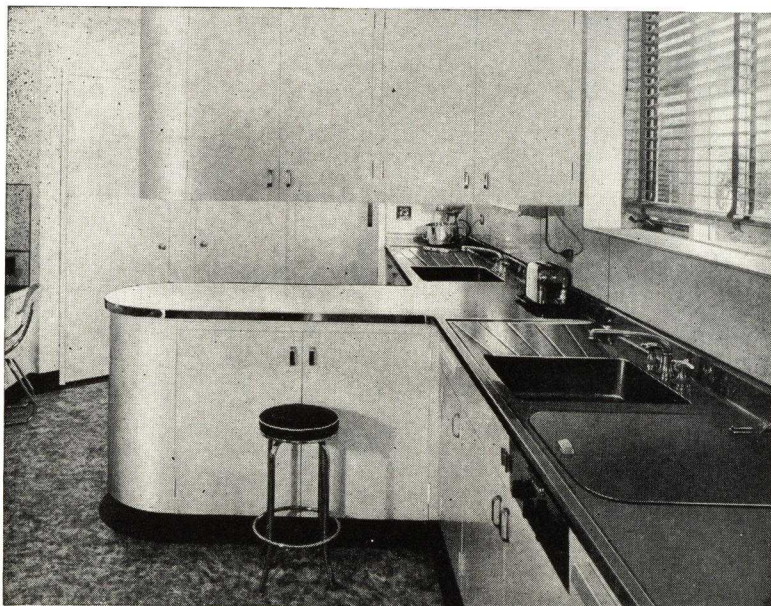
... You can obtain the help of thoroughly trained consulting engineers for any steel problem without obligation.

... You will enjoy the facilities of the world's largest producer of steel.



(Above) Designed to Invite Customers, U-S-S Stainless Steel entrance to cafe and cocktail bar. Doors made from one piece with no seams. Openings cut by hand.

(Left) Stainless Steel gives a building the permanent sparkle that attracts attention. U-S-S Stainless, 18-8, used for doors, marquee, windows and letters on this flower shop in San Francisco.



(Left) An Architect's Best Advertisement. No one can enter this kitchen without being impressed by the clean, attractive sparkle of U-S-S Stainless Steel—and you can be sure the job will last.



U·S·S STAINLESS STEEL

Brings New Freedom and Beauty to Architecture

Architects are displaying a new freedom of design in which U·S·S Stainless Steel plays an important part. No metal offers greater possibilities for striking effects. Its gleaming beauty enhances any design. Its newness never wears off, for U·S·S Stainless is immune to atmospheric corrosion.

When considering the medium with which the most attractive, modern and durable effects may be obtained, four features are of special benefit to architects:

(1) U·S·S Stainless is available in any finish from dull satin to high polish.

(2) The great strength of U·S·S Stainless combined with its corrosion resistance permits the use of thinner sections. Thus weight can be reduced with a corresponding reduction in cost.

(3) It is ideally suited for bright metal towers, roofing, flagpoles, facades, store fronts; in fact for any installations which are inaccessible for cleaning.

(4) Stainless Steel is the only commercial metal which is permanently brilliant.

U·S·S Stainless Steel Can Reduce Expense, Save Money

Considering all the factors of expense over the life of an average building, architects have found that for many applications, U·S·S Stainless Steel is actually the least expensive metal to use!

Because of its exceptional toughness and strength, it is often possible to use lighter sections of U·S·S Stainless. This means fewer pounds of metal to buy. Even more important, however, is the fact that the first cost is virtually the last with no further expense for repairs, replacements or polishing.

Available Shapes

U·S·S Stainless Steel is usually available for immediate delivery from jobbers' stocks in the common metal forms

—sheets, strips, tubular and structural sections. It is available in such a wide range of dimensions that practically any desired structure can be easily fabricated.

Types of U·S·S Stainless Steel

U·S·S 18-8, approximately 18% chromium and 8% nickel, is recommended for all architectural purposes. This analysis is completely immune to weather, to a wide variety of corrosive agents, and has the best physical properties for all structural uses.

U·S·S 17, approximately 17% chromium, is recommended for interior applications, where exposure is not severe and cost reduction is an important consideration.

Reasonable Cost of Fabrication

Experienced architectural fabricators are now thoroughly familiar with the properties of U·S·S Stainless Steels, and are in a position to fabricate these metals at reasonable cost by virtually every artifice of the metal worker—welding, soldering, sawing, grinding, polishing, drilling, bending, deep drawing, rolling, etc. Extruded shapes alone are not available.

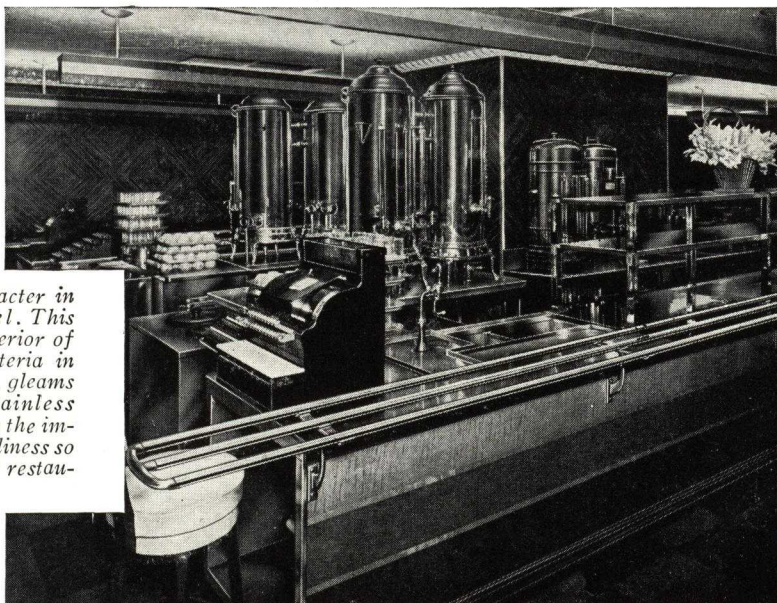
Architectural Consulting Service

As a service to architects who contemplate using U·S·S Stainless Steel, we maintain extensive testing laboratories. Skilled metallurgists and the most complete equipment are available at all times. Thus we are able to assist architects with many problems which they may encounter.

To supplement this, architects will find a competent stainless steel specialist in each of our principal district offices. He can often suggest new ideas and applications for U·S·S Stainless Steel.



Grace and Character in Stainless Steel. This stairway and interior of the S&W Cafeteria in Knoxville, Tenn. gleams with U·S·S Stainless Steel and creates the impression of cleanliness so necessary for restaurants.



U·S·S VITRENAMEL SHEETS

For Use in Architectural Porcelain Enamel

Applications

Homes, store fronts, filling stations, restaurants, theatres, bus stations, food products factories, interiors of food stores, kitchens and bathrooms.

Porcelain enamel fused to U·S·S Vitrenamel Sheets provides a surface which combines the hardness and permanence of glass with the strength of steel. The base metal itself is absolutely protected against rust and corrosion.

Newest development is the use of porcelain enamel for the trim of homes. Colors remain brilliant permanently with no periodic maintenance. For shutters, eaves, corner boards, entrance canopies, U·S·S Vitrenamel is a practical material because it will not rot out and is water-tight.

Modern—Porcelain enamel has become identified in the public mind with that which is up to date. Its attention value plus cleanliness, durability, attractiveness and low maintenance cost make it a building material of real potentialities.

Forms, Design, Color

Any form in which steel can be fabricated is available in porcelain enamel. This allows a freedom of design which permits striking effects not possible with any other ma-

terial. All colors are available and it is possible to apply several colors to an individual piece, producing highly decorative effects.

Methods of Erection

Porcelain enamel can be easily attached by mechanical means. If the joints are to be treated with mouldings of stainless steel, the sheets can be furnished flat with holes along the edges. Where joints are not to be covered with moulding, edges are flanged to hide the border and fastening devices. Joints are filled with mastic. A number of satisfactory systems of erection are in general use.

Another type of construction consists of porcelain enamel backed up with light-weight concrete masonry units which are laid up like any other masonry facing material.

Advantages of U·S·S Vitrenamel Sheets

U·S·S Vitrenamel is specially prepared for the best quality porcelain work. It is adapted to meet the most severe drawing operations, lends itself readily to all types of welding technique, has a uniformly clean and etched surface, maintains a high standard of flatness and freedom from warpage in the finished parts, and has the maximum degree of adhesion.



U·S·S Vitrenamel finds new uses in modern housing development. Architectural designers are turning to porcelain enamel as a means of increasing home beauty and eliminating maintenance costs. In this dwelling, weatherproof porcelain enamel in color forms a permanent trim—shutters, corner boards, cornice and entrance hood. These parts of the house are difficult to maintain—most likely to rot. Porcelain enamel makes them waterproof—immune to ordinary troubles.



Something new in bathrooms, U.S.S Vitrenamel is used for walls, bathtub, wash basin and toilet tank. All these uses have proved entirely practical and make a considerable reduction in weight of bathroom equipment. In a recent test for strength an elephant stood in one of these tubs without causing damage. In another test a 480-lb. weight was lowered into a tub 149,000 times. No cracks appeared.



Porcelain Enamel makes the kitchen gleam. Women prefer white porcelain enamel sinks over any other type. This one is made from heavy U.S.S Vitrenamel Sheets to which acid-resisting porcelain enamel has been applied. Porcelain enamel is also used in the range, table top, refrigerator and kitchen utensils.

U·S·S BLACK AND GALVANIZED SHEETS

For industrial buildings, such as factories, machine shops, mine buildings and other industrial structures. U·S·S Black and Galvanized Sheets have twelve definite advantages. Briefly, these are:

Long Life—Properly painted, U·S·S Copper Steel Black and Galvanized Sheets have lasted 30 or 40 years as roofing materials.

Economy—Steel roofing and siding compare most favorably in price with other building materials.

Ease of Application—U·S·S Formed Roofing and Siding products do not require experienced labor to apply them. For most roofing, only one tool is essential—a hammer. This feature adds to the economy of steel building materials.

Strength and Rigidity—Steel construction provides great strength and rigidity without adding undue weight. The use of corrugated patterns, particularly, imparts additional strength without the need of closely laid sheathing.

Fire Protection—Steel roofing and siding are strongly advocated by fire insurance underwriters.

Lightning Protection—An unusual incident took place in a Southern state some time ago. A building roofed and sided with metal was struck time after time during a protracted thunderstorm without sustaining sufficient damage to require repairs.

Vermin Protection—When specifying building materials for rural construction, steel is your best choice. No rat, mouse, field mouse, chipmunk, or termite has ever yet succeeded in getting through a steel roofing or siding sheet.

Neat and Sanitary—Roofing and siding made of U·S·S Sheets have a smooth surface. The wind keeps buildings sheathed with steel clean with the aid of rain

water, and carelessly thrown stones cannot break or crack steel sheets.

Adaptability—The various forms of U·S·S Formed Roofing and Siding make it possible to construct practically any type of building, with roof construction from nearly flat to that of the steepest pitch.

Resistance to Weather—Sudden changes of weather or temperature are harmless to U·S·S Steel Roofing and Siding. If properly applied, steel sheets do not suffer from contraction or expansion and do not buckle or rattle. High grade, rust-resistant alloys and coatings found in U·S·S Sheets protect them for many years against the ravages of corrosion under atmospheric attack.

Low Upkeep Cost—Steel roofing and siding are the only building coverings which combine reasonable first cost with low upkeep cost over a long period. Painting at reasonable intervals is the only attention ever necessary with U·S·S Sheets. The saving in fire insurance rates alone often more than covers this very nominal expense.



U·S·S STEEL SHEETS and ROOFING TERNES

For Roofing, Siding, Flashings, Duct Work, Formed Products

Advantages of a Terne Roof

For fine residences and public buildings, we recommend U·S·S Copper Steel Ternes. A roofing terne plate is a steel sheet coated with a mixture of tin and lead. The name *terne* is probably derived from "ternary," meaning an alloy of three constituents—in this case, steel, tin and lead. Ternes are ductile, durable and economical—three big advantages from an architectural standpoint.

Terne roofs have lasted 80 years in service, as is exemplified by the Moravian Seminary in Bethlehem, Pa. The White House is roofed with ternes. So is Monticello, Thomas Jefferson's home in Virginia, re-roofed in 1926 with U·S·S Copper Steel Ternes. Old Swedes' Church in Philadelphia, the Morris Colonial Home, the old Germantown Inn, and many of the historic colonial mansions in the South bear testimony to the long life of terne roofs.

Service

Terne roofs when properly installed and painted last indefinitely with a minimum of attention. They are satisfactory under any climatic conditions.

Fireproof, Waterproof, Lightningproof

Not long ago, The Metal Club of Philadelphia tested terne roofs with a fire test. They found that ternes withstood intense heat where other materials failed. A terne roof is an unbroken sheet of metal with no cracks or openings of any kind to admit fire. Insurance underwriters grant more favorable rates to buildings roofed with ternes

because of experiences in notable fires in Chelsea, Mass.; Indianapolis, Ind.; Scranton, Pa.; and elsewhere.

Terne roofs, when properly applied, are waterproof. Ternes are cleated together, soldered and laid as a single piece of metal. In addition, ternes are prepared for painting so that a terne roof can be painted while it is being laid, if speed is essential.

Terne roofs are unaffected by wind and snow, for the metal is impervious to weather, when properly painted.

The safest place during a thunderstorm is in a building roofed with steel, properly grounded. According to experts, a building roofed entirely with steel has never been penetrated by lightning nor the occupants injured.

Adaptability

An important factor in selecting a roofing material. Terne roofs are adaptable to flat or sloping roofs of any pitch. Naturally, different types of seams are used for roofs with different pitches.

U·S·S Copper Steel Ternes can be used for gutters, valleys, downspouts and flashings. When a building is roofed with other materials, it may economically be repaired by laying roofing ternes over it.

Appearance

This is important, and if you look at the illustrations of terne roofs shown on this and the following page, as well as those on historic buildings, you will agree that terne roofs are attractive. The color of a terne roof is a matter of individual taste. The finishing coat of the new terne roof or the repainting of the old can be done in any color or shade preferred. For example: Light green, lead gray, and nut brown are favorite colors. You can have harmony or contrast, as you choose, with the color scheme of the building.



Monticello, Thomas Jefferson's home in Virginia, was re-roofed in 1926 with U·S·S Copper Steel Ternes. The roof is virtually one unbroken sheet of steel — stormproof, leakproof and a sure protection against fire.



Economy

A terne roof means long-run economy. Little or no re-pairing is required. A well-laid roof of U·S·S Copper Steel Ternes has an amazingly low cost per square foot. Consult your local distributor of roofing supplies.

THE FIVE STANDARD METHODS OF APPLYING U·S·S ROOFING TERNES

Lap Seam

The lap seam is the simplest type of the seams used in applying U·S·S Roofing Ternes. Usually, lap seams are made 1 in. wide, with the edges of the sheets soldered for a total distance of 1½ in.

The Standing Seam

This type of construction gives an attractive and interesting ribbed appearance. The standing seam is literally a double-lock standing seam which finishes 1 in. high. Cleats are used for fastening. Standing seam roofs are particularly adaptable to roofs with a rise of 2 in. per foot and greater. The sheets are laid from ridge to gutter.

Flat Seam

For a wide variety of terne roofs, including all "flat" roofs—with a rise of ¼ in. per foot and greater—the most common construction is the flat seam.

Batten or Ribbed Seams

For a roof where the decking is laid in *battens*, either in vertical "ribs" or horizontal "steps", construction with

U·S·S Roofing Ternes is ideal. This type of construction is relatively simple, yet the number of variations possible makes batten roofs a pleasing possibility for architects who wish originality.

Combination Seams

Embody the same principle as the standard types described above. They have no wide use in roofing or flashing work but are used generally ornamentally.

Directions for Painting U·S·S Ternes

All U·S·S Ternes are ready for immediate painting. Before application, the ternes should be painted with one coat on the under side. Two coats of paint should later be applied on the exposed surface immediately after laying.

U·S·S Roofing Ternes May Be Applied on Many Surfaces

Wood Sheathing forms an excellent laying surface for U·S·S Ternes. Sheathing boards should be ship-lap, tongued-and-grooved, or splined.

When cinder concrete is used, the protection of a heavy coating of acid-free asphalt paint must be utilized.

Gypsum also is well adapted for use as a base for terne roofing. What has been said about concrete applies, except that gypsum can be nailed into directly.

Terra cotta, stone, brick, or stucco may be covered with a flashing of U·S·S Roofing Ternes. Such surfaces should be treated with neat cement or asphalt, as is concrete.

Standing seam roof of U·S·S Ternes on a modern colonial style home. Notice how beautifully the roof blends with the architecture of the house.



RUST-RESISTING U·S·S COPPER STEEL GALVANIZED SHEETS For Air-Conditioning Work

Copper steel is an alloy made by adding small amounts of copper to molten steel, thereby increasing the resistance of steel to rust. Metallurgists, railroad construction engineers and independent testing laboratories have discovered that less than $\frac{1}{4}$ of 1% of copper added to molten steel doubles the life of the steel. Experience in service proved U·S·S Copper Steel has two to three times the atmospheric corrosion resistance of ordinary steel.

In specifying U·S·S Copper Steel Sheets for air-conditioning work, you are taking advantage of steel sheets which have 100% to 200% more life for about 5% more in cost.

Other advantages which U·S·S Black and Galvanized Sheets offer to the architect who specifies air-conditioning systems include the ease of fabrication and tight adherence of coating of the galvanized sheets.

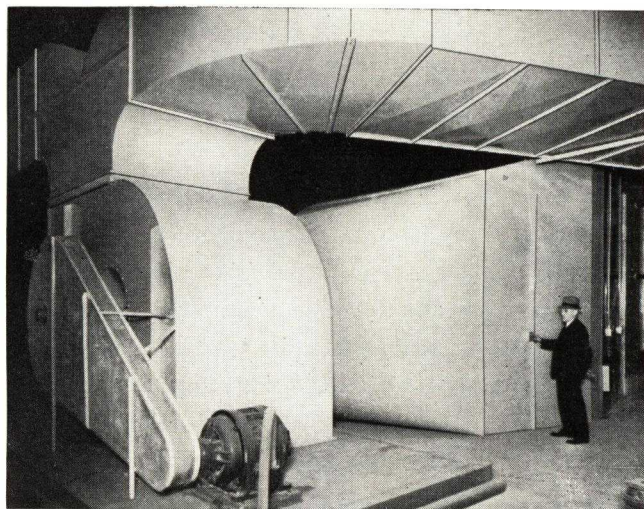
Corrosion Resistance Year After Year in the Central Station

Many large buildings are now completely air-conditioned. It is important that the duct work be constructed of steel sheets which are not only easy for the sheet metal worker to handle but are also made of the most durable materials. You can secure maximum speed of installation, long life and ultimate satisfaction for the owners of the building by specifying U·S·S Copper Steel Galvanized Sheets for your duct work.

Not only are U·S·S Copper Steel Galvanized Sheets resistant to ordinary atmospheric conditions but the copper in the steel base adds known resistance to corrosion from extremely moist conditions, industrial gases, and other vapors that may attack metal.

The Empire State Building, tallest building in the world, is efficiently air-conditioned. U·S·S Black Sheets and U·S·S Galvanized Sheets were used in the extensive ventilating systems of this building. Shreve, Lamb & Harmon were the architects.

The Chrysler Building, the Irving Trust Company Building and the New Waldorf-Astoria Hotel, New York City; the New Park Plaza Hotel, St. Louis, Mo.; The First National Bank Building, St. Paul, Minn. are other modern buildings where U·S·S Sheet Products were specified for air-conditioning of the finest type.



Air Conditioning Duct Work Demands the Extra Corrosion Resistance of U·S·S Copper Steel Sheets.

UNITED STATES STEEL CORPORATION SUBSIDIARIES

U·S·S SHEET PRODUCTS

Manufactured by:

Carnegie-Illinois Steel Corporation, Pittsburgh and Chicago
Columbia Steel Company, San Francisco
Tennessee Coal, Iron & Railroad Company, Birmingham

U·S·S STAINLESS STEEL

Manufactured by:

American Steel & Wire Company, Cleveland, Chicago and New York
Carnegie-Illinois Steel Corporation, Pittsburgh and Chicago
National Tube Company, Pittsburgh, Pa.

.

Distributors:

Scully Steel Products Company, Chicago, Warehouse Distributors
Columbia Steel Company, San Francisco, Pacific Coast Distributors
United States Steel Products Company, New York, Export Distributors

SECTION 13

CONTINUED 

DAVIDSON ENAMEL PRODUCTS, INC.

Manufacturers of Porcelain Enamel Building Parts, Signs, Letters, Etc.
Box 328, LIMA, OHIO

Uses of Porcelain Enameled Iron

The primary architectural use of porcelain enameled iron is for covering the exterior of buildings. It is most generally used as a colorful decorative exterior building material for all types of store fronts, service stations, theatres, etc.

For other architectural purposes it is used as varied colored spandrels and ornaments; for interior walls and ceilings of restaurants, dairy stores, butcher shops; places where cleanliness is of vital importance.

Description of Material

Porcelain enameled iron is a glass coating fused to a sheet of special iron at a temperature of 1550° F. It is inorganic and will thus resist the effects of the elements indefinitely. The iron base reinforces the glass coating making a material which resists shocks and possesses considerable structural strength. The base is of sheet iron which can be formed and embossed into a variety of shapes and, as there is no limitation to the different colors obtainable, the combined factors of color and form offers the architect a particularly flexible material for modern design.

Architectural Service

DAVIDSON ENAMEL PRODUCTS, INC., has an Engineering Department offering architectural service. This department works with the architect while the design is in the formative stages. It will be to the architect's advantage to use this service in order to employ porcelain enamel to its fullest extent. Approximate prices and construction details are sent upon request.



Construction and Fabrication Specifications

All material is of 16-gauge special enameling iron.

Fabrication and enameling conforms to highest standard practise.

Fastened to building by hidden mechanical means. Parts do not rely upon cement or any other material for security.

Only acid-resisting enamels used.

Recommend maximum size to be 2 ft. 6 in. by 4 ft. 6 in.

Work and shop drawings and color samples supplied by manufacturer for the architect's approval.

Installations

BUILDING AND LOCATION

Greyhound Bus Terminal, Fort Wayne, Ind.

Dorsel's Restaurant, Cleveland, Ohio

Ford Garage Building, Rapid City, S. D.

McMillan Store, Detroit, Mich.

The Ark, Syracuse, N. Y.

Kirk-Whitcomb-Kirk Bldg., Amarillo, Tex.

Faust Theatre, Minneapolis, Minn.

Shell Petroleum Station, Dayton, Ohio

Ohio Oil Station, Lima, Ohio

Kroger Store Bldg., Charleston, W. Va.

Hook Drug Store, South Bend, Ind.

G. Poulous Restaurant, Flint, Mich.

Baker Shoe Store, Memphis, Tenn.

Emery Theatre, Cincinnati, Ohio

Cole's Shoe Store, Cleveland, Ohio

ARCHITECT

Wischmeyer, Arrasmith & Elswick, L. W. Larrimore, Assoc.

F. William Bertsch, Col. Karl I. Best, Assoc.

Chenoweth, Fraser & Forette

Griffels & Vallet, L. Rosetti, Assoc.

The Ark, Inc.

Guy A. Carlander

Liebenberg & Kaplan

Shell Petroleum Corp.

Ohio Oil Company

Kroger Groc. & Baking Co.

Vincent F. Fagan

George J. Bachman

W. Emil Forman

Grunkenmyer & Sullivan

W. Emil Forman



THE ERIE ENAMELING COMPANY

Porcelain Enameling on Sheet Steel and Cast Iron

122 East 42nd Street
NEW YORK, N. Y.

ERIE, PENNSYLVANIA

47 Commercial Wharf
BOSTON, MASS.

ARCHITECTURAL PORCELAIN ENAMEL FOR:

Buildings, Service Stations, Store Fronts, Restaurants or any exterior or interior surface where design and color will add to its beauty and permanence.

SERVICE TO ARCHITECTS AND CONTRACTORS

- (1) Designing the porcelain surface.
- (2) Obtaining accurate measures and layout.
- (3) Detailing of the enameled pieces.
- (4) Fabrication and Enameling to design and color.
- (5) Complete erection of porcelain, when required by contractor.

Complete, experienced service on all of the above will be given to architects and contractors, anywhere.

SPECIFICATIONS

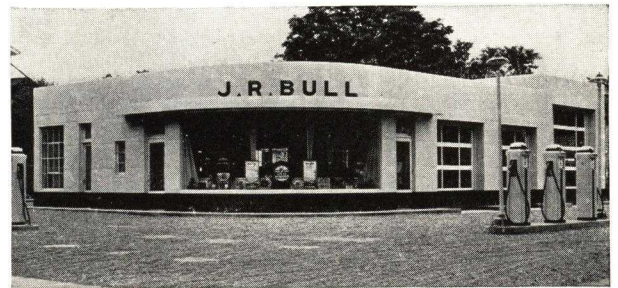
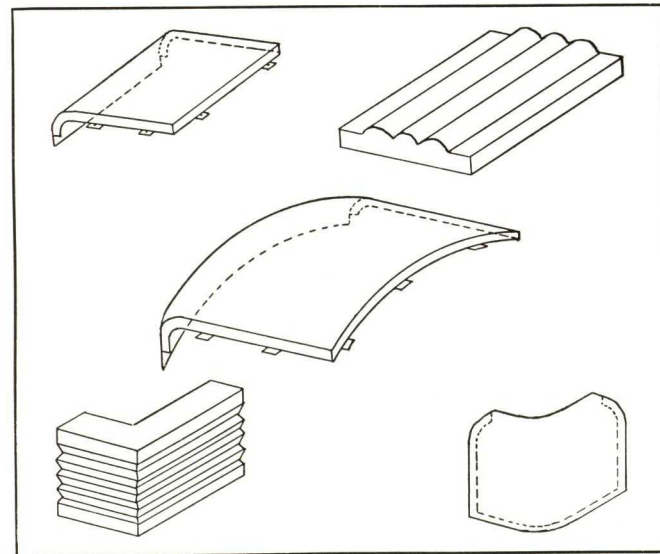
All work will conform to the specifications of the Architectural Committee of The Porcelain Enamel Institute of Chicago.

SPECIAL FINISHES

In addition to white, black and other standard colors, we can furnish a number of new blended or foam finishes, in high lustre or matt, and in many color combinations, to produce striking effects.

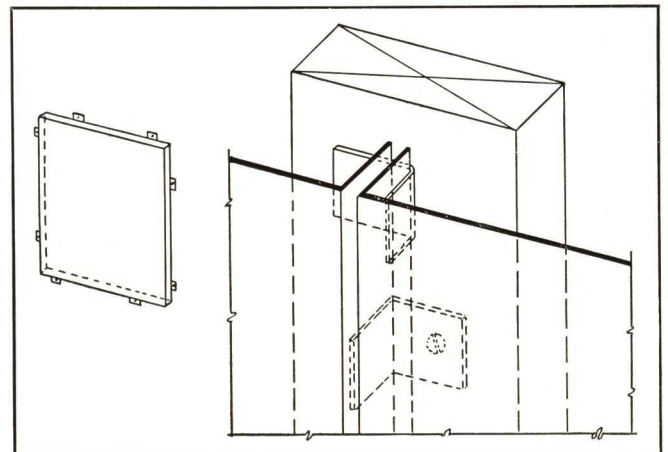
SPECIAL SHAPES

Special shapes and designs can be made to fit any surface or sub-structure and to produce any motif or design.



ERECTION

The pan-and-lug system, illustrated below, is one of the simplest methods of suspension of architectural porcelain. Our own erection crews have found it the quickest and least expensive.



THE ENAMEL PRODUCTS COMPANY

Manufacturers of Tepco

"The Universally Adaptable Super De Luxe Porcelain Enamel"

Eddy Road and Taft Avenue, CLEVELAND, OHIO

Behind the Product

Incorporated in 1912, THE ENAMEL PRODUCTS COMPANY has since the beginning, been a pioneer in vitreous porcelain enamel products. In its early history, the application of vitreous porcelain enamel parts to stoves was the major endeavor. Then followed the addition of outdoor advertising signs and displays, the introduction in the furniture field of porcelain tops for kitchen tables, kitchen cabinets and breakfast room sets, then plumbing supplies, and now architectural material.

Through this series of developments the Enamel Products organization acquired an exceedingly broad experience and has prospered to the point that the physical equipment and facilities are of the finest.

Through this period of over twenty-five years THE ENAMEL



PRODUCTS COMPANY has been able to maintain a more than satisfactory financial position.

While experience of eight years in the architectural field has not been long it represents the full span from the original conception of the idea to the present time, and the company fairly claims to have done the outstanding work in this field in the country.

Research and Architectural Service

Plans and specifications for new buildings or modernization of old structures will receive careful and intelligent study by our engineers, designers and estimators. You are encouraged to send porcelain problems to us in order that our engineering research may help you accomplish your objective. In research in this architectural field, we have developed many useful technical ideas that will be of assistance to you.

TEPCO SUPER DE LUXE PORCELAIN ENAMEL

What Tepco Means to Porcelain Enamel

Since the establishment of the Tepco trade-mark in 1912 THE ENAMEL PRODUCTS COMPANY has spared no effort or expense to maintain the quality of the porcelain enamel at the highest peak commercially possible.

To accomplish this has not only meant research and development in the product field but also in equipment and methods to the point that today the plant has the most modern and efficient equipment available.

The Tepco trade-mark in the outdoor advertising sign field, in the furniture field and in the plumbing trade has represented for years the Sterling mark of quality. In the building field every effort has been made to meet and even anticipate the demands of modern structural and architectural uses.

Care is taken in choosing the best quality enameling sheets. They must be adaptable to die shaping and accepting a high grade coat of porcelain enamel. It is important to obtain iron sheets that are flat, free from buckles and waves and impurities that might react on the porcelain enamel.

Equal care is taken to choose special minerals to be fused together at high temperatures to make the frit. Enamel Products smelts its own frit and grinds and mixes its own enamels to insure that an integral and indestructible bond is made with the steel. Tepco Porcelain Enamel is a tough, opaque glass fused onto steel panels, combining beauty, the weather-resisting qualities of glass with the strength of steel.

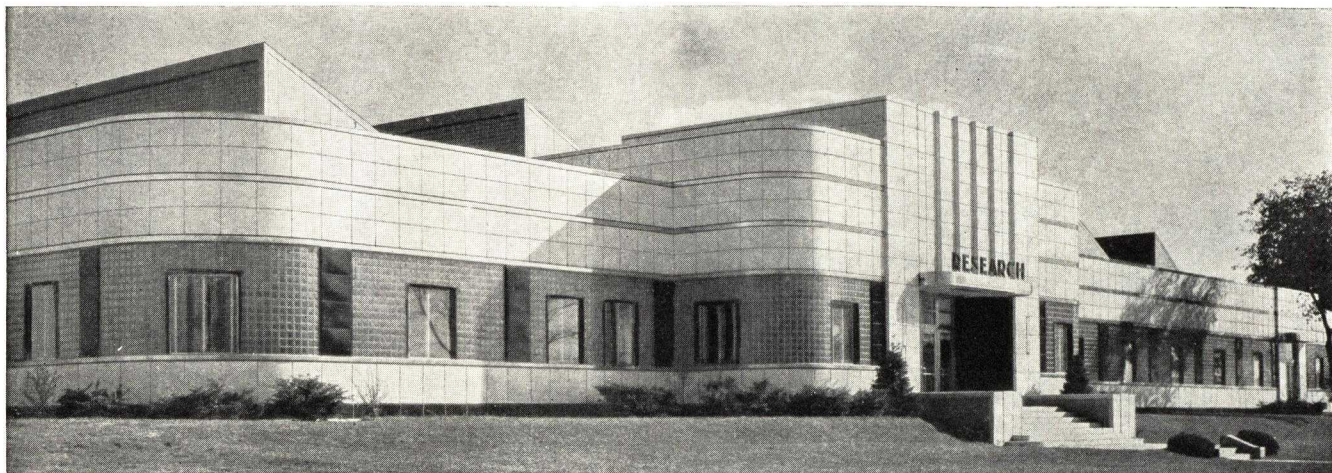
Craftsmen and skilled workmen supervise production all the way through no matter whether it is standard work or special orders going through the plant. A uniform, dependable product is the result. Experienced engineers and a research department are constantly on the alert to improve the product and assist architects in the solution of any specific job.

Where Tepco Porcelain Enamel Is Being Specified

Exterior Uses—*For low upkeep and publicity value.* Exterior Paneling for schools, office buildings, industrial plants, laboratory buildings, theater fronts, gasoline service stations, food stands, attractive fronts for stores of all kinds, show rooms, display signs, lighting equipment and spandrels for office and apartment buildings because of the color and decorative possibilities.

Interior Uses—*For low upkeep, sanitation and better lighting.* Interior Paneling for office building wainscoting, elevator cabs and doors, hospital walls, dental and medical offices, laboratories, ceilings, walls and doors in packing houses, bakeries, canning plants, dairies and breweries, theater lobbies, bus terminals, barber shops, beauty parlors, bathrooms, kitchens, washrooms, food stores, bars and drug stores.

Miscellaneous—*To resist corrosive chemical fumes and alkalis.* Laundry walls and ceilings, chemical laboratories, doors, walls, ceilings, hoods, shower bath stalls and walls, toilet partitions.



Research Building, Middletown, Ohio

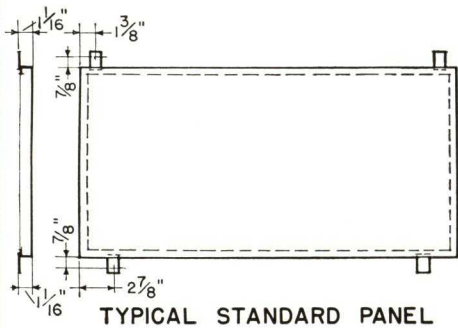
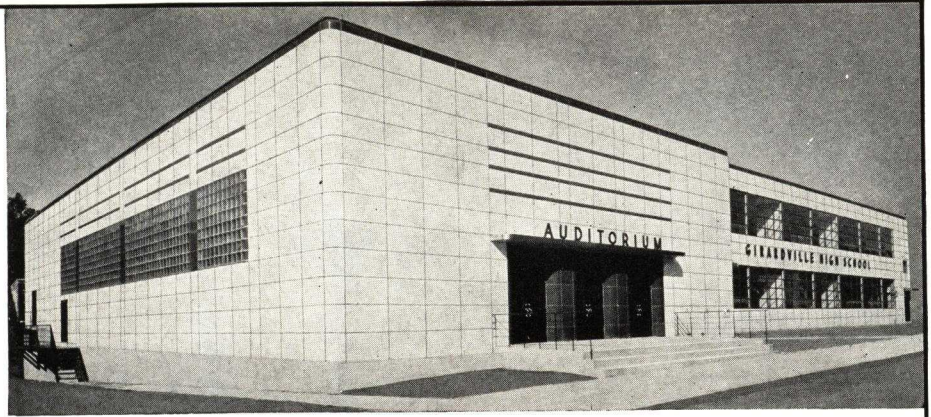
THE AUSTIN Co., Cleveland, Engineers and Builders

A striking example of the greater freedom and wider scope for creative effort afforded by Tepco Super DeLuxe Porcelain.

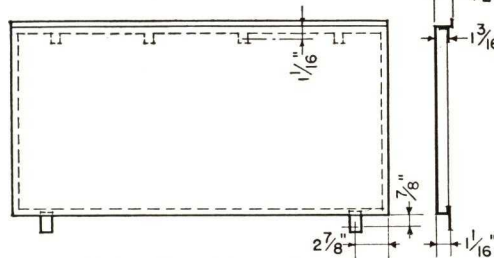
**GIRARDVILLE
HIGH SCHOOL**

Girardville, Pennsylvania

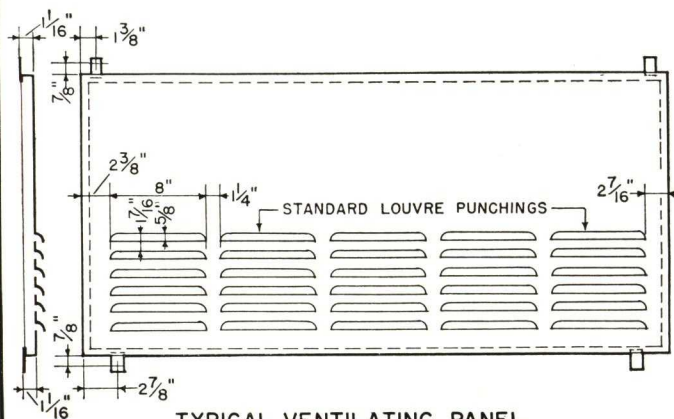
VICTOR E. MURCY, Consulting Engineer
GROOTENBOER & KNOBLOCK, Architects
H. A. WILLIAMS General Contractor



TYPICAL STANDARD PANEL

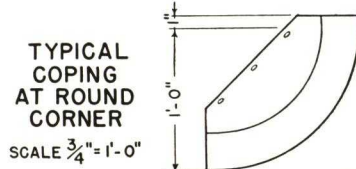


TYPICAL SILL PANEL



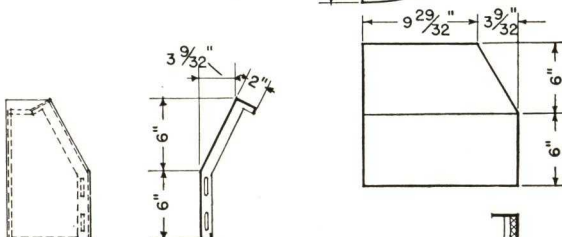
TYPICAL VENTILATING PANEL

SCALE $\frac{3}{4}$ " = 1'-0"



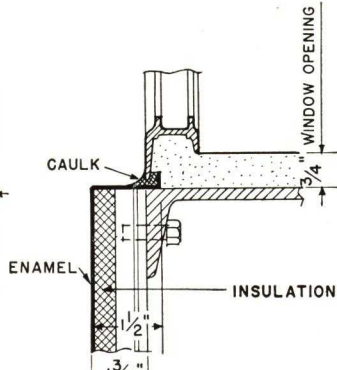
TYPICAL
COPING
AT ROUND
CORNER

SCALE $\frac{3}{4}$ " = 1'-0"



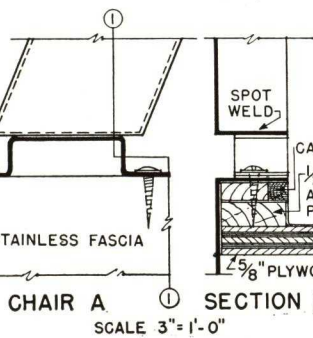
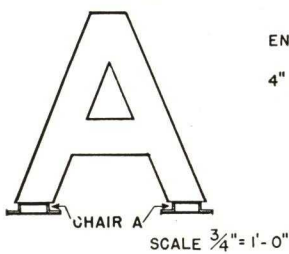
TYPICAL
COPING
AT SQUARE
CORNER

SCALE $\frac{3}{4}$ " = 1'-0"

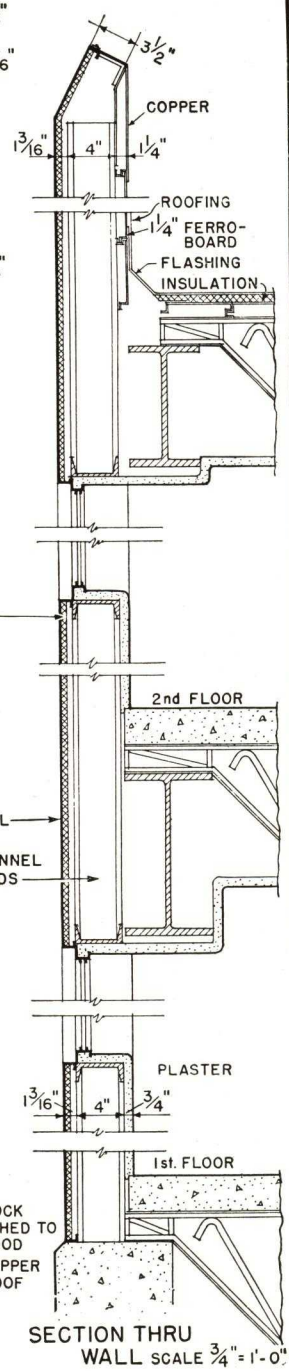


TYPICAL
WINDOW SECTION

SCALE 3" = 1'-0"



CHAIR A
SCALE 3" = 1'-0"



SECTION THRU
WALL SCALE $\frac{3}{4}$ " = 1'-0"



Standard Oil Co. of Ohio
THE AUSTIN Co., Cleveland, Engineers and Builders

Tepco Panels in the Girardville High School

Tepco Panels were used in the Girardville High School as illustrated and detailed on page 2. Some of the advantages afforded by architectural porcelain enamel, as given by the architects, Grootenboer & Knobloch, are:

- (1) It permits a flexible construction which will not cave in if the foundation settles because the exterior surface and the framework are integral. This was important in this locality where settling is frequent due to mining operations in the vicinity.
- (2) The low weight per unit of exterior surface makes it possible to safely use less structural steel and less foundation.
- (3) The resulting thinner wall makes available more floor space.
- (4) The finish is permanently attractive. Maintenance costs are reduced to almost nothing because no painting is ever necessary.
- (5) The surface of porcelain enamel being impervious to moisture, prevents frost damage.
- (6) Installation costs compare favorably with other types of construction.

Tepco Building Panels

Standard Tepco is made on 18-gauge steel, or to architect's specifications.

Standard Panels—Are made any size with a recommended maximum width of 36 in. and length 48 in. Flanges are 1 in. depth. (Minimum $\frac{3}{4}$ in., maximum 2 in.) Turn over $\frac{3}{8}$ in. Over all dimensions are guaranteed to $\frac{1}{16}$ in. from those specified. Maximum distortion of the surface will not exceed $\frac{3}{8}$ in. plus or minus. (This variation is to be measured from the plane of flange height while the panel is held firmly in a flat plane.) Slots in flange $\frac{1}{8}$ in. x $1\frac{1}{2}$ in. for clips spaced as desired with minimum of 1 in. from any end.

Corner Panels—Should not be greater than 6 x 6 in. nor exceed 48 in. in length. (Minimum 3 x 3 in., Standard 4 x 4 in.) Corner may be square or round (see curved panels).

Angle Panels—Should not be greater than 6 x 6 in. nor exceed 48 in. in length. (Minimum 3 x 3 in., Standard 4 x 4 in.) Angle to be 90° or more as desired. Angles less than 90° require special dies.



17th Euclid Building, Cleveland, Ohio
A. H. MARTY Co., Enamel Contractor.
GARFIELD, HARRIS, ROBINSON & SCHAFER, Architects.

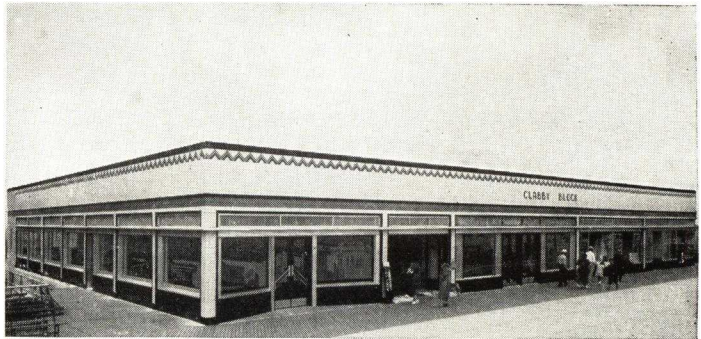
Curved Panels—See detail drawings and table, page 4.

Special Shapes and Special Dies—Will be designed to special order.

Special Holes—Light outlets, clearance holes, etc., will be made to special order.

Insulated Panels—Are recommended and can be supplied with the insulation material of the desired type and thickness cemented to the back under pressure. This will not sweat or break the bond. The insulating material not only reduces the heat loss but also effectively deadens any metallic ring caused by tapping the panel or by it being struck by foreign objects. A further value of the insulation material is in reducing the volume of sounds outside the building penetrating to the interior.

Clips—See construction details page 4.



Clabby Block, Atlantic City (Board Walk)
HOWARD A. SCOTT, Architect

Colors

High quality inorganic color oxides are thoroughly mixed with the frit in the milling process to obtain equal distribution and uniform lasting color.

An almost unlimited range of colors, except gold, silver and aluminum, are available to meet practically any desired effect. Some fifty colors and tints are carried in stock and a large number more can be made from our own formulas on special order.

Designs and Finishes

Trademarks, insignia, and designs in any desired colors can be successfully stencilled and applied to the panels.

Finishes—In addition to the standard full gloss finish semi-matte, matte and various mottled finishes can be produced when desired.

Systems of Construction

Architectural Porcelain Enamel can be applied to old or new buildings with equal satisfaction and effect. The material can be applied direct to masonry, to wood or steel furring or studing. The method of application varies slightly, depending on the type of construction, and our engineers will be glad to consult with you and recommend the type best suited to your building.

The clip method of application as illustrated on page 4 has been used successfully on a number of installations. It is simple, easy to install, allows for expansion and contraction of the panels and for adjustment of the space between the panels to meet any variations in the building. Tepco panels are fabricated for installation by this or any standard method of application.

Specifications

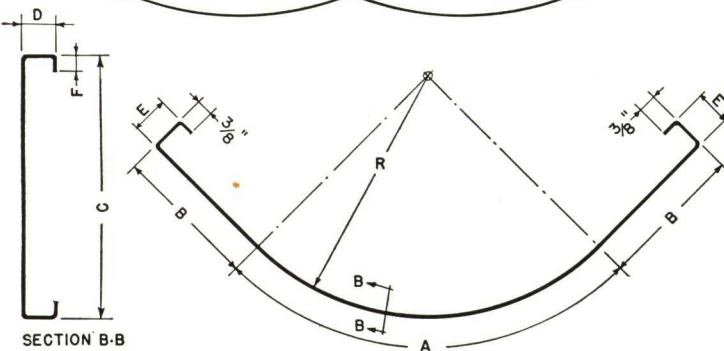
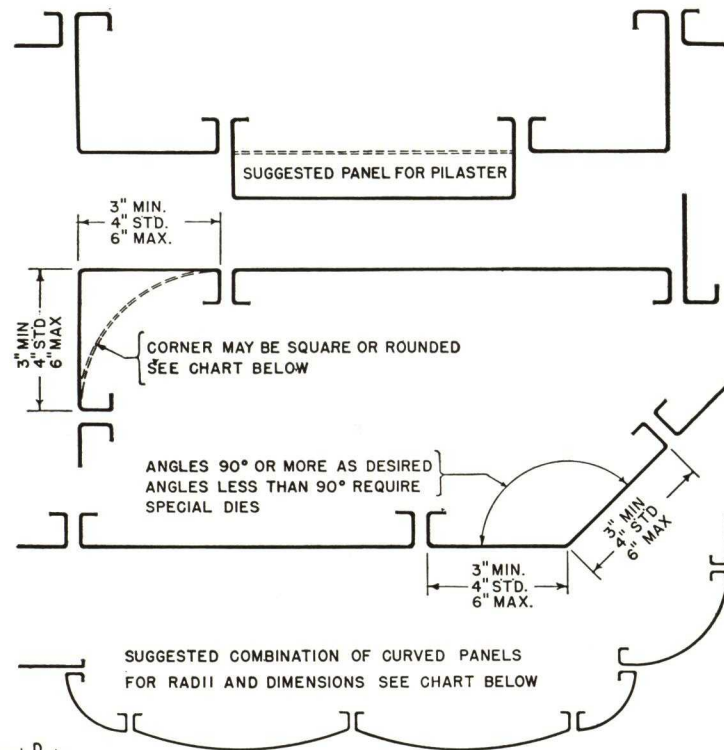
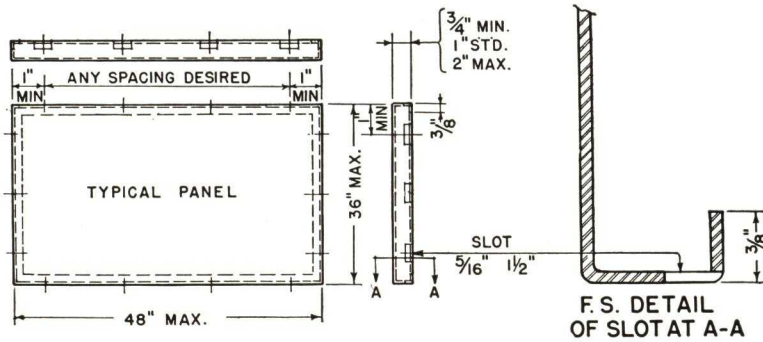
All panels, where shown on the plans, shall be of 18-gauge (heavier if panels are larger than 36 x 46 in.) iron sheets which are flat, free from buckles, waves and impurities which might react on the porcelain enamel.

They shall be formed to the sizes and shapes shown on the plans before enameling.

After forming, they shall be given a ground coat of a material that will give the greatest adhesion to the steel and that will successfully take the finish. Color coat shall then be applied to produce the color selected.

All enameled panels shall be produced by the THE ENAMEL PRODUCTS COMPANY, Cleveland, Ohio.

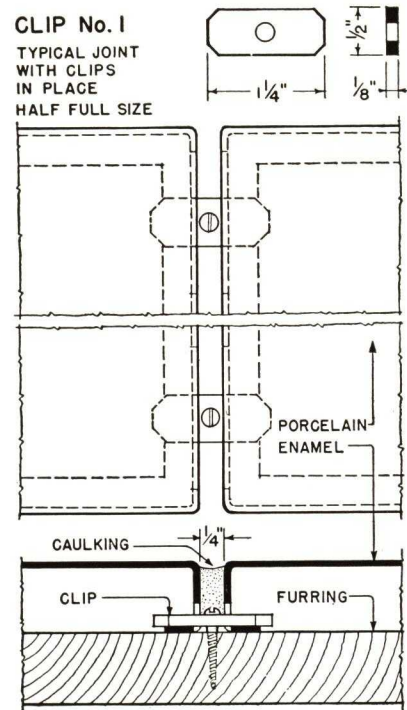
DETAILS OF *TEPCO* BUILDING PANELS and CLIPS



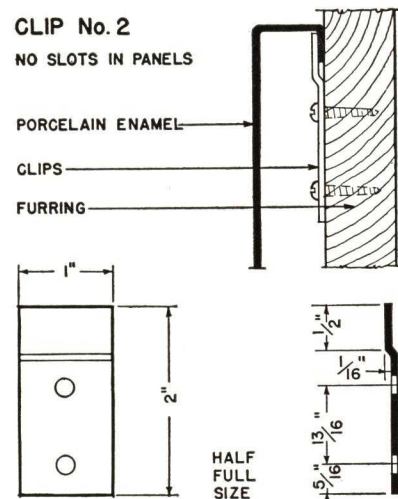
R radius	A maximum	B possible	B*	C	D	E max.	F
3"	1/4 CIR. Ap. 4 3/4"	1" to 8"	1 1/2" to 6"	6" to 44"	1"	1"	None
12"	1/4 CIR. Ap. 18 1/8"	to 4"	1"	6" to 44"	1"	1"	None
18"	1/4 CIR. Ap. 28 1/4"	to 4 1/2"		8" to 44"	1"	1"	3/8"
5'-19 1/8"	45"	None		7" to 44"	1", 2" or 3"	3"	3/8"
10'-0"	48"	None		7" to 44"	1", 2" or 3"	3"	3/8"
19'-5"	48"	None		7 1/2" to 44"	1", 2" or 3"	3"	3/8"

*RECOMMENDED- BECAUSE OTHER SIZES REQUIRE WELDING

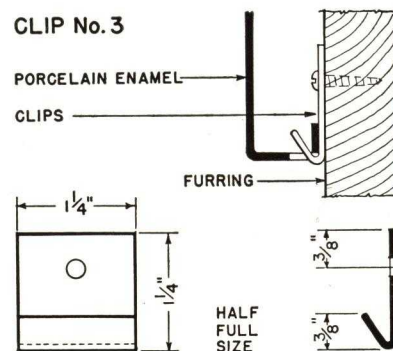
CLIP No. 1
TYPICAL JOINT
WITH CLIPS
IN PLACE
HALF FULL SIZE



CLIP No. 2
NO SLOTS IN PANELS



CLIP No. 3



PORCELAIN METALS, INC.

TELEPHONE
Stillwell 4-2280

28-26 Borden Avenue
LONG ISLAND CITY, N. Y.

BOSTON OFFICE: 143 Federal Street—Telephone, Hubbard 6707

BLOOMFIELD, N. J., OFFICE: 27 Curtis Street—Telephone Bloomfield 2-3782

REPRESENTATIVES

PITTSBURGH, PA.
Frank Limbach
1772 E. Ohio Street

ROCHESTER, N. Y.
Wm. T. Davies
19 Canary Street

ATLANTIC CITY, N. J.
John Sykes Corporation
300 No. Florida Avenue

BALTIMORE, MD.
The Builders' Agency
508 Hearst Tower Building

TROY, N. Y.
Charles H. Dauchy Co.
279 River Street

ALSO REPRESENTATIVES IN MANY LEADING CITIES

SUPORCEL PORCELAIN METALS IN BUILDING CONSTRUCTION

SUPORCEL Porcelain Metals, the superior porcelain enameled metal product for exterior and interior architectural use.

SUPORCEL Porcelain Metal panels used as a facing material for masonry, wood and steel frame construction are fastened to the building unit by means of hidden lugs and clips.

May be supplied in practically any shape, color, shade, and in series of finishes, permitting unlimited latitude to the architect and designer.

Its permanence of color, ease of cleansing, and

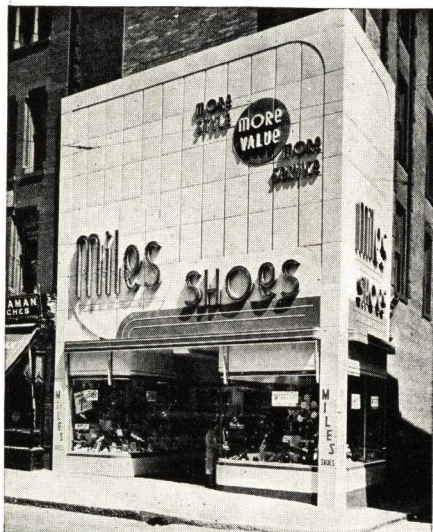
SUPORCEL
REG. TRADE NAME

simplicity of installation make it a most logical, effective, and reasonable building material.

PORCELAIN METALS, INC. maintains a service department in charge of experienced supervisors in its main offices and in its branches.

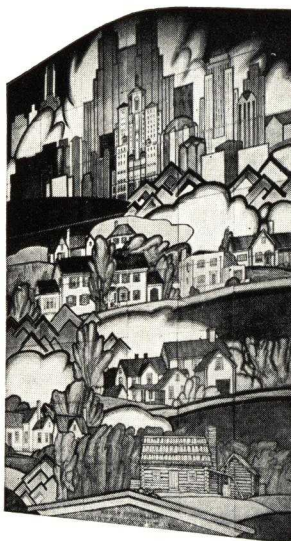
These departments are at the disposal of architects and others desiring information about SUPORCEL Porcelain Metals and its application to specific problems.

Additional information, literature, and samples sent upon request.



Miles Shoes, Albany, N. Y.

MICHAEL POLOM, New York, N. Y., Designer;
GERBER CONSTRUCTION, 395 Marcy Avenue, Brooklyn, N. Y., Erectors
Ivory terra cotta finish, maroon trim



Suporcel Porcelain Enamel Mural
Shelter Building

New York World's Fair of 1939

Designer: J. SCOTT WILLIAMS, Executed by
PORCELAIN METALS, INC.
The subject of the mural (16'-6" x 12'-0") explains man's progress in the development of shelter and housing (from isolated house to great community) and rendered in full color



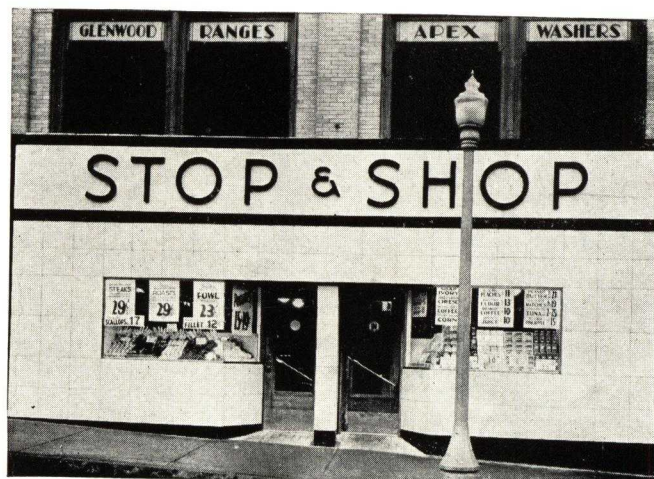
Perry Theatre, Pittsburgh, Pa.

JOHN EBERSON, New York, Architect; FRANK LIMBACH, Erector
Tower and lower facia enveloping the display poster frames are Suporcel Porcelain Enamel, shaded a pinkish cast, terra cotta finish. The full standing letters are also of porcelain



Mammy's Show Boat, Boardwalk, Atlantic City, N. J.

N. DIMEN, New York, N. Y., Architect
Ship design facade in battleship gray with blue and red trim. Rivets exposed imitating marine construction



Food Market, Hudson, Mass.

Designer: ANDREW M. BROOKS
General Contractors: PORCELAIN METALS ERECTION COMPANY, INC., Boston, Mass.
Colors: Black and white

VESCO CORPORATION

VITREOUS ENAMELING & STAMPING CO., Inc.

Specialists in Architectural Porcelain Enamel

TELEPHONE
Topping 2-9206

1383 Sedgwick Avenue, NEW YORK, N. Y.

The use of Porcelain Enamel for architectural purposes has become so widespread that it is no longer necessary to tell the architect and builder what it is and how it is made.

It is only necessary to emphasize the fact that when properly made and properly applied to its iron base it is truly a "Life Time Finish."

Architectural Porcelain has become popular with architects and builders within a very short time, and many manufacturers have entered this field without the necessary background of experience to furnish a material that will stand up to the claims made for it by those who really pioneered in its introduction to the building trades.

There are many kinds of Porcelain Enamel made —

periodically whereas Porcelain Enamel needs but a washing down with ordinary water to restore its original lustre.

VESCO was a pioneer in the introduction of this material, hence has had a long and wide experience and has maintained its lead by the introduction of many new finishes for this material.

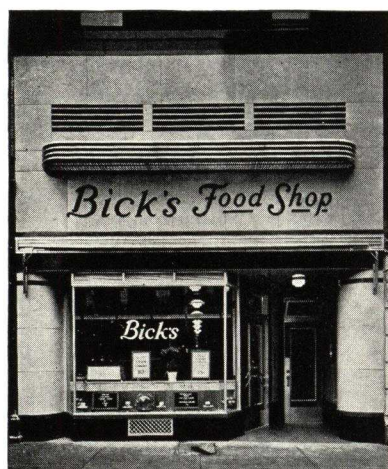
VESCO controls every step of the manufacture of Architectural Porcelain Enamel in its own plant. This means not only the fabrication of the steel, but what is even more important, the actual manufacture of the Porcelain Enamel. This fact is so well known that many architects specify "to be made by Vesco."



some suited for one purpose, some for others and no one formula can be used successfully for all purposes any more than could any one wood answer for all purposes.

The inexperience of some manufacturers of this material has resulted in many jobs that were a disappointment to the architect and owner and reflects no credit to the enameling industry.

On the other hand, there are many outstanding jobs in Porcelain Enamel that could not be achieved with any other material. Age will only enhance their beauty as there is no material other than granite, marble or bronze that will outlast Porcelain Enamel when properly manufactured. Any one of the above requires a costly cleaning,



Store Front

Porcelain by VESCO CORPORATION; F. R. STUCKERT, Architect; erected by ARTISTIC STORE FRONTS CO., New York, N. Y.



Store Front

Porcelain by VESCO CORPORATION; designed and erected by BENZENBERG BROS., New York, N. Y.



Store Front, Perth Amboy, N. J.

Porcelain by VESCO CORPORATION; designed and erected by BENZENBERG BROS., New York, N. Y.

MEMORANDA

ALUMINUM COMPANY OF AMERICA

Member of The Producers' Council, Inc.

Manufacturers of Alcoa Aluminum and Its Alloys

1844 Gulf Building

PITTSBURGH, PA.

For Sales Offices, see Metals Section

For Other Pages on Alcoa Aluminum, Its Alloys and Uses, see File Index



ALCOA ALUMINUM FOR COPINGS

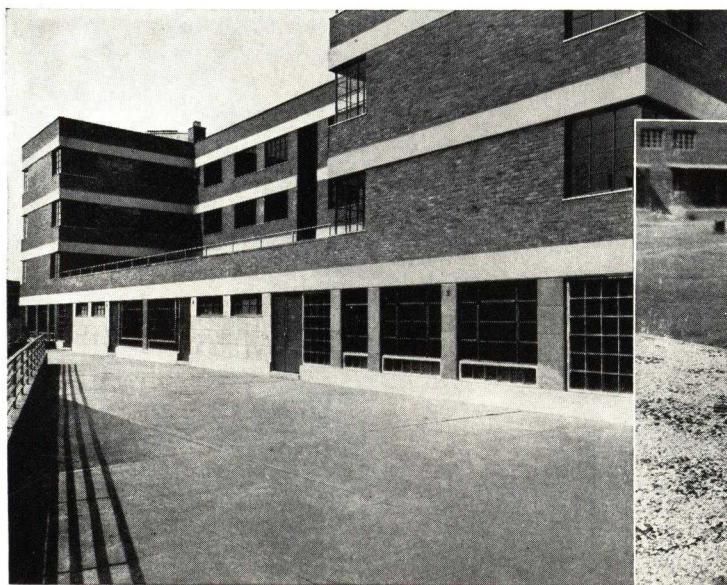
Because aluminum is available in so many commercial forms copings may be designed to suit any type of construction. Light-weight aluminum replaces the heavier, harder to handle building materials. Since aluminum coping sections come in long lengths, a minimum of construction joints are necessary, and maximum water-tightness is assured. For parapet walls of any thickness a combination of an extruded aluminum shape with formed aluminum sheet provides an economical and permanently water-tight cap. Particular attention is called to the simple anchoring devices and the excellent provisions for expansion and contraction shown in the details on the next page. With this basic design may be obtained any number of sight line effects or varying widths of metal bands at the parapet by changing the length of the vertical leg of the extruded member. Also

available for parapet walls is an all-sheet coping which is exceptionally economical and may be easily fabricated at any metal shop. For walls up to thicknesses of 8 in., coping made of a single extruded shape is available. Copings of one extruded member can be designed with almost any contour or degree of pitch, provided the greatest over-all dimension of the extruded shape does not exceed 10 in. Fully detailed blueprints of these last two types of copings will be sent upon request.

The Extruded Fascia and Gravel Stop for finishing edges of flat roofs is practical and economical. Page 2 shows a single exposed shape provides a sloping gravel stop, a positive waterproof sill, a terminal cap for roof membrane, and a fascia band concealing the edge of the cast roof slab.

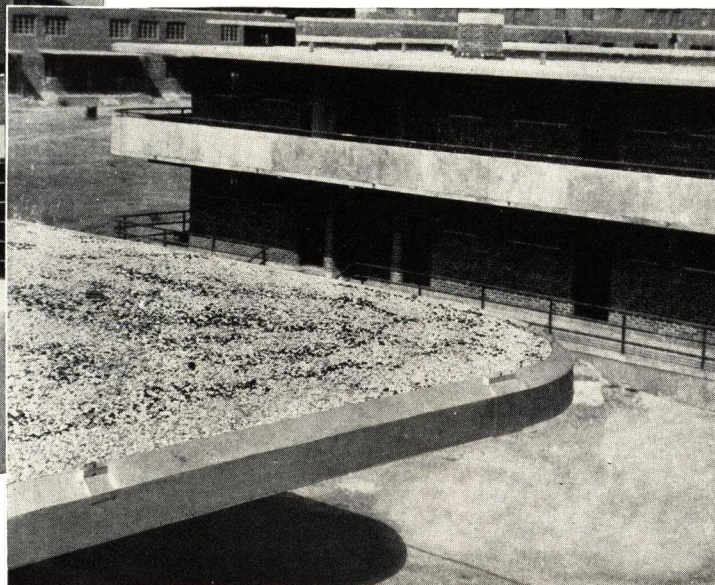
Left:

Extruded aluminum copings on this Federal Housing Project structure were chosen for their water-tightness and economy.



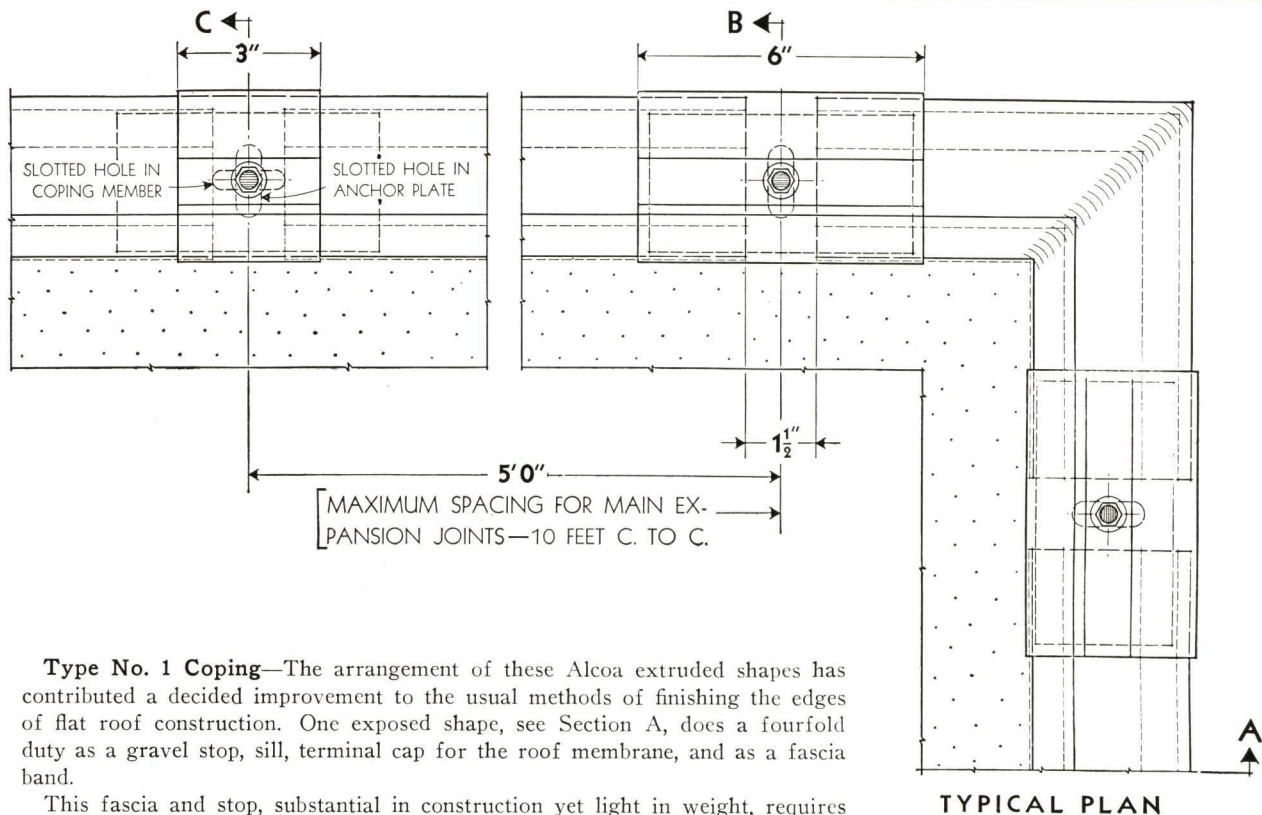
Right:

Close-up of aluminum gravel stop and fascia. Details shown on page 2.



ALCOA TYPE 1 ALUMINUM FASCIA AND GRAVEL STOP

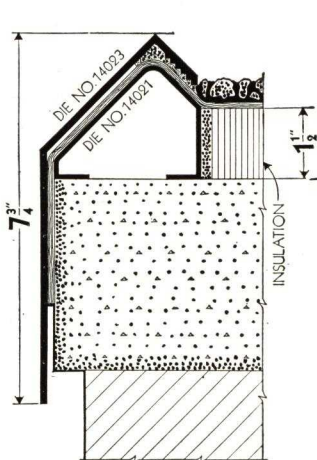
(ONE QUARTER FULL SIZE)



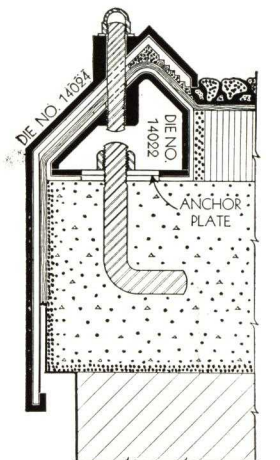
Type No. 1 Coping—The arrangement of these Alcoa extruded shapes has contributed a decided improvement to the usual methods of finishing the edges of flat roof construction. One exposed shape, see Section A, does a fourfold duty as a gravel stop, sill, terminal cap for the roof membrane, and as a fascia band.

This fascia and stop, substantial in construction yet light in weight, requires only the simplest of shop fabrication, and its field of erection is accomplished rapidly and economically. Its inconspicuous expansion joints permit perfect freedom of movement for temperature changes and it can, therefore, be used over extremely long runs yet maintain undistorted sight lines.

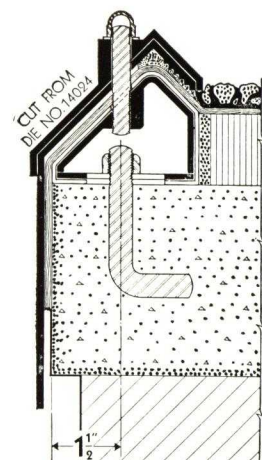
Other designs of the same general detail are available for lesser thicknesses of roof insulation material.



SECTION "A"
TYPICAL



SECTION "B"
AT MAIN EXPANSION JOINT

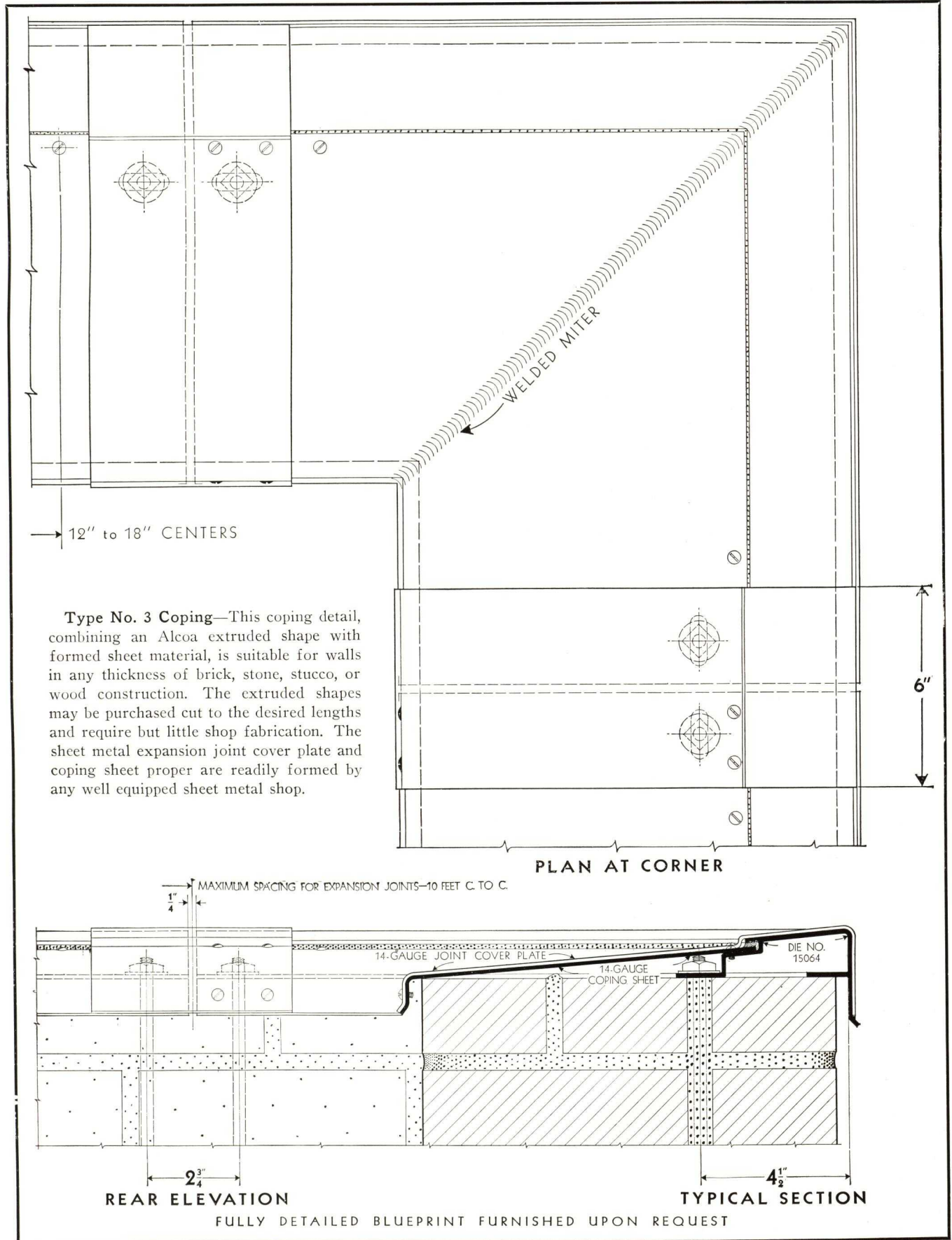


SECTION "C"
AT INTERMEDIATE ANCHOR

FULLY DETAILED BLUEPRINT FURNISHED UPON REQUEST

ALCOA TYPE 3 ALUMINUM COPING

(ONE QUARTER FULL SIZE)



THE AMERICAN BRASS COMPANY

Manufacturers of Extruded and Cold Drawn Shapes, Sheets, Wire, Rods and Tubes of Bronze, Brass, Copper and Nickel Silver

GENERAL OFFICES
WATERBURY, CONNECTICUT

ANSONIA, CONNECTICUT
BUFFALO, NEW YORK

MANUFACTURING PLANTS
TORRINGTON, CONNECTICUT
DETROIT, MICHIGAN

WATERBURY, CONNECTICUT
KENOSHA, WISCONSIN

OFFICES AND AGENCIES IN PRINCIPAL CITIES

IN CANADA: Anaconda American Brass Limited, NEW TORONTO, ONT.

PRODUCTS

ANACONDA ARCHITECTURAL BRONZE, BRASS, COPPER and NICKEL SILVER for ornamental and structural purposes, in Extruded and Drawn Shapes, Sheets, Rods and Tubes for the fabrication of ornamental and structural metal work, including Cornices, Pilasters, Grilles, Counter Screens, Doors, Windows, Trim, Saddles, Hand Rails, etc. For other pages, see File Index.



EXTRUDED ARCHITECTURAL SHAPES

ANACONDA Architectural Bronze, Copper and certain Nickel Silver Alloys are successfully wrought into finished shapes of irregular cross-section as well as angles, channels, etc., by the extrusion process which results in sections characterized by unusually smooth surface, accuracy in dimensions, strength and durability. They are entirely free from pitted surfaces and porosity and their edges are sharp and clean. Extruded Architectural Shapes are superior to castings in every way.

Shapes Available

Thousands of dies, made up during a period of more than thirty years, for the production of extruded bronze shapes from designs by many leading architects, have been released for general use. The availability of these dies often eliminates the expense of special die-making, reducing the cost of the finished metal work. It is possible for the architect to create an almost unlimited num-



ber of original designs by means of various combinations of these standard shapes.

The illustrations on the following page show a typical use of standard shapes in the execution of original designs.

THE AMERICAN BRASS COMPANY has recently published a revised and enlarged catalog showing cross-sections of over four thousand ANACONDA Extruded Architectural Shapes in actual size. This book has been four years in the making. Its organization and scope are such as to make it a distinct improvement over any similar work published in the past. Architects may obtain copies without cost by writing to THE AMERICAN BRASS COMPANY on their firm letterheads. Ask for Catalog No. AB-7.

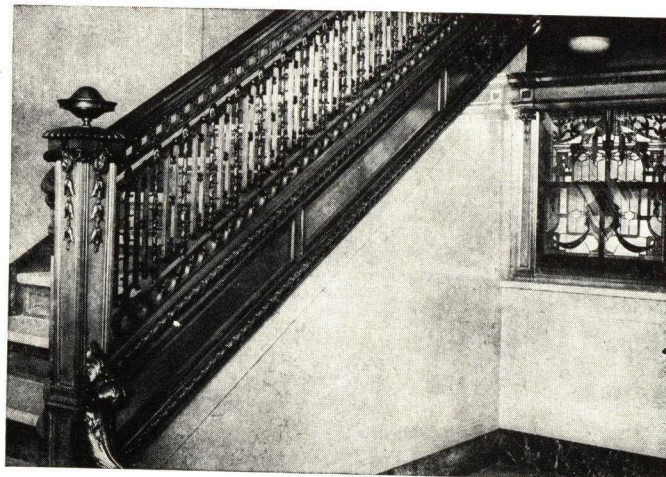
COLD DRAWN ARCHITECTURAL SHAPES

When light moldings and shapes are required in gauges and alloys not extrudable, the cold drawn process is used. Seamless tubing with plain and irregular cross-sections are also produced by this method. These cold drawn shapes are used for numerous architectural purposes, such as trim, window frames, showcases, store fronts, etc. A wide range of alloys can be worked by this method, offering color combinations not possible with extruded shapes.

Catalog No. AS-7 illustrating the dimensional cross-sections of the thousands of cold drawn shapes for which dies are available without tool cost, will be mailed to architects and draftsmen upon request.



Anaconda Extruded Bronze Lends Simple Dignity to This Store Front
FRANK H. HOLDEN, Architect; J. STOTT DAWSON, Associate



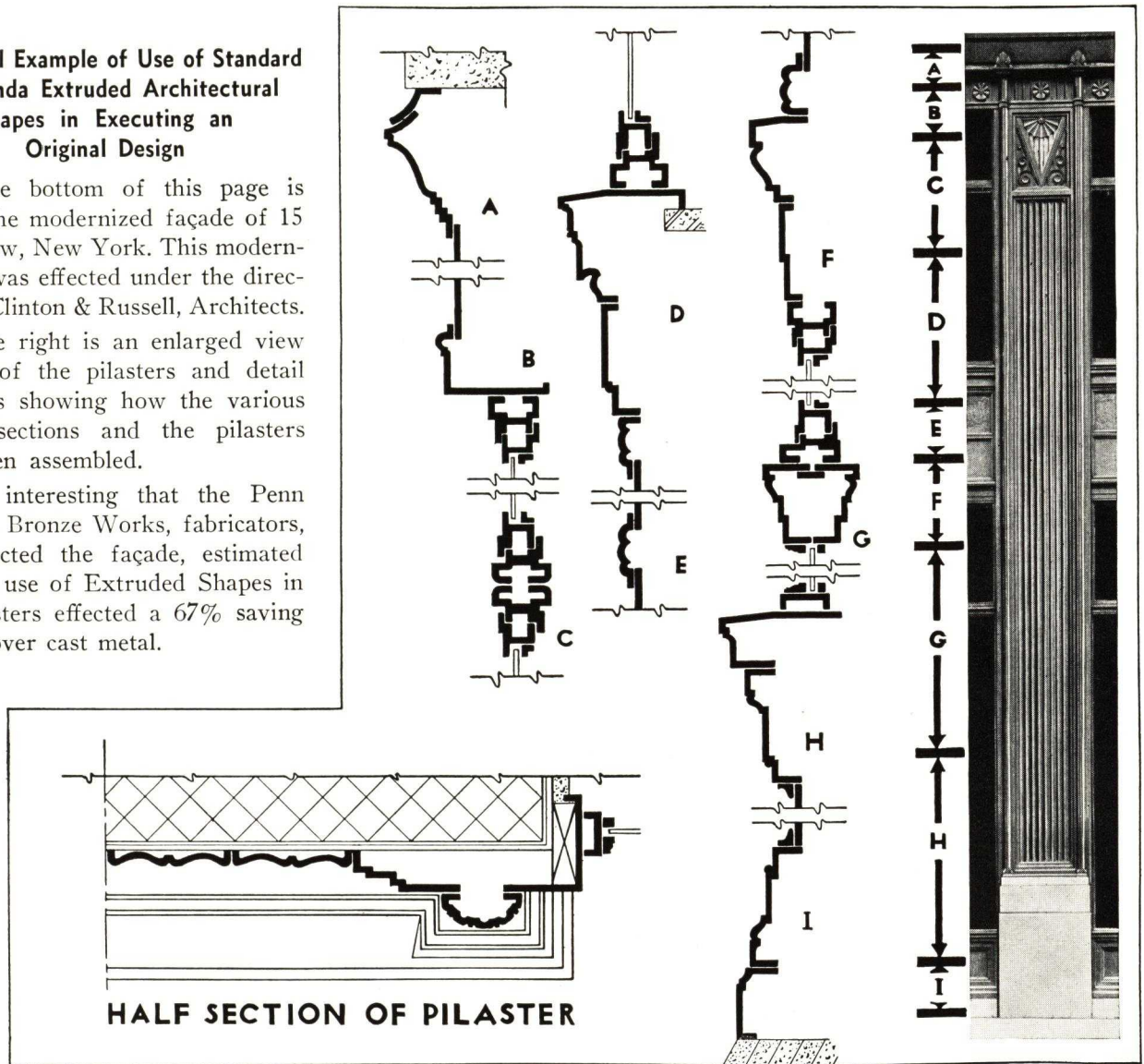
Anaconda Extruded Nickel Silver Combined with Nickel Silver Sheets and Cast Benedict Nickel
DENNISON & HIRONS, Architects

**A Typical Example of Use of Standard
Anaconda Extruded Architectural
Shapes in Executing an
Original Design**

At the bottom of this page is shown the modernized façade of 15 Park Row, New York. This modernization was effected under the direction of Clinton & Russell, Architects.

At the right is an enlarged view of one of the pilasters and detail drawings showing how the various lateral sections and the pilasters have been assembled.

It is interesting that the Penn Brass & Bronze Works, fabricators, who erected the façade, estimated that the use of Extruded Shapes in the pilasters effected a 67% saving in cost over cast metal.



ATLANTIC STEEL COMPANY

Hand Rail Sections of Basic Open Hearth Steel

ATLANTA, GEORGIA

For Foundation or Wall Ventilators, see File Index

The Company and the Product

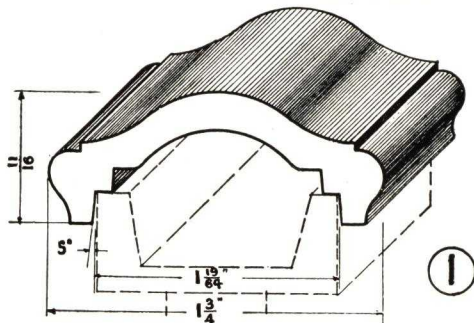
To supply the need for American-made steel Hand Rail Sections, the ATLANTIC STEEL COMPANY has designed the five popular sections shown in actual size below. Graceful curvature and symmetry of design characterize Dixisteel Hand Rail Sections, all five of which are available for prompt

DIXISTEEL
TRADE-MARK

shipment, in lengths of 20 feet, from large stocks at the mill. Hand samples are furnished, free of charge, upon request.

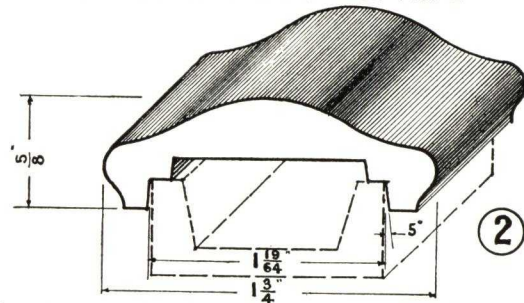
Specifications should be worded "Dixisteel Hand Rail Section No. —, made by ATLANTIC STEEL COMPANY, Atlanta, Georgia," so that fabricators will know exactly what to order from their sources of supply.

Dixisteel Hand Rail Section No. 1



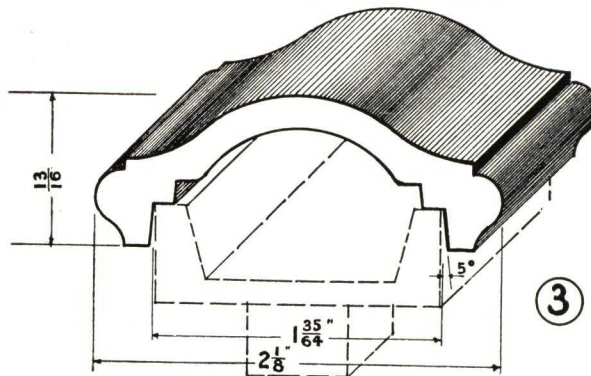
Dixisteel Hand Rail Section No. 1 weighs 1.5 pounds per lineal foot. The over-all height is $1\frac{1}{8}$ in. and the over-all width is $1\frac{3}{4}$ in. The double-cove construction permits the use of channels either 1 in. or $1\frac{1}{4}$ in. wide. No. 1 is our lightest-weight Hand Rail Section and its use materially reduces the total weight of the installation.

Dixisteel Hand Rail Section No. 2



Dixisteel Hand Rail Section No. 2 weighs 1.7 pounds per lineal foot. The over-all height is $\frac{5}{8}$ in. and the over-all width is $1\frac{3}{4}$ in. Because of the double-cove construction, channels either 1 in. or $1\frac{1}{4}$ in. wide can be used. No. 2 is a very popular Hand Rail Section. Of artistic design, its weight is not excessive, yet it has sufficient body to take unusually sharp turns without spreading and it forms a perfect union with the channel under all conditions.

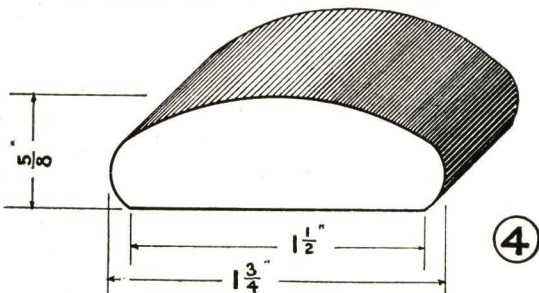
Dixisteel Hand Rail Section No. 3



Dixisteel Hand Rail Section No. 3 is the same shapely design as Section No. 1, but it is somewhat larger and proportionately heavier. It weighs 1.85 pounds per lineal foot.

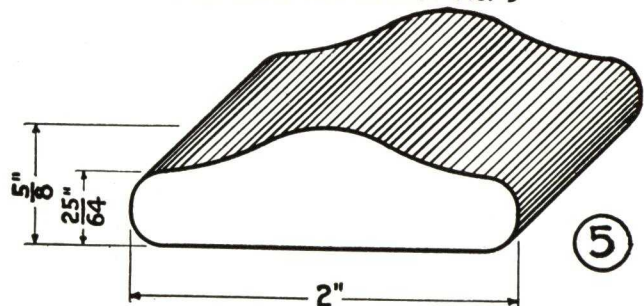
The over-all height of Section No. 3 is $1\frac{3}{8}$ in. and the over-all width is $2\frac{1}{8}$ in. Channels either $1\frac{1}{4}$ in. or $1\frac{1}{2}$ in. wide can be used because of the double-cove construction.

Dixisteel Hand Rail Section No. 4



Dixisteel Hand Rail Section No. 4 weighs 3.04 pounds per lineal foot. The over-all thickness is $\frac{5}{8}$ in. and the over-all width is $1\frac{3}{4}$ in. Section No. 4 meets the demand for a solid section of plain design. Government specifications frequently call for Section No. 4.

Dixisteel Hand Rail Section No. 5



Dixisteel Hand Rail Section No. 5 weighs 3.15 pounds per lineal foot. The over-all thickness is $\frac{5}{8}$ in. and the over-all width is 2 in. It is a solid section of shapely design, and is frequently specified on Government work.

AMERICAN BRONZE CO.

Ornamental and Architectural Bronze, Aluminum and
Non-ferrous Metal Work

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1316-1318 West 63rd Street, CHICAGO, ILL.

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ORNAMENTAL, ARCHITECTURAL and STATUARY BRONZE, ALUMINUM, NON-FERROUS METAL WORK, which includes: Monumental Work; Doors; Memorial and Commercial Tablets; Statuary; Letters; Rails; Brackets; Grilles and Wickets; Thresholds; Flagpole Bases; Fountains; Clocks; Check Desks; Inkwell Stands combined with Reflectors; Name Plates; Illuminated Signs; Exterior and Interior Directories and Bulletin Boards for commercial offices and professional buildings; Altar Rails; Altar Gates; Sanctuary Rails; Tabernacle Doors; Candlesticks and Candelabra for churches; Mausoleum Doors, Grave Markers and Gates for cemeteries; Ornamental Exterior and Interior Lighting Fixtures.



Bronze Plaque Erected at Moline, Ill.



Statue Erected at City of Aberdeen, S. D.

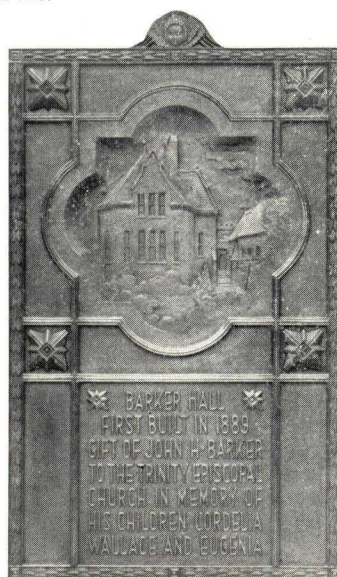
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All work is made to order, in any size, or shape. Architects' special designs and ideas will be carefully followed.

Work made and shipped complete, ready for erection, to any part of the country. All workmanship and material is guaranteed to be of the very best.



Bronze Plaque Erected in Barker Hall, Michigan City, Ind.



Bronze Plaque Erected in St. Bernard's Church, Chicago, Ill.



Bronze Doors

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Quotations submitted promptly upon receipt of specifications.

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Manufacturers of Ornamental Metal and Wire Products
Aluminum-Bronze, Iron, Nickel Alloys

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WIRE WINDOW GUARDS
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WIRE SIGNS
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Recent Installations

Harrison County Court House, Clarksburg, W. Va.,
Walker & Weeks, Architects; Hutter Construction
Co., Contractors

North Western Mutual Life Insurance Company Building,
Milwaukee, Wis., Holabird & Root, Architects;
W. W. Oeflein, Inc., Contractors

Lowry Medical Arts Building, St. Paul, Minn., Clarence
H. Johnston, Architect; F. J. Romer Construction
Co., Contractors

Warner Theatre and Office Building, Milwaukee, Wis.,
Rapp & Rapp, Architects; Geo. A. Fuller Co., Con-
tractors

State Office Building, Madison, Wis., Arthur Peabody,
State Architect; J. H. Findorff & Son, Contractors

Washington Hospital, Washington, Pa., R. E. Schmidt,
Garden & Erikson, Architects; Hutter Construction
Co., Contractors

Illinois State Hospital, Manteno, Ill., Granger & Bollen-
bacher, Chicago, Ill., Architects; Patrick Warren
Construction Co., Chicago, Ill., Contractors

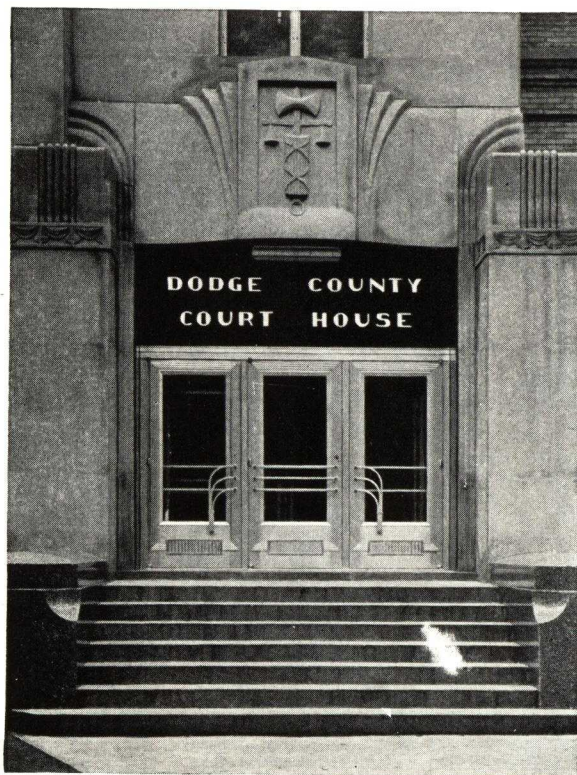
Dixon State Hospital, Dixon, Ill., C. Herrick Ham-
mond, Supervising Architect, Division of Architec-
ture and Engineering; A. Smith & Company, Chicago,
Ill., Contractors

Mohammed Temple Building, Peoria, Ill., Jameson &
Harrison, Peoria, Ill., Architects; Geo. D. Johnson
Co., Peoria, Ill., Contractors

Veterans Hospital, Dearborn, Mich., Veterans Admin-
istration, Construction Service, Washington, D. C.,
Architects; Cooper-Little Company, Detroit, Mich.,
Contractors



**Aluminum Stair "Anodized"—Schuster's 12th Street Store,
Milwaukee, Wis.**
Architect: PETER BRUST



**Main Entrance Feature—Dodge County Court House,
Juneau, Wis.**
Architect: R. R. BOYD, Beaver Dam, Wis.
Contractor: W. H. FARLEY, New Lisbon, Wis.

DECATUR IRON & STEEL COMPANY

Manufacturers of Ornamental Metal, Jail Equipment and Structural Steel
DECATUR, ALA.

For Jail Equipment, see File Index

ORNAMENTAL METAL FOR EVERY PURPOSE

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Ornamental Iron
Ornamental Bronze
Ornamental Aluminum
Ornamental Stainless Steel
Wire Work

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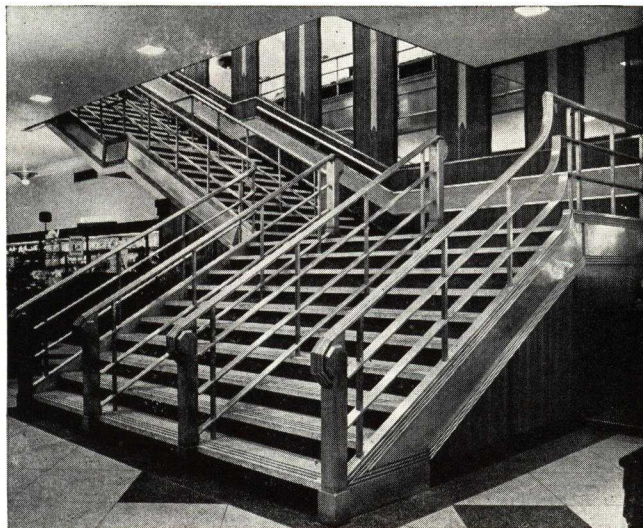
Gates and Railings
Fire Escapes
Grilles
Floor Grating
Flagpoles

Facilities

Our plant is the largest engaged in Ornamental Work in the South. Established in 1887, we are now in our fifty-second (52nd) year of unbroken service to the Construction Industry. With the constant addition of new machinery, the plant equipment is kept continually up to date enabling us to maintain leadership in the industry in the South.

Typical Disco Installations

LOCATION	BUILDING	ARCHITECTS
Atlanta, Ga.	Kress Bldg.	Edward F. Sibbert
Miami, Fla.	Kress Bldg.	Edward F. Sibbert
Miami, Fla.	Sears Roebuck	Nimmons, Carr & Wright
Miami, Fla.	Walgreen Store	Zimmerman, Saxe & McBride
Baton Rouge, La.	State University	Weiss, Dreyfous & Seiferth
Charleston, S. C.	The Citadel	J. E. Sirrene & Co.
Charleston, S. C.	Dial Office Bldg.	Hentz, Adler & Shutze
Fort Davis, Canal Zone	Navy Department	Navy Department
Pensacola, Fla.	Naval Air Station	Navy Department
Coca Solo Canal Zone	Various Bldgs.	Quartermaster General
Barksdale Field, La.	Various Bldgs.	Navy Department
Fort Benning, Ga.	Various Bldgs.	Quartermaster General
Fort Bragg, N. C.	Various Bldgs.	Quartermaster General
Fort McClellan, Ala.	Various Bldgs.	Quartermaster General
Maxwell Field, Ala.	Various Bldgs.	Quartermaster General
Pope Field, N. C.	Various Bldgs.	Quartermaster General
Randolph Field, Tex.	Various Bldgs.	Quartermaster General
Atlanta, Ga.	Post Office	Treasury Department
Charlotte, N. C.	Post Office	Treasury Department
Davenport Iowa	Post Office	Treasury Department
Columbia, S. C.	Housing Project	James B. Urquhart
Montgomery, Ala.	Housing Project	Ausfeld & Jones
Nashville, Tenn.	Housing Project	Nashville Allied Architects
Houston, Tex.	City County Hospital	A. C. Finn & J. Finger
Lexington, Ky.	Federal Narcotic Farm	Treasury Department
Albuquerque, N. Mex.	Veteran's Hospital	Veteran's Administration
Alexandria, La.	Vets. Armin. Facility	Veteran's Administration
Batavia, N. Y.	Vets. Armin. Facility	Veteran's Administration
Chillicothe, Ohio	Vets. Armin. Facility	Veteran's Administration
Greenville S. C.	Vets. Armin. Facility	Veteran's Administration
Gulf Port, Miss.	Vets. Armin. Facility	Veteran's Administration
Knoxville, Iowa	Vets. Armin. Facility	Veteran's Administration
Little Rock, Ark.	Vets. Armin. Facility	Veteran's Administration
Lake City, Fla.	Vets. Armin. Facility	Veteran's Administration
Murfreesboro, Tenn.	Vets. Armin. Facility	Veteran's Administration
Oteen, N. C.	Vets. Armin. Facility	Veteran's Administration
Springfield, Mo.	Vets. Armin. Facility	Veteran's Administration
Tuscaloosa, Ala.	Vets. Armin. Facility	Veteran's Administration
Tucson, Ariz.	Vets. Armin. Facility	Veteran's Administration
Waco, Tex.	Vets. Armin. Facility	Veteran's Administration
Washington, D. C.	St. Elizabeth's Hospital	Veteran's Administration



Aluminum Stair Railing and Facia, F. W. Woolworth Co.,
Charlotte, N. C.

Charity Hospital
New Orleans, La.

WEISS DREYFOUS & SEIFERTH
New Orleans, La.
Architects

GEO. A. FULLER CO.
Washington, D. C.
and
New York, N. Y.
General Contractors



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JOHN M. DOYLE

ESTABLISHED 1859

Designers and Manufacturers of Tablets, Signs and Letters, in Any Metal with Raised or Engraved Lettering

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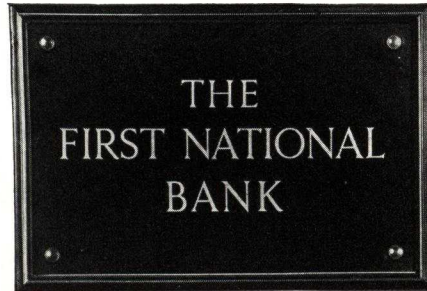
PRODUCTS

CAST TABLETS of Bronze, Nickel, Vitreous Enameled Bronze, Aluminum, Stainless Steel.

INDIVIDUAL LETTERS, Cast or Sheet Metal in all Metals and Inlaid Vitreous Enamel.

ASSEMBLED METAL SIGNS: cast metal letters mounted on oxidized sheet copper background.

ENGRAVED PLATES—also Directional Signs, Bank and Desk Name-Plates.



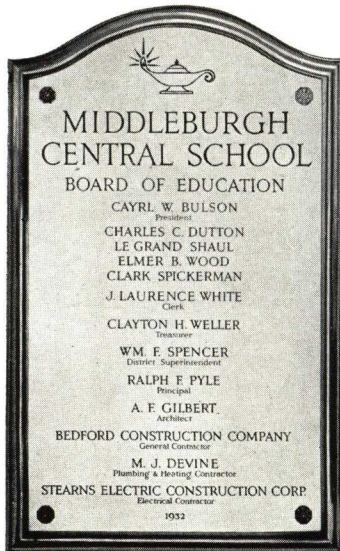
Vitreous Enamel Bronze Sign

Letters are engraved and ivory enamel inlaid (also available with raised letters). Border is extruded bronze and background sheet bronze. The only permanent sign which does not require polishing

SERVICE

A complete corps of artisans—whose experience is based on our 80 years of designing and executing fine memorials and signs.

Designs and suggestions are cheerfully furnished. When you have a lettering problem—write or call on us.



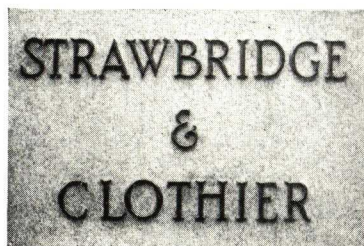
Hand Engraved Tablet

Engraved on sheet bronze with V-cut lettering. Extruded bronze moulding. Oxidized light statuary. Only master craftsmen can produce work of this character



Fret Cut Boxed Ribbon For Neon

Fabricated Sheet Metal Letters are now very popular. Made from your details in Stainless Steel, Bronze, Aluminum and Galvanized



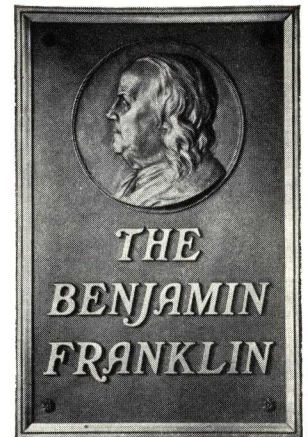
Cast Individual Bronze Letters

Bronze letters are used for fronts of buildings and embedding in sidewalks. Furnished in many cross sections, cast or fabricated sheet metal



Assembled Bronze Sign

Made with cast bronze letters and moulding. Oxidized sheet copper background. A fine looking sign is thereby produced for a reasonable price



Bronze Tablet

Erected on Ben Franklin Hotel, Philadelphia. Note the fine bas-relief and the Colonial simplicity of design



Modeled Bronze Tablet

Erected at birthplace of U. S. Marine Corps. Hand modeled bas-relief tablet with Runic Letters. A fine example of expert craftsmanship

DOYLE SAVES YOU MONEY

J. W. FISKE IRON WORKS

Ornamental Iron, Brass, Bronze, Wire and Zinc Work

69-71 Park Place, NEW YORK, N. Y.

PRODUCTS

In addition to those illustrated: Franklin Stoves

Air Bricks
Altar Rails
Andirons
Backstops
Bank Screens, metal
Bird Baths
Bronze, architectural
Drains, garage, gutter and stable gutter
Edging, garden and walk
Electric Operators, gate
Entrances, bronze, iron or aluminum
Flag Pole Bases
Flag Poles, metal
Folding Gates
Foot Scrapers
Fountains, display and lawn

Gates, Elevator folding, iron, bronze or wire, plain or ornamental, horseback
Grates, fireplace
Grilles, cast and hand wrought
Guards, column, door, tree, and wheel

Hitching Posts
Imported French Woven Wood Fence
Jets, fountain
Poultry Runs
Sanitary Stall Drains
Settees and Chairs
Sidewalk Doors and Gratings

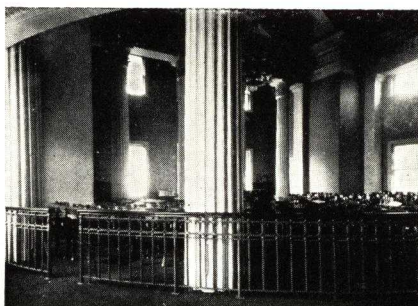
Stable Fittings, horses, cows, goats
Stable Gutter
Stadium Seat Brackets
Sun Dials
Swimming Pool Ladders
Tennis Court Enclosures
Trench Covers and Frames
Turn Stiles
Verandas
Vestibule Doors
Washers, automobile
Water Troughs
Wheel Guards
Window Guards
Wire Partitions
Wrought Iron Railings



Fig. 3285
Typical FISKE Chain Link Kennel Enclosures



Cast Bronze Tablet
Special sizes made to order



State Capitol Building, Raleigh, N. C.
Atwood and Nash, Inc., Architects



Fig. 3275
Entrance Gate
James W. O'Connor, Architect

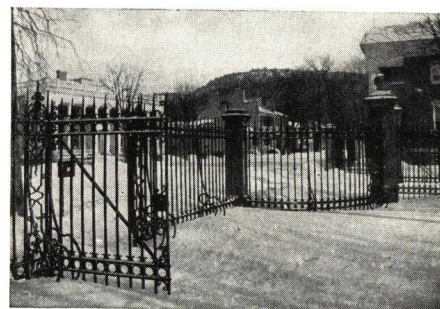


Fig. 3100
Wrought Iron Railings and Gates,
Cooperstown, N. Y.



Fig. 450-C



Fig. 119



Fig. 317-F



Fig. 303-F



Flag Pole Base
Special designs
executed in bronze
and iron



Fiske Weather Vane

Guilbert & Betelle,
Architects

FISKE Weather Vanes are specified by many architects specializing in school construction. We build weather vanes to architects' details in addition to a line of stock designs.

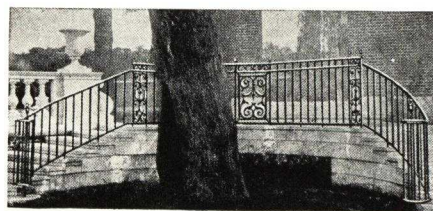
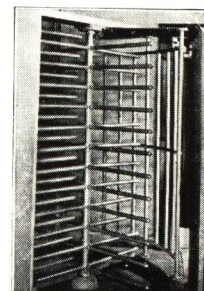


Fig. 3280
Balustrade
Carrere & Hastings, Architects

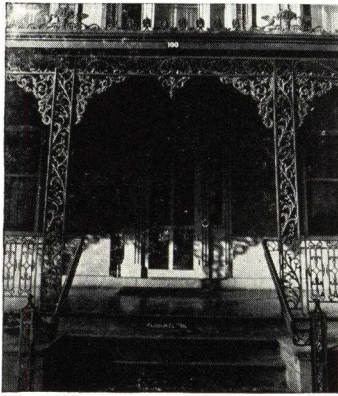


At right:
Baffle Gate
All metal
Made to operate clock
or counterclockwise
as required.

Fig. 317-F Cast Iron Lamp and Base
Lamp hexagon, height overall 58"; width across spikes 19", base 10" octagon.
Fig. 303-F Cast Iron Lamp and Bracket
Height 3'9", 10 1/2" projection, back plate 7" x 15".
Fig. 119 Cast Iron Post with Copper Lamp and Cast Eagle
Complete with glass and chimney, 11'10" high overall including eagle, 9" diameter base.
Fig 450-C Cast Iron Post
No. 1—8'10" high under ball; No. 2—7'10" high under ball.
Diameter of base, 15".

ORNAMENTAL CAST IRON WORK BY FISKE

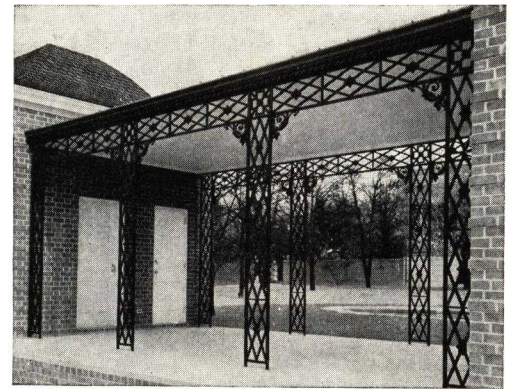
The following illustrations are a few of the residences designed by prominent architects who have applied the use of FISKE ornamental cast and wrought iron work. All of these designs are our stock patterns, many of them having been made from architects' details. In our 80 years as artisans serving architects and estate owners, we have, however, accumulated many other patterns, illustrations of which will be sent upon request.

**Design C5**

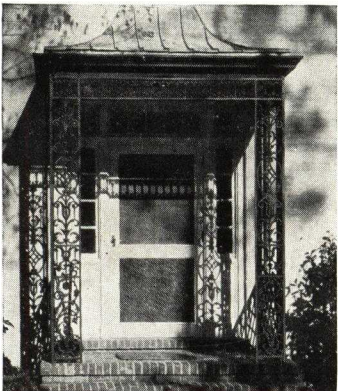
Residence of Commanding Officer, U.S. Military Academy, West Point, N. Y.

**Design C12**

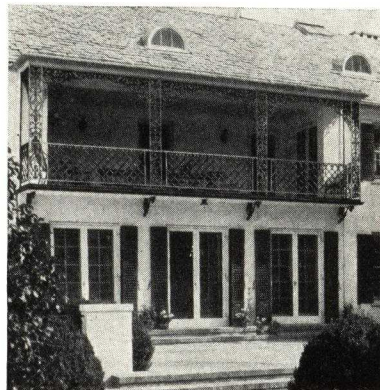
James W. O'Connor, Architect

**Design C10**

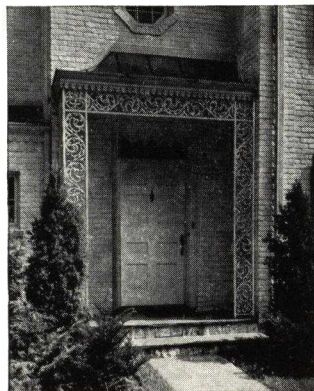
Treanor & Fatio, Architects

**Design C4**

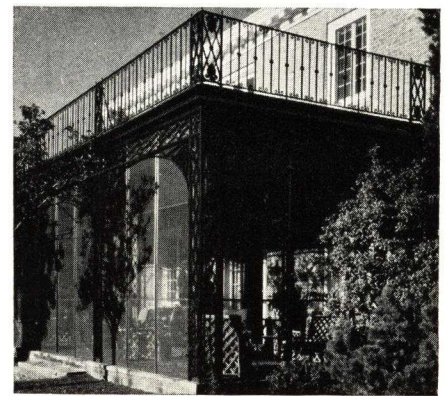
Peabody, Wilson & Brown, Architects

**Design C3**

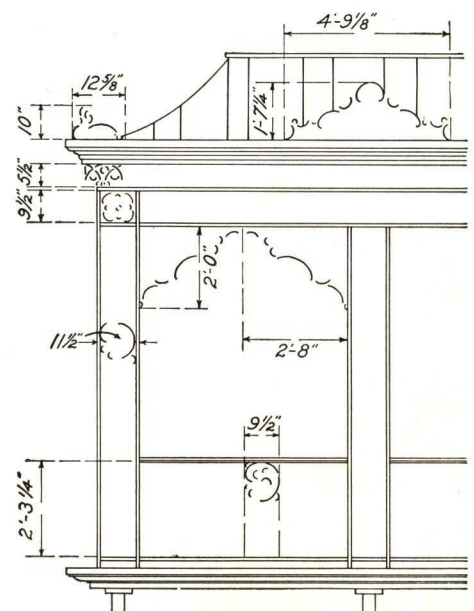
Delano & Aldrich, Architects

**Design C9**

Paul W. Drake, Architect

**Design W1**

Bradley Delehanty, Architect

**Design C9**

Showing general idea of dimension; different designs have slight variations.

SANITARY STABLE AND BARN EQUIPMENT

In most of the finest stables in this country, FISKE Sanitary Stable and Barn Equipment has been installed. This includes both the privately owned and commercial stables. Hundreds of architects have specified our equipment because they have felt that by so doing they best served the interest of their clients. We have illustrated a few

installations, each showing a different type of our standard Stable Equipment, the result of 80 years of specialized experience in this construction. You will find us ready to co-operate when unusual conditions require special treatment. Our complete catalog of Stable Equipment will be sent on request as well as any special information.

A FEW RECENT INSTALLATIONS

*Installation**Architect*

Frank Altschul, Riverbank, Conn.—R. H. Dana
Luther L. Blake, Convent, N. J.—Aymar Embury, II.
William E. Bruyn, Gardiner, N. Y.—Teller & Halverson
Boulder Brook Club, Scarsdale, N. Y.—Hart & Shape
Borden Farm Products, 3 Stables—J. C. Schaeffler
S. Sloan Colt, Tuxedo Park, N. Y.—Peabody, Wilson & Brown
Walter P. Chrysler, Cambridge, Md.—Reinhard & Hofmeister
Alfred A. Cook, Mount Kisco, N. Y.—Taylor & Levi
Henry A. Colgate, New Vernon, N. J.—Pearsall & Mills
Joseph P. Day, Short Hills, N. J.—William W. Renwick
Edsel Ford, Seal Harbor, Me.—Duncan Candler
W. R. Grace, Aiken, S. C.—James W. O'Connor
Richard V. N. Gambrill, Peapack, N. J.—James C. MacKenzie
Hamilton Farm, Gladstone, N. J.—William Whitehill
S. Reece Hatchitt, Centreville, Md.—Henry Powell Hopkins
John A. Hartford, Valhalla, N. Y.—James R. Thomson
Thomas W. Lamont, Palisades, N. Y.—Walker & Gillette

*Installation**Architect*

John W. Mackay, Roslyn, N. Y.—Cross and Cross
R. P. Noble, Greenwich, Conn.—Phelps Barnum
New York State Armories, Genesco, Newburgh, Peekskill, Staten Island, and Utica—State of New York, Architect
New York State Police Barracks, Hawthorne, Oneida and Troy—State of New York, Architect
Dr. C. V. Paterno, Armonk, N. Y.—Cherry and Matz
W. V. R. Ruxton, Greenwich, Conn.—Ludlow & Peabody
Walter T. Rosen, Katonah, N. Y.—C. F. Rosborg
John J. Raskob, Centreville, Md.—T. V. Wadleton
Miss Natalie Reynal, Bedford, N. Y.—George P. Butler, Jr.
E. B. Schley, Far Hills, N. J.—Hyde & Shepherd
Percy Straus, Port Chester, N. Y., and Red Bank, N. J.—Alfred Hopkins Associates
Clarence Mott Wooley, Greenwich, Conn.—Robert Currie
Harrison Williams, Bayville, L. I.—Delano & Aldrich

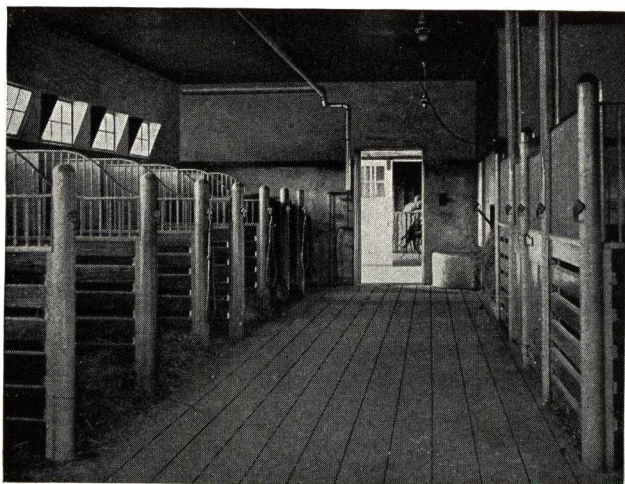


Fig. 3-AK
Farm Stable of Marshall Field Estate,
Huntington, L. I.
John Russell Pope, Architect
Alfred Hopkins, Associated

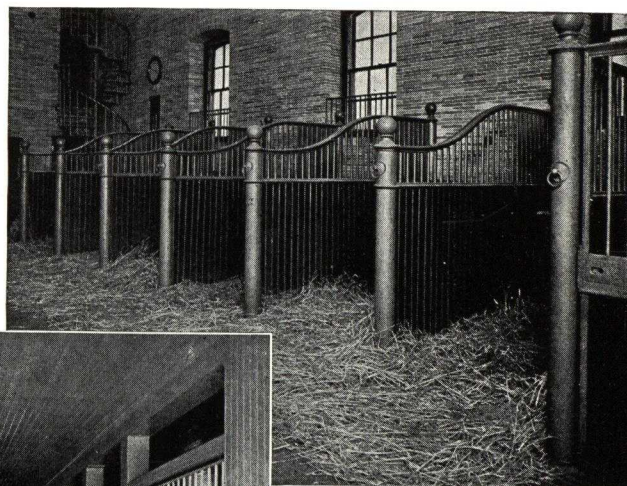


Fig. 7-AK
John D. Rockefeller Stable, Pocantico
Hills, N. Y.
William Wells Bosworth, Architect
Range of Single Stalls and Box Stalls
using the heavy English type fittings.
FISKE Sanitary Stall Drains used in
this stable.

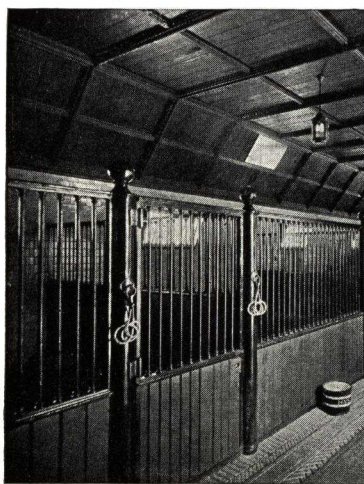
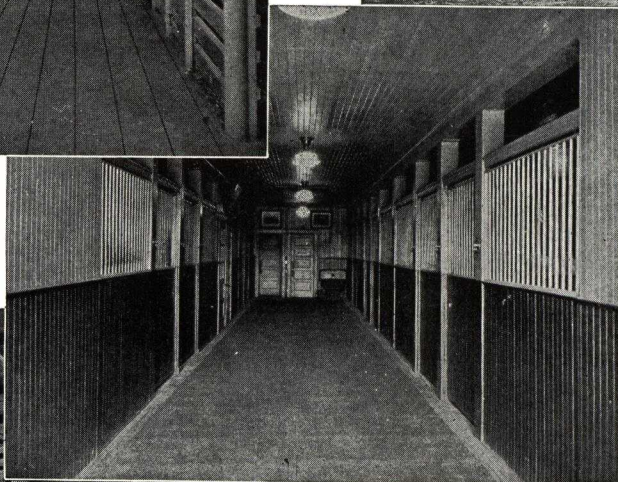


Fig. 59-K
Herbert N. Straus Stable, Red Bank, N. J.
Alfred Hopkins and Associates, Architects
A very fine example of a low front type of Box Stall with iron bound doors.



At Center: Fig. 62-K
Amory L. Haskell Stable, Bellmore, N. J.
Seymour and Braun, Architects
Box Stalls with sliding doors using split posts and double partition.

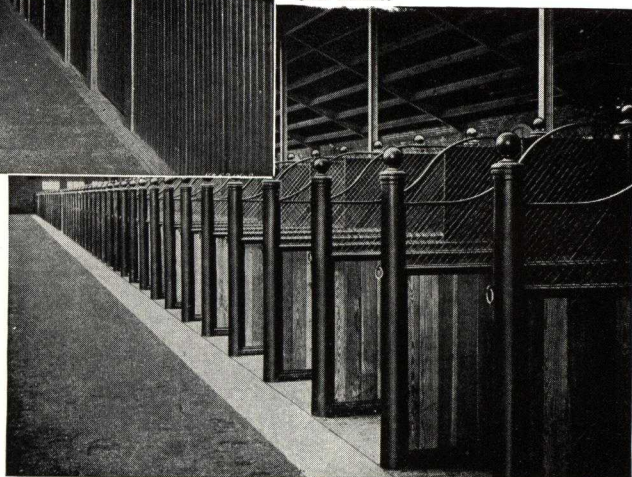


Fig. 51-AK
New York State Fair Grounds Horse Stable, Syracuse, N. Y., 392 Stalls
New York State Architect's Office

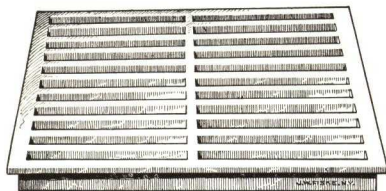
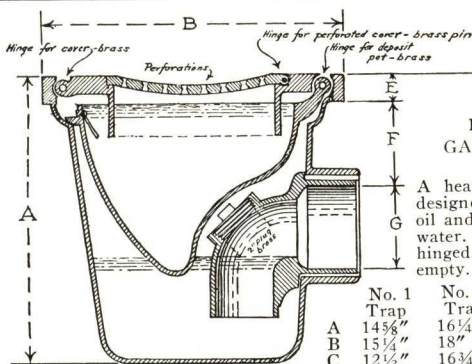


Fig. 173-EK

RECTANGULAR GRATINGS FOR CONCRETE

(Sizes do not include $\frac{5}{8}$ " flange all around)

9"x17"x2" deep	14"x19"x2" deep
12"x13"x2" deep	16"x20"x2" deep
13"x15"x2" deep	18"x25"x2" deep
14"x15"x2" deep	24"x36"x1½" deep
15"x17"x2" deep	36"x36"x2" deep

Fig. 204-AK
GARAGE DRAIN TRAP

A heavy Trap especially designed for separating oil and sediment from the water. The deposit pot is hinged and swings up to empty.

	No. 1	No. 3	No. 1	No. 3
Trap	14½"	16¼"	13½"	1½"
A	15¼"	18"	E	4½"
B	12½"	16¾"	F	4½"
C	9¾"	12½"	G	5"

Nos. 2 and 4, same size as Nos. 1 and 3, but have polished brass top grates.

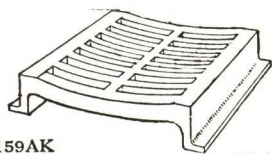


Fig. 159AK

HIGHWAY CATCH BASIN FRAME & GRATING (Very Heavy)

24" long, 22½" wide, 5½" deep
Grating only, 20½"x20", 2½" thick in center



Fig. 196EK

LIGHT GUTTER BASIN & GRATE

For lawns & carriage drives, not for street use
18" wide x 24" long x 5" deep
Grating only, 16"x22"

HEAVY GUTTER BASIN & GRATE

For roadways, streets, parks, cemeteries, etc.
No. 2—18" wide x 24" long x 5" deep
Grating only, 16"x22"
No. 1—9"x15"3" for use in draining small areas. The outlet is so designed that it can be used on 4", 6", 8", or 10" pipe.



Fig. 196FK

SAFETY COAL HOLE COVER & FRAME

Cover	Frame
No. 1—18"x18"	23"x23"
No. 2—22"x22"	27"x27"
No. 3—30"x30"	35"x34"

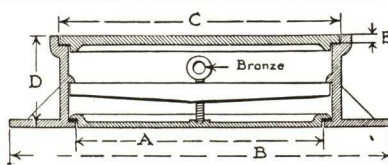


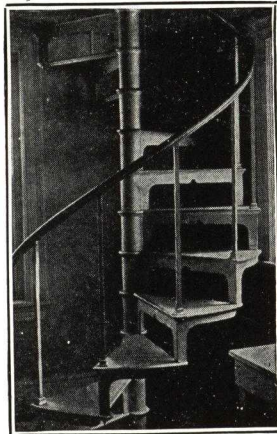
Fig. 173-JK

MANHOLE FRAME AND COVER (ROUND)

With Inside Cover, Rubber Gasket and Locking Bar

Pattern	Dimensions, inches					Weight lbs.
	A	B	C	D	E	
No. 1, heavy	20	36	26	10	1¼	560
No. 2, heavy	30	46	36	12½	1¼	950
No. 3, heavy	24	42	29	11½	1¼	560
No. 4, medium*	18	28	23¾	8	1	260
No. 5, medium*	24	34	30	8	1	380
No. 6, medium*	30	40	36	8	1	490

*From patterns Nos. 4, 5 and 6 the bottom flange is omitted and a 3" flange added to the top frame.

Fig. 819-C
SPIRAL STAIRS

Furnished for all floor heights in 3'6", 4'0", 4'6", 5'0", 5'6", 6'0", and 7'0" diam.; 12 or 16 treads to a circle. Allow 2" clearance all around for hand-rail at wellhole.

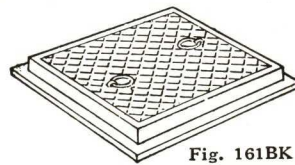
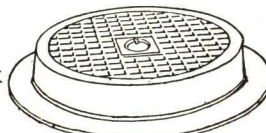


Fig. 161BK

MANHOLE FRAME & COVER, FOR CONCRETE

Size cover	Outside dimensions	Depth frame
12"x12"	16¼"x16¼"	3"
18"x18"	22"x22"	3"
24"x24"	28"x28"	3"
30"x30"	36"x36"	3"

Fig. 173AK



MANHOLE FRAME & COVER

Opening	Depth	Diam. on bottom	Cover
20" (light pattern)	4"	26½"	20½"
20" (deep pattern)	6½"	28¾"	20½"
20" (heavy pattern)	4¾"	27"	20½"
24" (light pattern)	6"	31½"	24½"
24" (heavy pattern)	6"	31½"	24½"

Fig. 173BK
GRATING

To fit in bell ends of soil pipe

Size of pipe	Grating
8"	10"
10"	12"
12"	14¾"
15"	17¾"
18"	20¾"
20"	23¼"
24"	27¾"

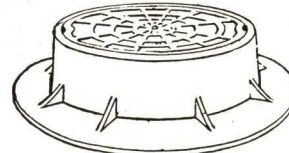


Fig. 163K

MANHOLE FRAME & COVER

No.	Clear opening	Size cover diam.	Flange	Depth	Weight
13	22¼"	24"	31½"	8"	385 lb.
28	22"	24"	31½"	8"	405 lb.
45	23"	25"	37"	10"	500 lb.
98	24"	28"	38"	8"	509 lb.
36	21¼"	22½"	38¾"	10½"	545 lb.

Fig. 151-K
VICTOR VENT (Cast Iron)

With wire mesh backing and shutter. Size 16" x 9"

For 2x3", 3x4", 4x5" rectangle leaders 9, 12, 18, 24, 30, 36, 42, 48, 54, 60 and 72" long. Lugs furnished on Shoes 24" and longer.

Fig. 766-DK Leader Shoes for round leaders of same lengths. Both types furnished with elbows at bottom for surface drainage if desired.

Fig. 761-HK
LEADER SHOE (See below)

Fig. 201CK

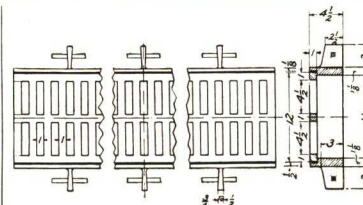
CAST IRON GRATING

For concrete or iron gutter. Width 5¾"



Fig. 201DK

GUTTER COVER.	Wide	Thick	Wide	Thick
For concrete gutter	3½"	¾"	7"	1½"
	4"	¾"	8"	1½"
	5"	1½"	9"	1½"
	6"	1½"	9"	1½"

Fig. 182-AK No. 30
CAST IRON GRATING AND CURBING

THE FORMAN COMPANY

Manufacturers of Signs, Letters and Tablets in Bronze, Brass,
Aluminum, Nickel Alloys and Other Metals

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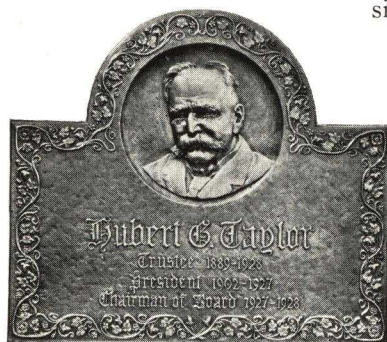
Having skilled talent at our command, we can assure the finest degree of workmanship—whether the project be a simple memorial plaque

or a tablet requiring elaborate modeling — and at a surprisingly low cost.

It is due to this assurance of complete satisfaction, that architects and building contractors turn to us with their specific tablet problems.

We offer designs of our own conception—or built from ideas furnished by our clients. There is, of course, no charge for this service.

On this page we show the results of recent typical installations.



FORMAN

Typical letters in Cove, Flat, Round, Round Edged, and Bevel or Prismatic Face, cast or fabricated in bronze, aluminum, nickel silver, stainless steel, etc., in all sizes, shapes and styles.

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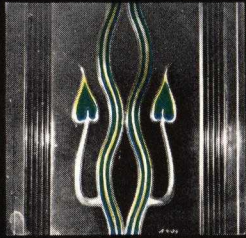
PLANTS BOSTON, MASS. • CHAMPAIGN, ILL. • OFFICES PRINCIPAL CITIES

SUPER STAINLESS-STEEL ARCHITECTURAL CASTINGS FOR

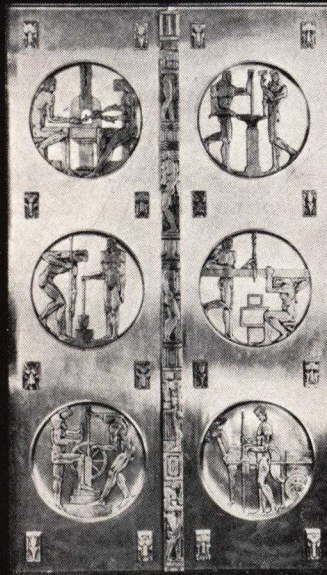
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KLOIZENAY

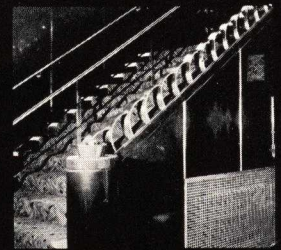
—FUSED GLASS—
—IN COLOR ON—
—LIVING STEEL—
U.S. PATENT NO. 2,001,725



Spandrel with cast ornament. By Raymond Hood.



Doors designed and executed by Oscar Bach with ETERNAL metal castings.



Stainless Steel stairway, Earl Carroll Theatre, N. Y. George Keister, Architect.



Head from life by I. Noguchi, N. Y.



Sculpture by I. Noguchi.



KLOIZENAY name plates.



15

Railing by Umberto D'Atri.

THE UPJOHN COMPANY



Upjohn Building, Kalamazoo. Albert Kahn, Architect.



KLOIZENAY sign.



16



17

KLOIZENAY rosettes.

The only metal known to man, other than gold or platinum, which does not foul its own face (by oxidation) is stainless steel. History records no permanent colors except glass and ceramics. Stainless Steel with fused glass in colors combine the two primitives of color and reflected light. Outdoor murals are now possible—cornices do not need heavy third dimension for contrast—for color is more visible than shadow.

ETERNEL metal is Super-Stainless Steel—exceeding U. S. Navy specifications—higher in chrome and nickel than rolled "stainless". It is the cast complement to U. S. S. 18-8,—Allegheny Metal—Enduro—Rezistal—etc.

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Send for Catalogue in Color



KLOIZENAY plaque, main entrance gate, Century of Progress.



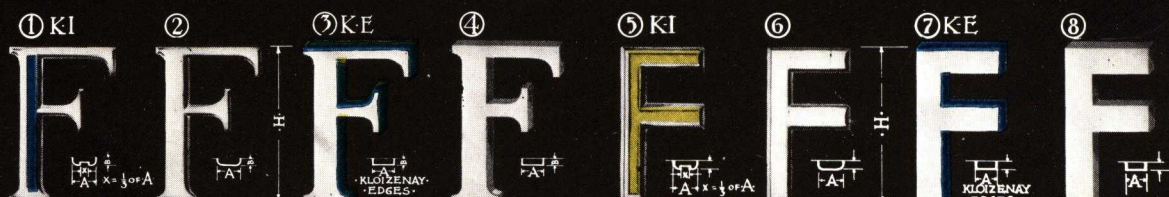
KLOIZENAY tablet.



Insignia and flagstockets KLOIZENAY (Red, white and blue), Boy Scout Building, Pittsburgh.



MODERN TYPE OF LETTERS



① KI POLISHED-WITH-KLOIZENAY-RECESS ② POLISHED ③ KE POLISHED-FACE-ONLY ④ POLISHED-FACE-AND-EDGES ⑤ KI POLISHED-WITH-KLOIZENAY-RECESS ⑥ POLISHED ⑦ KE POLISHED-FACE-ONLY ⑧ POLISHED-FACE-AND-EDGES

STANDARD LETTERS



Various applicable designs.

KLOIZENAY is available in practically all colors and ETERNAL metal is supplied in a variety of finishes from mirror to dark oxide. Backgrounds can be finished in lead, gold, or other metals. ETERNAL metal requires no polishing (washes like glass with Bon Ami), is stronger than steel with the finish of platinum. One hundred per cent solid stainless steel—not a surface treatment. Indestructible and everlasting. Stainless steel and platinum are the only "white" metals. All others are "white" only until they turn gray, black, green or brown. An inescapable fact.

While bronze, stone and weathered aluminum are light absorbing monotone media depending upon shadows for contrast ETERNAL metal and KLOIZENAY are light reflecting media. "One and one-half dimensional" shallow silhouette bas relief, as here illustrated, is the most effective and economical form. Cost compares with finest bronze tablet work—but one foot of KLOIZENAY has more decorative value than a yard of soft metal. Apply KLOIZENAY ornament on stainless steel sheet, Carrara glass, Vitrolite, Macotta, marble, Bakelite, stone.

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Architectural Metal Work

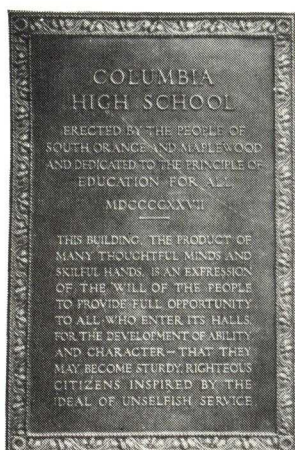
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WESTERN SALES OFFICE: 3849 West Lake Street, CHICAGO, ILL.

FACTORIES: LONG ISLAND CITY, N. Y. and CHICAGO, ILL.

ROMAN BRONZE WORKS (Subsidiary) CORONA, L. I., N. Y.

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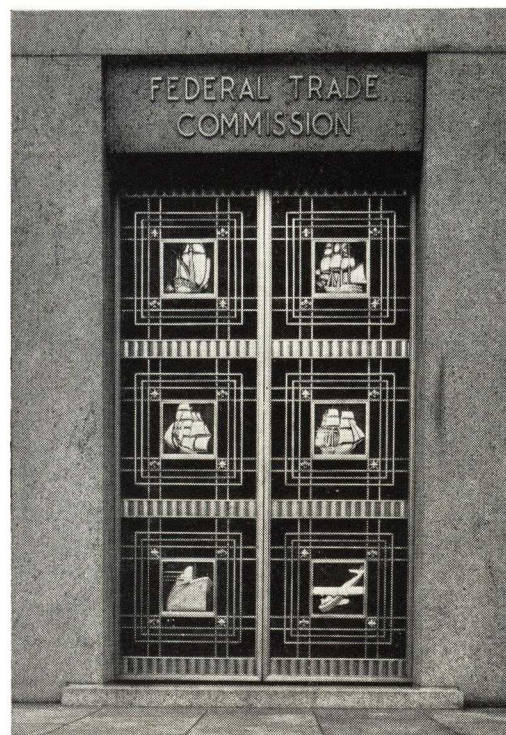
In the field of statuary, Roman Bronze Works (a subsidiary) combine art and fine craftsmanship — whether in delicate, small pieces or in heroic statues.



Portal of Goelet Building, New York—in solid nickel silvers, both rich and varied in color
103J

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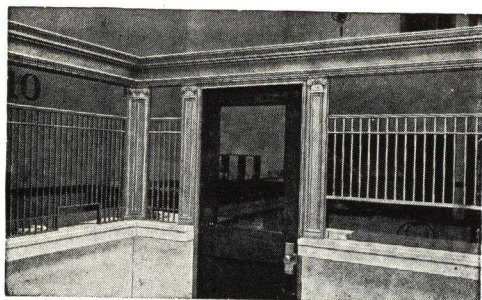
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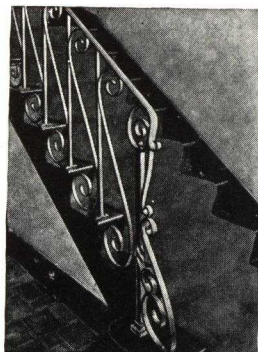
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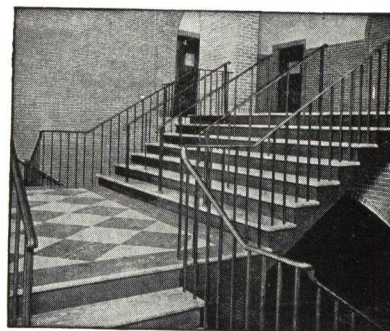
Separate catalogues and bulletins on different items furnished on request. Let us know your requirements and full information will be forwarded to you promptly.



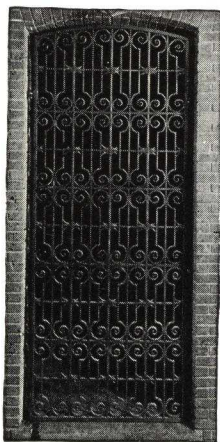
Bank and Office Cage



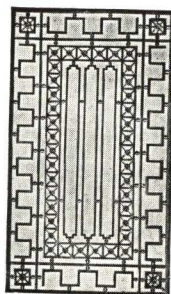
Iron Stair Railing



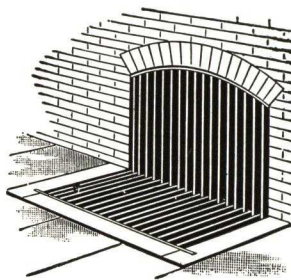
Steel Stairs



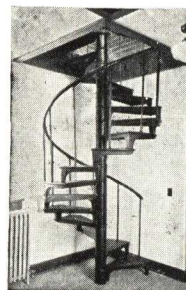
Gate in Archway of School Building



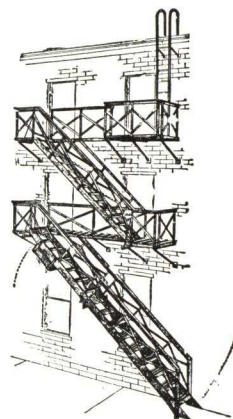
Ornamental Grille



Sidewalk Grating or Door



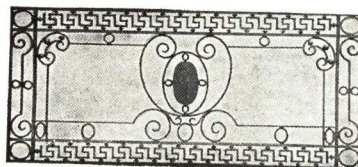
Spiral Stair



Fire Escape



Ornamental Metal Work



Metal Railing

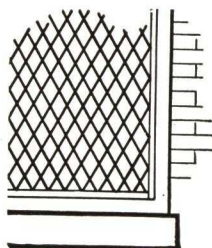


Open Mesh Partition

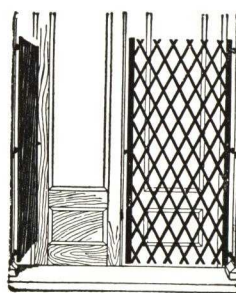


Modern Chrome Furniture

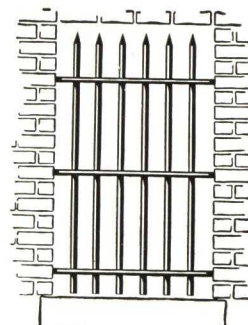
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Drawing and specification shown in another section. See File Index.

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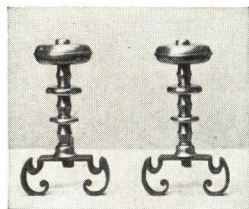
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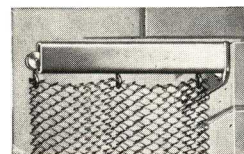
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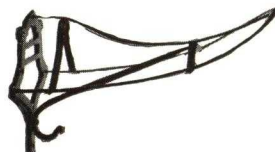
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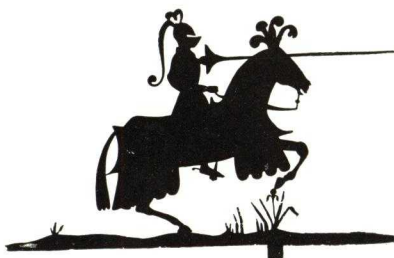
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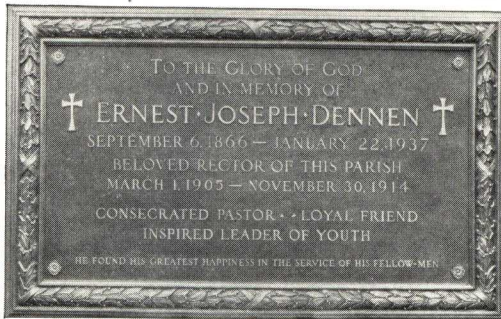
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Colossal Bronze Equestrian Monument, Manchester, N. H.
LUCIEN GOSSELIN, Sculptor



Sculptured Bronze Tablet



Gold Plated Bronze Rubrical Tabernacle



Bronze Altar Set



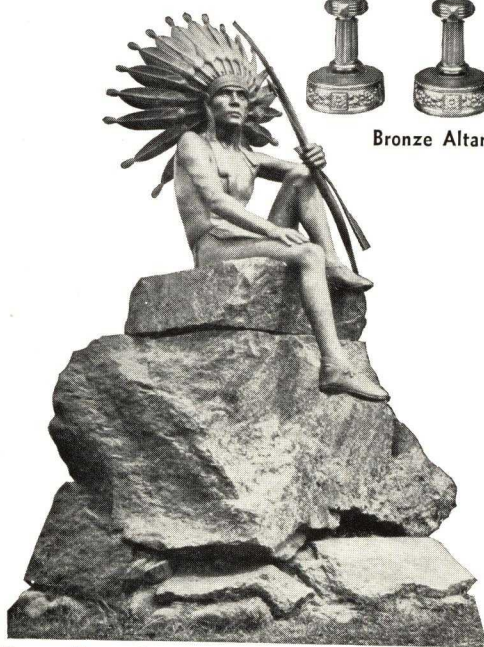
Bronze Bas-Relief



Bronze Lamp, College of Pharmacy, Boston, Mass.



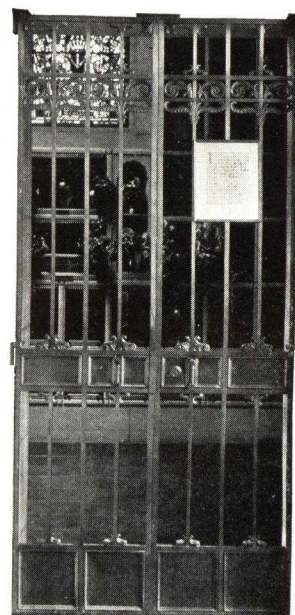
Bronze Bust Placed at State House, Boston, Mass.



Bronze Figure, American Indian Museum, Harvard, Mass.
PHILIP SEARS, Sculptor



Bronze World War Flag Base



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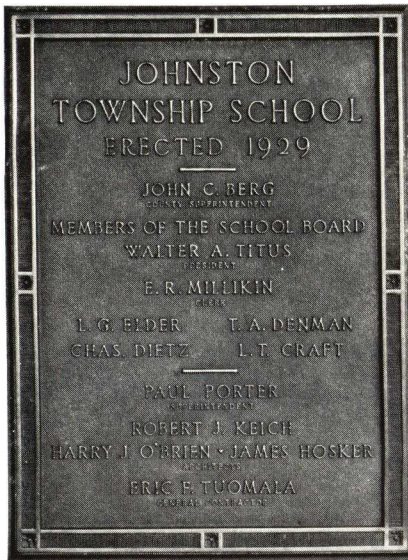
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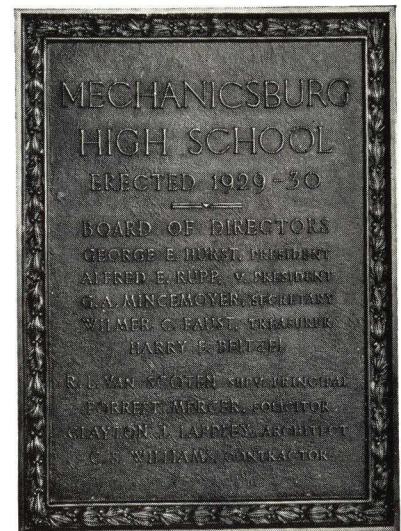
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Illustrated 18"x24". Made any size



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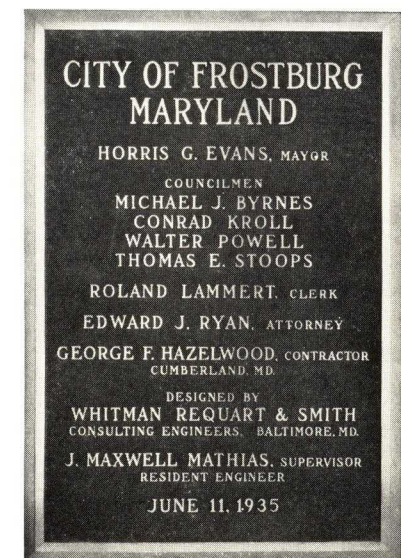
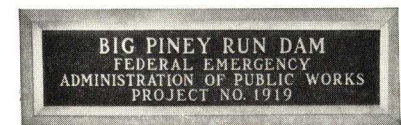
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SPECIALTIES

Kalamein, Hollow, Extruded and Cast Doors of copper, bronze, aluminum, nickel and stainless steel. Bronze, aluminum and nickel Tablets and Letters. Genuine wrought iron, bronze and aluminum Railings and Gates. Special period Lighting Fixtures.

TYPICAL INSTALLATIONS

- Library of Congress Annex, Washington, D. C.
David Lynn, Architect
- Students' Service Building, University of Cincinnati
Harry Hake, Architect
- Ball State Teachers' College, Muncie, Ind.
George F. Schreiber, Architect
- U. S. Post Office, Amarillo, Tex.
- Wilson Junior High School, Port Arthur, Tex.
Mark Lemmon, Architect
- Archives Building, Washington, D. C.
- Public Health Building, Washington, D. C.
- Labor Department and Interstate Commerce Commission
Group of Buildings, Washington, D. C.
- U. S. Courthouse, Pittsburgh, Pa.



"A"



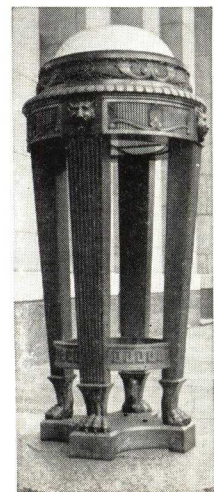
"B"



"Metalcrafts"
Doors of
Quality



"C"



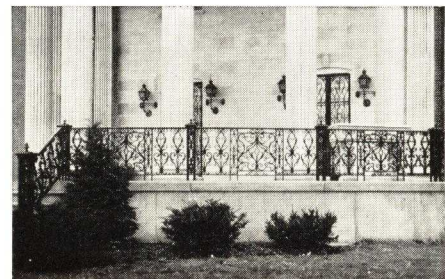
"D"



"E"

Key to Illustrations

- "A"—Holy Trinity R. C. Church, Dayton, Ohio
Pretzinger & Pretzinger, Architects
- "B"—Cyril Walsh Residence, Cincinnati, Ohio
Edw. J. Schulte, Architect
- "C"—St. Ann Church, Hamilton, Ohio
Edw. J. Schulte, Architect
- "D"—Supreme Court Building, Nashville, Tenn.
Marr & Holman, Architects
- "E"—City Light & Power Plant, Richmond, Ind.
Jos. R. Fallon, Architect
- "F"—Spindletop Hall, near Lexington, Ky.
E. T. Hutchings, Architect



"F"

NORTH AMERICAN IRON & STEEL CO., INC.

Designers and Fabricators of Ornamental Iron of All Kinds

TELEPHONE
Sunset 6-5302

116-136 57th Street, BROOKLYN, N. Y.

PRODUCTS

Special Railings and Fences	Warehouse Doors
Pipe Railing of all types	Waterproof Sidewalk Doors
Reticulated Grating	Special Forgings
Lamp Posts	Special Pipe Construction
Swaged and Continuous Taper Flag Poles	Stairs, Ladders, etc.

For Vertical Lift Doors, see File Index.

ORNAMENTAL IRON AND PIPE RAILING

Throughout the country will be found thousands of installations of our railings, fences and all types of metal work.

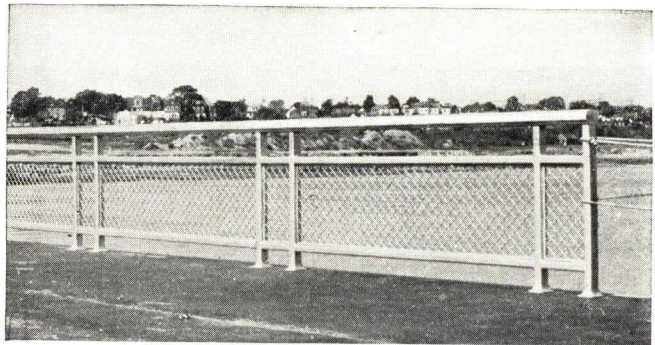
Our modern plant and equipment permit us to offer finest workmanship and expeditious execution.

We offer to architects and engineers a complete engineering service and are pleased to aid them in the design of any type of work.

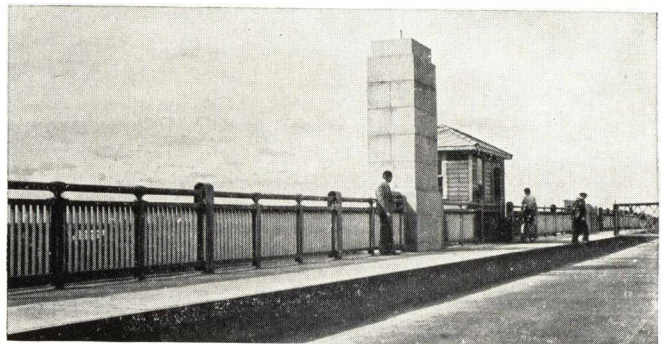
We are equipped to produce metal work in iron, bronze, aluminum or stainless steel, and the illustrations shown indicate but a small part of our products.

We stock thousands of fittings of all types and are in a position to make early shipments.

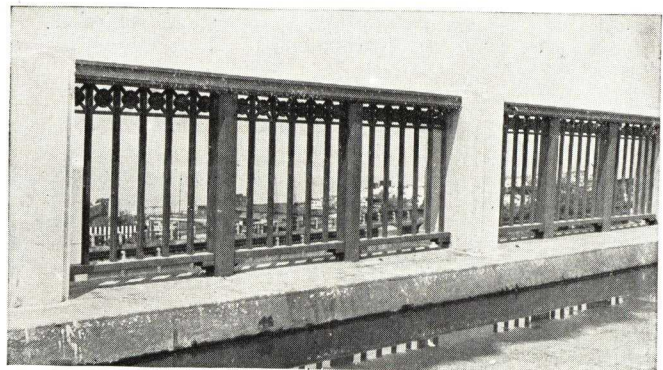
Detailed estimates and tentative designs will be furnished upon request.



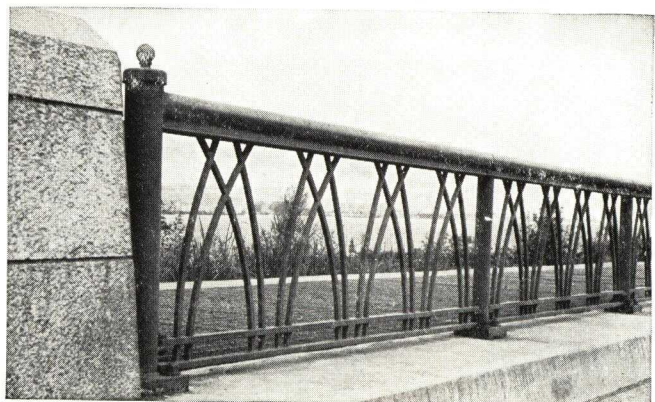
Combination Steel Frame and Woven Wire Fence at Boat Basin, World's Fair, New York, N. Y.



Bridge Railing, Flushing River Bridge, Flushing, L. I., N. Y.



Railing on the Henry Hudson Parkway, New York, N. Y.



Highway Fence, Henry Hudson Parkway
Over 30,000 feet of this fence installed on this project.



Typical Railing and Lamppost Produced in Our Shop

"NORTH AMERICAN" FLAGPOLES**Ground Setting—Roof Setting—Window Setting
Swaged Sectional Steel and Continuous Taper**

We offer a complete line of ground setting, roof setting and window setting flag poles.

Poles are made of the swaged sectional type as illustrated on left, or continuous taper types as illustrated on right, and furnished with straight-line taper or architectural entasis as required. Field joints, if required, are easily assembled and complete setting information is furnished with each pole.

Each pole is shipped complete with all fittings, including gilded ball, ball bearing truck, cleats, halyards and snap hooks. Iron fittings are hot galvanized to insure long service.

Ornamental bases of bronze or cast iron of

suitable size and design are available, and we are equipped to execute any special design desired. Special Finials or Weathervanes are available, as may be wanted.

A letter of inquiry will bring an estimate of cost and all the information or advice you require. We shall be pleased to co-operate with architects and engineers and furnish preliminary designs.

About 50 poles varying in height from 80 to 150 ft. have been made by us this year for the United States Government area of the New York World's Fair.

Flagpoles for Ground Setting

These poles are made of tubular steel or other materials as desired in any size, in any diameter or height. Each flag pole is delivered with all necessary fittings, such as ball, truck, snap hooks, cleats and ground protector. Each flag pole is painted one shop coat of red lead.

ROOF SETTING

There are two methods of anchoring flagpoles to a roof. One is by means of braces and the other by passing through the roof and fastened to the "Loft Floor."

Where braces are used the "brace line" (or point where the brace collar grips the flagpole) must be not less than 10% of flagpole height.

When the flagpole is fastened to the "Loft Floor" the height between the roof and loft floor is to be not less than 10% of the flagpole height.

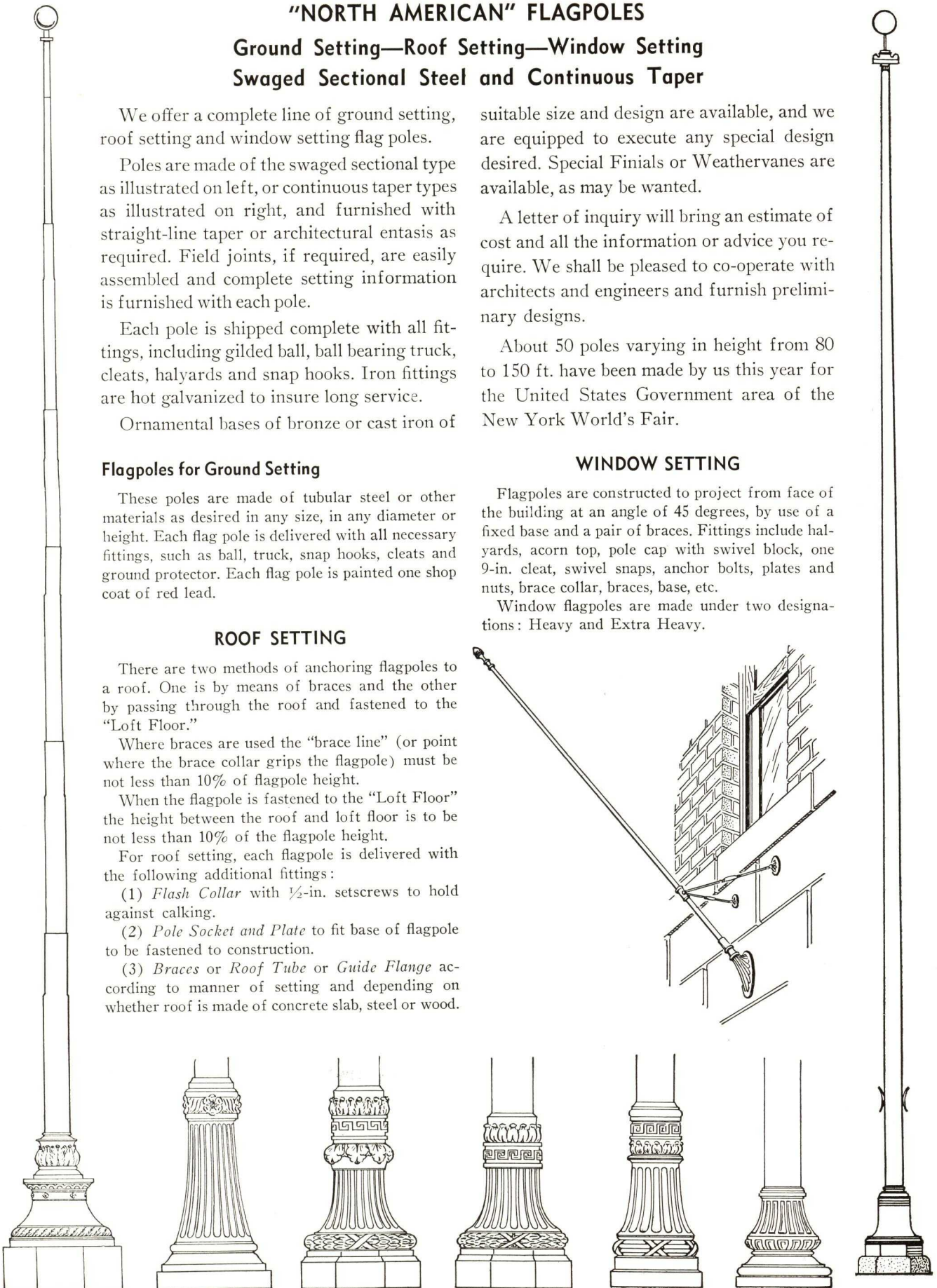
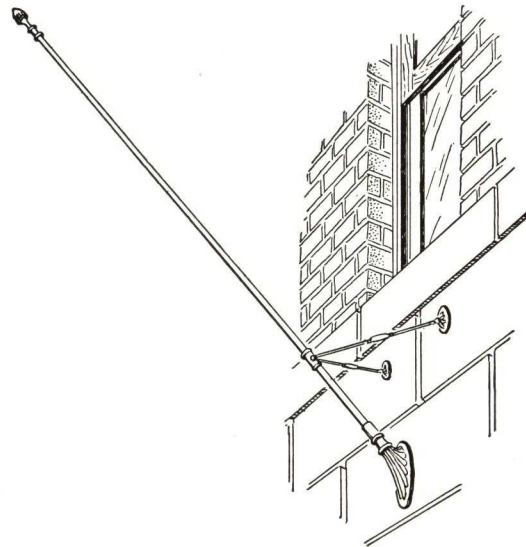
For roof setting, each flagpole is delivered with the following additional fittings:

- (1) *Flash Collar* with $\frac{1}{2}$ -in. setscrews to hold against calking.
- (2) *Pole Socket and Plate* to fit base of flagpole to be fastened to construction.
- (3) *Braces or Roof Tube or Guide Flange* according to manner of setting and depending on whether roof is made of concrete slab, steel or wood.

WINDOW SETTING

Flagpoles are constructed to project from face of the building at an angle of 45 degrees, by use of a fixed base and a pair of braces. Fittings include halyards, acorn top, pole cap with swivel block, one 9-in. cleat, swivel snaps, anchor bolts, plates and nuts, brace collar, braces, base, etc.

Window flagpoles are made under two designations: Heavy and Extra Heavy.



PENN BRASS & BRONZE WORKS

HENRY J. LANDOLT'S SONS

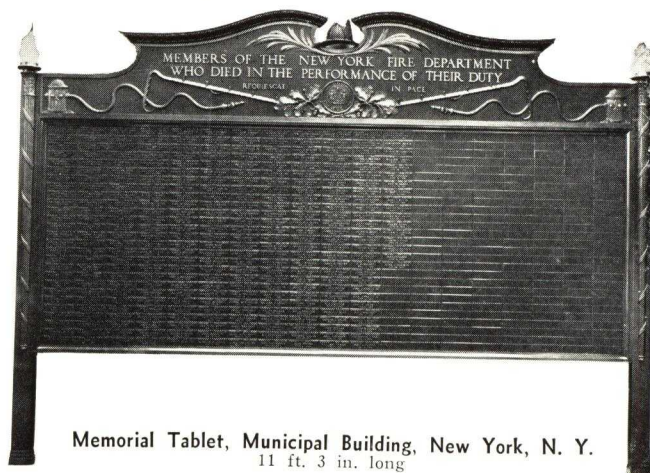
105-117 Dobbin Street, BROOKLYN, N. Y.

ORNAMENTAL BRONZE AND BRASS WORK

For Private and Public Buildings

Ornamental Bronze and Brass Work of every description, for private and public buildings:

Doors, Entrances, Balustrades, Newels, Stair Rails, Interlocking Windows, Grilles, Theater Railings, etc.; Cast Bronze Letters, Numerals and Signs for buildings; Gates, Folding Gates, Marquises, Mausoleum Doors and Supplies, Bank Enclosures, Counter Screens, Check Desks, Elevator Enclosures, Fences, Balconies, Lamp Standards, Brackets, Tablets, Push Plates, Kick Plates, Brass and Bronze Saddles, Door and Window Guards, Special Hardware, Special Castings (all Alloys), etc.



Memorial Tablet, Municipal Building, New York, N. Y.
11 ft. 3 in. long



Vestibule Entrance—Drydock Savings Institution



Entrance to Bank—Drydock Savings Institution
Cross & Cross and Lewis S. Weeks, Architects

CAST BRONZE AND ALUMINUM LETTERS AND TABLETS

Letters in All Sizes: Made from architect's details and also from stock patterns. Cast bronze name plates, signs and tablets

P

B

E

B

W

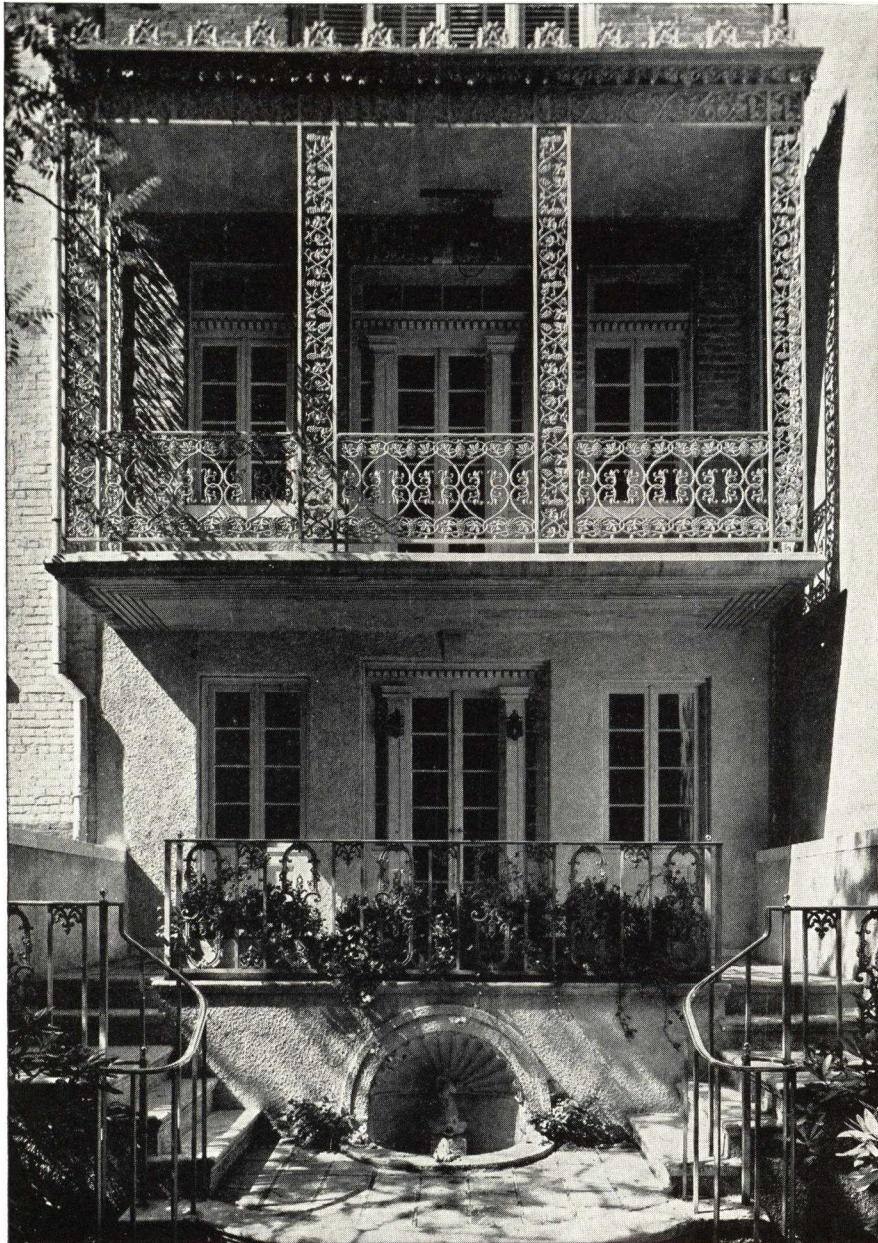
ESTABLISHED 1840

SMYSER-ROYER COMPANY

MAIN OFFICE AND WORKS
YORK, PA.

PHILADELPHIA, PA., Sales Office, 803 Architects Building

CAST IRON FOR VERANDAS, RAILINGS, ENTRANCES AND BALCONIES



Columns, Frieze and Pendant of Design No. 73. Upper Railing Design No. 31.
Lower Step Railing Made of a Combination of Designs No. 71 and 32.

These pages are typical ones from our 32-page catalogue which will be mailed on request.

Cast iron has been re-discovered by architects, builders and property owners. Many pleasing effects can be obtained at little expense

Many Smyser-Royer Company designs have a heritage of historical authenticity dating back to the early part of the 19th century. Many of the patterns have been in the possession of this firm since its founding in 1840.

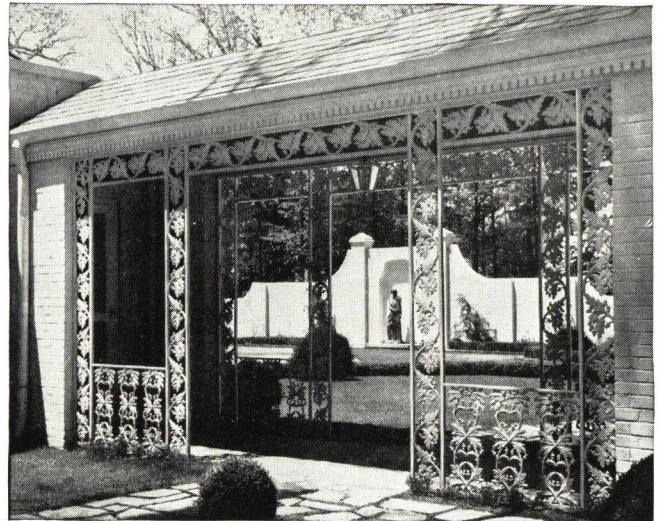


Veranda No. 73 (8½ In. Wide by 3 Ft. 4 In. Long)

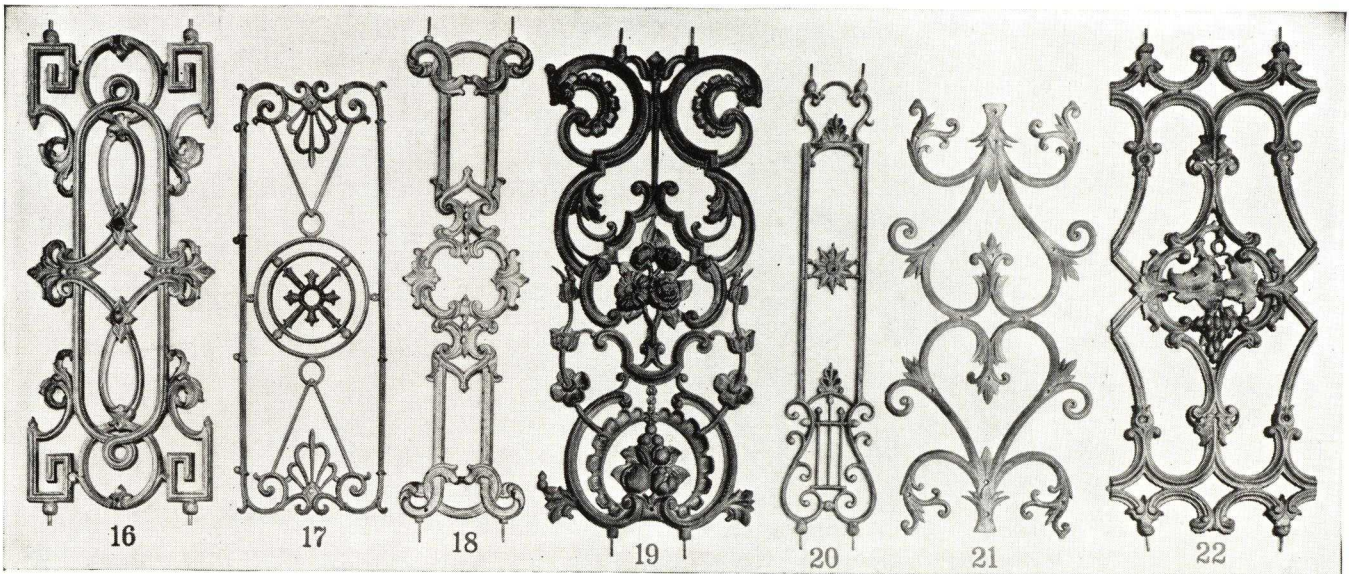


Willing, Sims & Talbut, Architects

Our Booklet on
Cast Iron Verandas
and Railings
contains a number
of different designs
and gives complete
information and all
necessary dimensions,
thereby making it
very easy for an
architect to complete
his own details by
using our Stock
Designs.



Design No. 72. Will W. Griffin, Architect

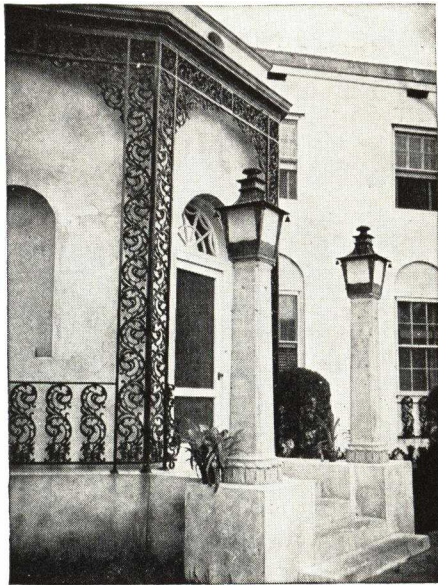


Our booklet contains over 130 different designs of railing panels, a few of which are illustrated above.

The important dimensions of these designs are given on the right.

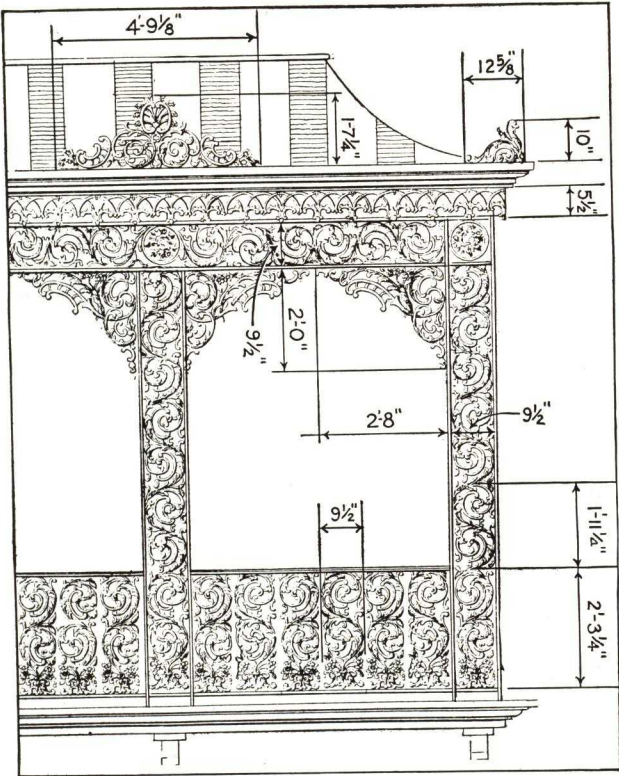
Design	Height	Width	Weight	Description
16	2' 5¾"	12"	15 lbs.	SBO
17	2' 27⁄8"	97⁄8"	10 lbs.	DF
18	2' 5¾"	8"	9 lbs.	DF
19	2' 6"	13¾"	13 lbs.	SBO
20	2' 3¾"	6"	4 lbs.	DF
21	2' 25⁄8"	12¾"	8 lbs.	DF
22	2' 55⁄8"	12¾"	12 lbs.	SBO

Key—"SBO" Single faced backed out. "DF" Double faced. "SF" Single faced.



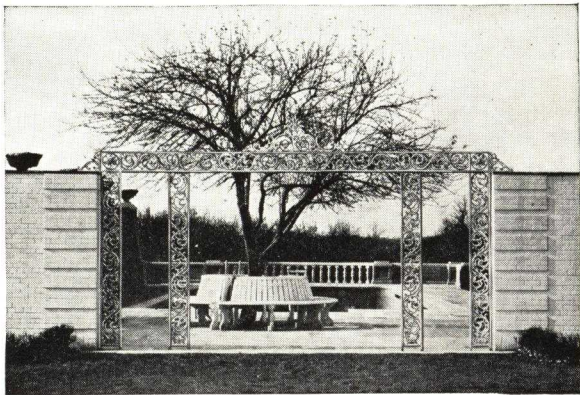
Design No. 69

JOHN MEADE HOWELLS, Architect

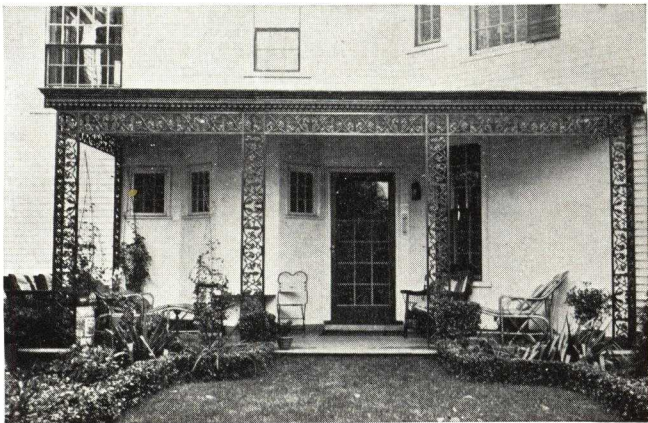


(Design No. 69)

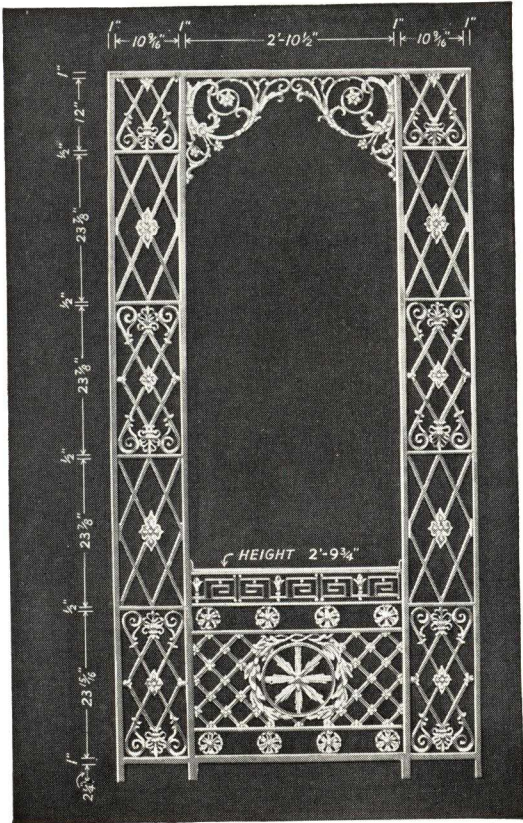
A Typical Cut from our Catalog Showing how all Dimensions are given



BRANDON SMITH Architect



SHEPARD & STEARNS, Architects



Design No. 74

THE TURNER BRASS WORKS

BRONZE DIVISION

Bronze, Brass or Aluminum Signs, Tablets, Name Plates, Grilles and Ornamental Work

GENERAL OFFICES AND PLANT

SYCAMORE, ILL.

CHICAGO OFFICE: 538 So. Dearborn Street

67 YEARS OF EXPERIENCE AND FINE WORKMANSHIP

For centuries bronze has been recognized for its beauty, its strength, its permanence, carrying everlastingly its atmosphere of stability and refinement. It is the ideal metal for memorials, trophies, tablets, honor rolls, historical markers, name plates, cemetery markers, for civic and commercial uses. For banks, business houses and professional men, no other form of plaque or name plate expresses an equal degree of stability and distinction.

Each tablet is fashioned into one solid piece of genuine bronze. The letters are raised, hand tooled and polished to a bright finish, background sunken and matted with a statuary, brown, Verde Antique or other tone for contrast reflecting an elegance and dignity found only in bronze.

The illustrations shown are but a few examples of the unlimited variety of styles, shapes and effects obtainable through master craftsmanship.

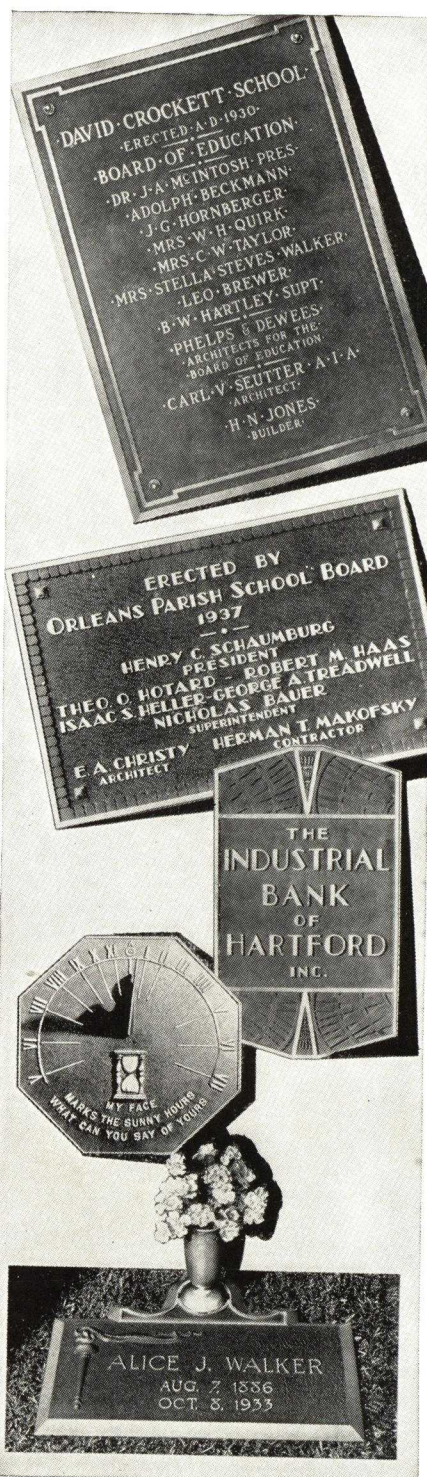
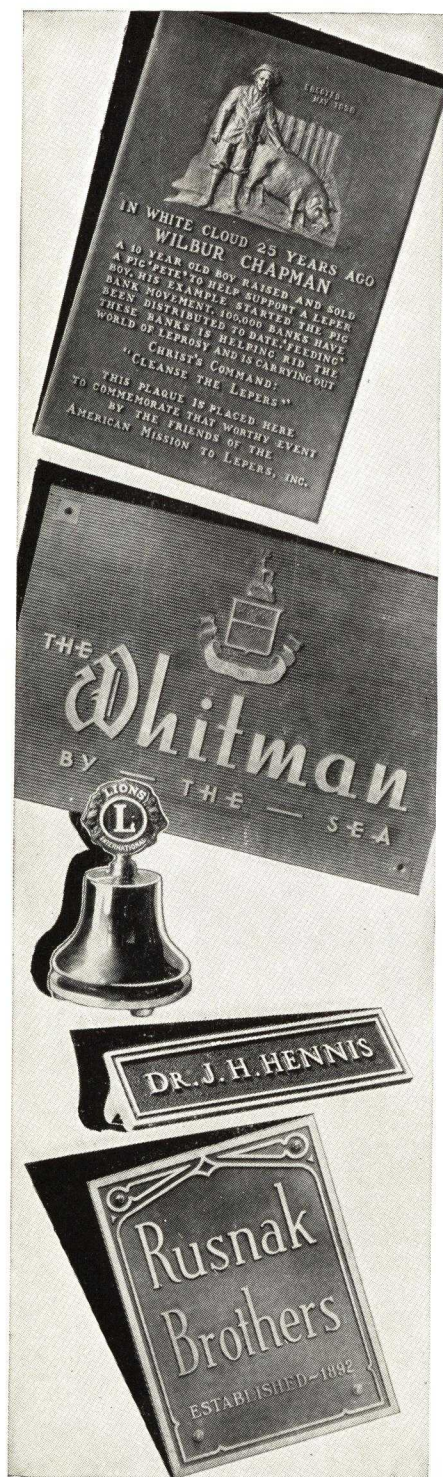
Our corps of expert artisans are prepared to handle your bronze work with skill and fine workmanship which comes after years of faithful service.

SERVICE

We will gladly prepare sketches or offer suggestions for your problems if supplied with data giving an idea what is required.

Whether you require a simple name plate or an elaborate memorial, we will be glad to submit estimates of cost with preliminary sketches or suggested inscriptions without charge or obligation.

We make bronze tablets for all leading architects, bridge builders and contractors, and name plates for such concerns as Westinghouse Electric & Mfg. Company, Landis Tool Company, C. H. Hanson Company and many others; also, bronze markers for memorial parks and cemeteries.



THE W. S. TYLER COMPANY

CLEVELAND, OHIO

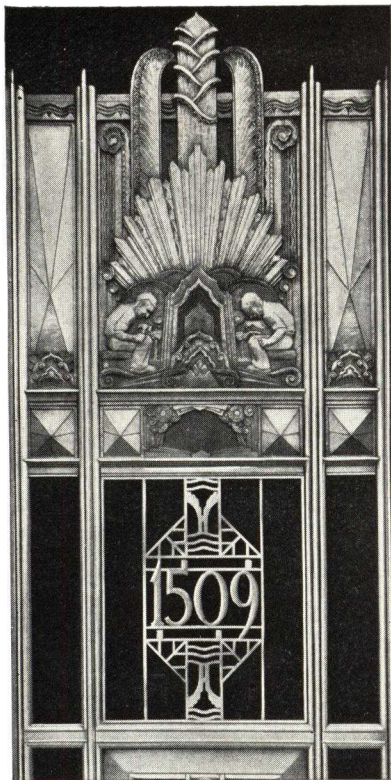
NEW YORK
BOSTON

BRANCHES
PHILADELPHIA
CHICAGO

LONDON, ENGLAND
ST. CATHARINES, CANADA

TYLER ARCHITECTURAL METAL WORK

For Complete Tyler Catalog, see File Index

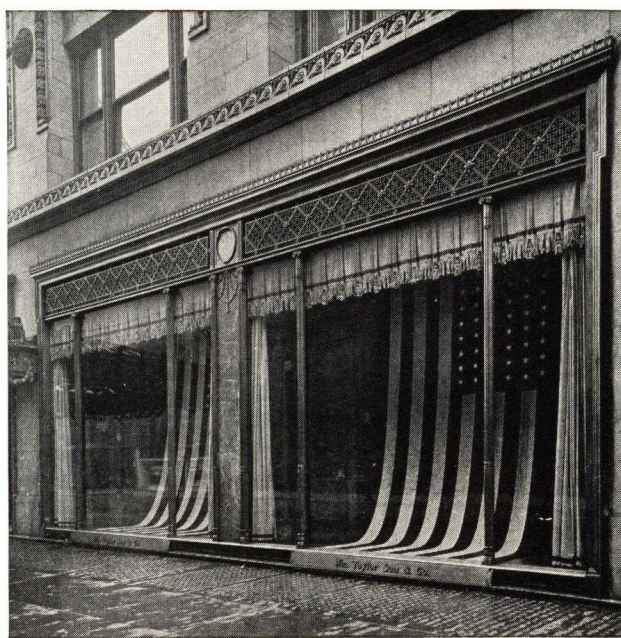
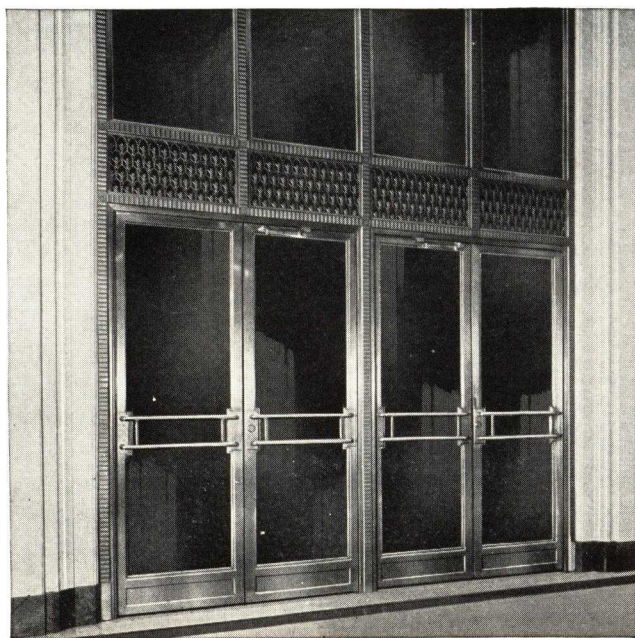


Tyler ornamental work includes every type of architectural interior and exterior metal for office buildings, banks, hospitals, public buildings, schools, apartment houses and administration buildings.

Outstanding buildings throughout the world are equipped with Tyler entrances, store fronts, marquees, display cases, store fixtures, directories, stairways, balconies, grilles, counters, screens, window frames and spandrels.

Tyler also produces bronze tablets and name plates, sculptural bronze plaques, mausoleum doors, gateways, etc.

The experience of Tyler craftsmen in handling all of the modern metals, such as Monel, stainless steel, aluminum and nickel, as well as bronze and iron is your guarantee of an exceptionally satisfactory installation.



UNITED STATES BRONZE SIGN COMPANY, INC.

Designers and Manufacturers of Bronze Tablets, Portraits, Letters, Plaques Fully Meeting Architects' Conceptions

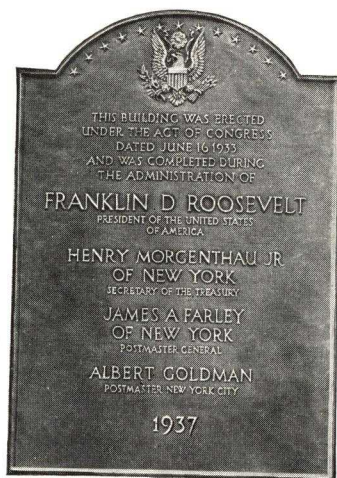
TELEPHONE
CAnal 6-4792

GENERAL OFFICES AND SAMPLE SHOWROOM
476 Broadway, NEW YORK, N. Y.

ARCHITECTURAL PRODUCTS

Tablets and Signs to architect's drawings, or from designs we furnish free. Bas-relief Portraits, Symbolic Plaques, accurately and economically executed.

Individual Letters in fine Standard patterns. Trademarks duplicated. Special Letters in Porcelain Enamel inlay or Alumilite, any size or style made by unique, successful methods. Signs, Solid—Fabricated, Nameplates. Directories, Exterior Cases for Clocks, Thermometers.



New York Post Office Tablets

Illustrating tablet cast from a sculptured mould. This method creates beautiful medallions and plaques, adding distinguished character to structures. We have talented craftsmen for production of fine designs. Our method of submitting drawings, photo enlargements and models is constantly used by architects.



P.W.A. Project Tablets

Write for the large list of standard patterns we have on hand. Re-use of moulds means savings and quick delivery. Free drawings, blueprints and proofs provide exceptional convenience.

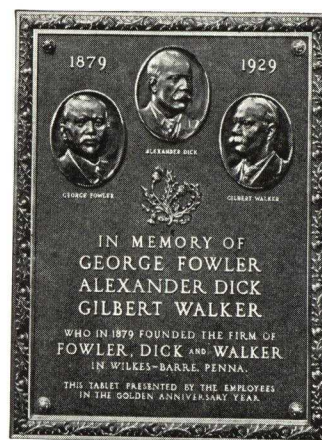


Porcelain Enamel Colors Inlaid on Bronze

The United States Bronze Sign Company inlays porcelain enamel colors on bronze letters and plaques. The porcelain and bronze combine beauty and permanence. Porcelain colors give uniformity and color match. We have equipped entire blocks of Store Fronts with porcelain inlaid letters. Write for exclusive information.

SERVICES—ORGANIZATION

We manufacture Tablets, Letters and Signs exclusively. Architects and contractors gain benefit of first hand facts and economical manufacturer's quotations. We invite inquiries while you are writing specifications. You receive fine drawings free. They practically equal a finished job. By our making only tablets, letters and signs we assure the architect true interpretation of his ideas. Comprehensive attention in correspondence. Air Mail and telegraphed quotations.



Bronze Tablets and Portraits

You are welcome to use our large selection of conventional ornamental patterns. We also duplicate your designs. Modelers and carvers transform drawings into accurate moulds. Portraits are sculptured after photographs. We give drawings in actual colors to help choose a design. There is no charge.

Write For Actual Photographs of Jobs Related to Your Needs.

Cast — Fabricated Porcelain Inlay Alumilite Gold Leaf and Standard Finishes

MODERN LETTERS

Write for outline drawings showing variety of styles. Can give great choice. Fine Special Designs

We manufacture the familiar Coved, Prismatic Round Face and Massive Architectural Roman letters. We are a center of production for Modern Letters used on glass and enameled store fronts. You are invited to use our free drawings that practically equal a finished job. We duplicate Script and Trademarks. Describe your needs. Constructive ideas furnished.

Some Users—Wabash Railroad, The Mimeograph Co., Coca-Cola Co., Childs Restaurants, McCrory Stores.

AMERICAN MAST & SPAR CORPORATION

Manufacturers of Flag Poles, Yacht Masts, Spars, Booms and Derrick Masts

TELEPHONE
Melrose 5-4940, 4941

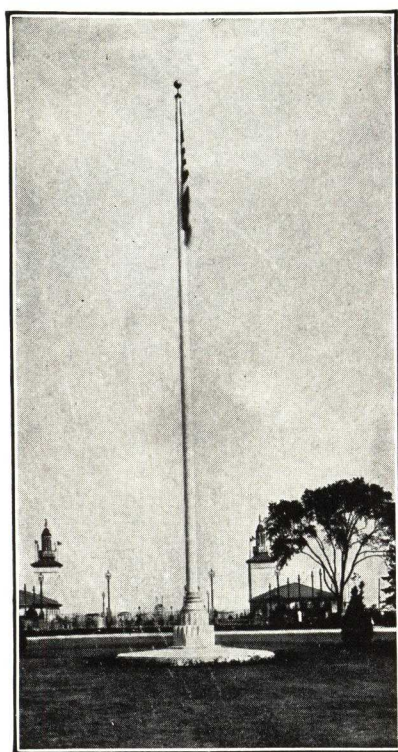
149th Street and East River
NEW YORK, N. Y.

CABLE
"MASTSPAR"

Metal Flag Poles

Made of copper-bearing steel, aluminum, bronze and stainless steel.

Made one-piece continuous taper; one-piece continuous taper with entasis; swaged jointed in several sections; and tilting flag poles.



Tapered Steel Pole

Ground Poles

Our ground poles are made of wood, copper-bearing steel, bronze and stainless steel.

Wood flag poles are made of selected grade yacht spar timber and machine turned to true entasis.

Metal flag poles are made according to flag pole manufacturers' standard specifications consisting of swaged sectional joints or continuous taper out of all metals.

Prices on application.

We Manufactured and Erected All the Flag Poles on the Rockefeller Center Buildings, New York



Umbrella Revolving Ball Bearing
Truck No. 30

Umbrella Revolving Ball Bearing Truck No. 30

When specified, poles are fitted with our Umbrella Revolving Truck No. 30, illustrated above. This truck, on comparison, shows many superior advantages. It gives the top of the flag pole a dressed appearance. It preserves the life of the pole. In addition, it is ball bearing and rustproof throughout.

Tilting Flag Poles

We manufacture tilting flag poles of the counterbalance type as well as the mechanical tilting type.

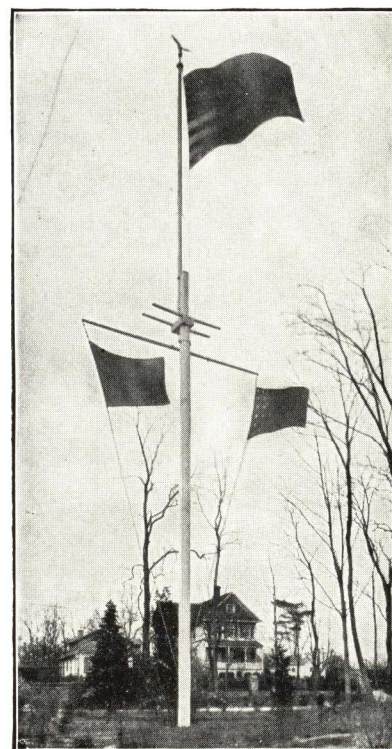
Wood Flag Poles

Made of especially selected yacht spar timber, machine turned, sand papered and given three coats of best white lead and oil.

Top Mast Flag Poles

Specially designed for yacht clubs, country clubs, golf clubs, homes, amusement parks and schools. Made in all sizes by shipbuilders who are master craftsmen, out of steel or wood.

All iron fittings galvanized. When we build a pole you can depend on a trim, ship-shape appearance.



Topmast Flag Pole with Yardarm
Built Like a Ship Mast

Made of copper-bearing steel or selected Oregon fir spar timbers, machine turned to true entasis. The Topmast is so made that it can be lowered in stormy seasons and for painting. All iron work is galvanized.

DIMENSIONS OF TOP MAST FLAG POLES

No.	Net length, ft.	Actual length, ft.	Heel diam., in.	Approx. weight, lb.
99	50	55	8	900
100	60	66	10	1500
102	75	82	12	2500
103	100	110	16	5900
104	125	137	20	8000

Designed and built by spar makers.
Prices upon application.

BABCOCK-DAVIS CORPORATION

Manufacturers of Steel Flag Poles—Sectional or Continuous Taper

474 Dorchester Avenue
BOSTON, MASS.

For other Babcock-Davis pages, see File Index

CONSTRUCTION AND ADVANTAGES OF BABCOCK-DAVIS EASY ACCESS POLE

U. S. Patent No. 1665535, April 10, 1928

Principle of the Easy Access Pole Design

It is designed to overcome the expense and difficulty often experienced in replacing fouled and broken halyards as well as making it easy to erect and paint. Every flag pole should be inspected once a year. With the Easy Access Pole, no steeplejack is required, as one man can raise or lower the pole in a few minutes.

A ratchet wrench is used to operate a worm gear, which turns against the geared edge of a quadrant secured to the bottom of the pole. The pole is raised or lowered or securely held in any position, making it possible to incline pole over parapet.

Economy of Erection and Upkeep

The saving in erection will offset the slight additional cost of the Easy Access Pole over that of the plainest type of pole.

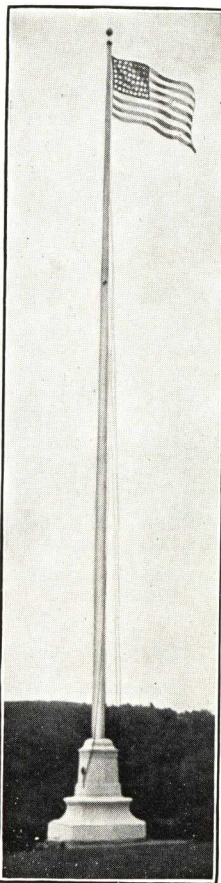
It is readily installed on all types of frame or fireproof roof construction and on grade foundations. For grade installation, a monumental aluminum or bronze base can be supplied to cover the operating mechanism.

Patented Easy Access Base Construction

One of the principal features of the base is that base plate and web plates are integral and installed as one. By this method no special requirements for long braces or extra flashings are required. The comparatively small and inconspicuous base is set on an island above the roof as shown in the details on the following pages.

The base also contains the worm which operates the gears of the quadrant on the bottom of pole.

The heavily galvanized base plate is drilled to receive anchor bolts. It is set in plastic cement and bolted to



B-D Continuous Tapered Flag Pole at Veterans Hospital, Rutland Heights

88 ft. 0 in. overall, 15 in. diameter at base and 5 in. diameter at tip, equipped with bonnet type halyard top and 12 in. gold leafed copper ball

roof construction, then roofing material is carried over it, thoroughly flashing the base.

The island type of construction is the most advanced method of setting flag poles. There has never been a leaky roof where any of our bases have been installed.

Poles Sectional or Continuous Taper

Standard poles are sectional, graduated to give a graceful taper. Continuous taper poles can also be supplied if specified.

Poles are constructed from copper-bearing steel tubing or steel pipe. Sections are shrunk and welded together. Field joints are readily made, upper pieces resting on heavy supports and aligned by setscrews, then caulked or welded in the field. Poles are open at the bottom and vented through top. All poles are given one coat of red lead and two coats of aluminum paint before shipment.

The Invisible Halyard Connector

Our invisible connector makes a continuous halyard that can be disconnected to renew and will always take strain of the weight of halyard off flag. With this connector, there is no opportunity to lose the halyard while removing the flag.

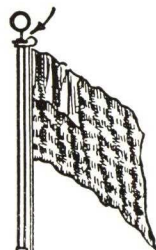
Specifications

Furnish and erect Babcock-Davis Easy Access Pole ...ft. high (if canted, specify degree of angle), equipped with (6, 8 or 10-in.) 22-karat gold leafed copper ball, ball bearing swivel top, continuous braided cord halyards, with invisible connector, halyard cleat, and operating ratchet wrench as manufactured by BABCOCK-DAVIS CORPORATION, 474 Dorchester Avenue, Boston, Mass.

All poles shall be given one coat of red lead and two coats of aluminum paint before shipment.

Note: For roof installation specify forming of island as shown in details to take base and building-in of anchor bolts. If on ground specify foundations and height carried above surface of ground and bolts located according to shop drawings supplied by us.

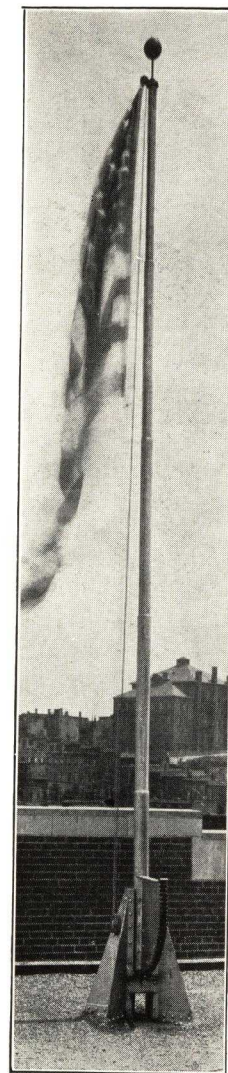
GOLD LEAF
COPPER BALL
BABCOCK-DAVIS
TYPE
BALL BEARING
SWIVEL TOP



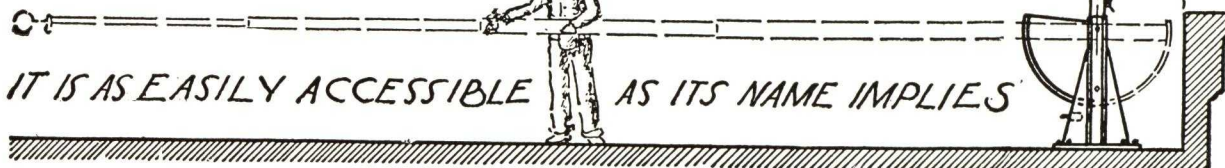
HALYARD

STEEL
POLE

2'-8"
MINIMUM



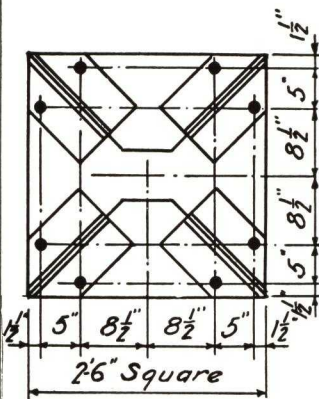
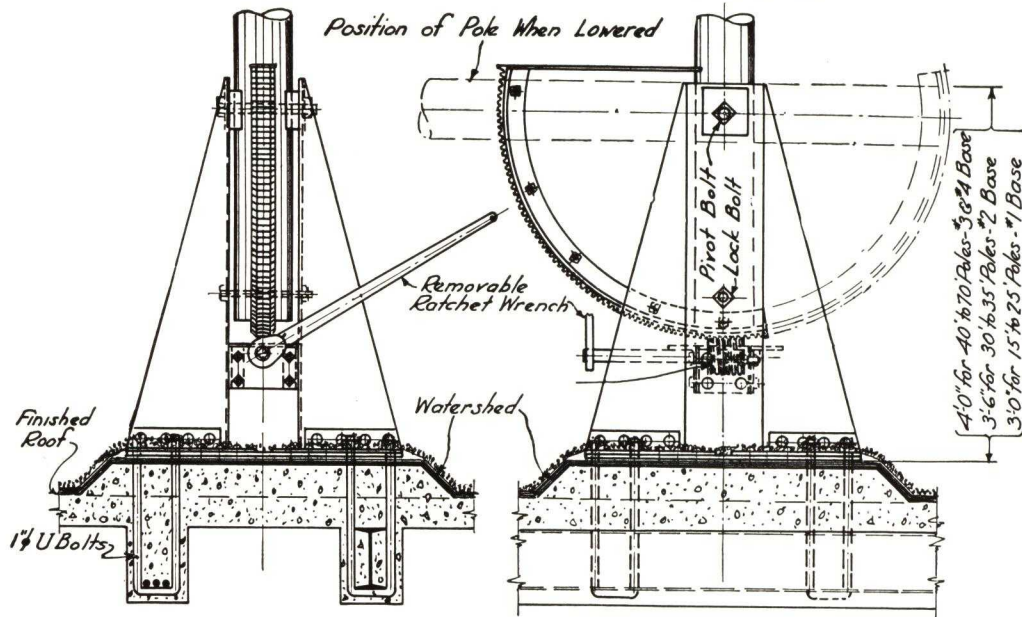
25-ft. B-D Pole, H. P. Hood Co. Building, Charlestown, Mass.



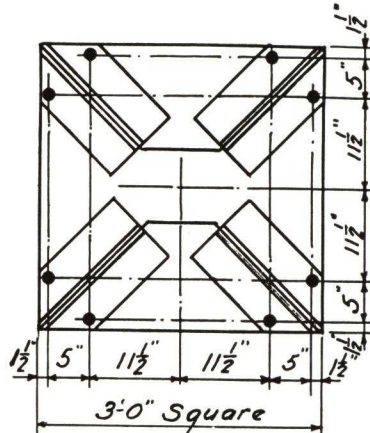
IT IS AS EASILY ACCESSIBLE AS ITS NAME IMPLIES

[2]

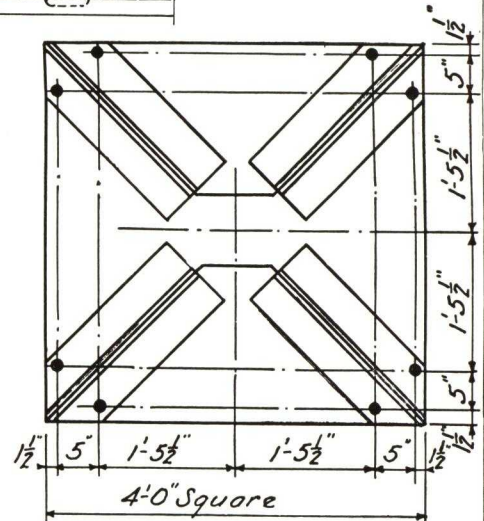
STANDARD ROOF ANCHORAGE



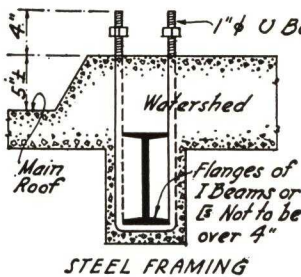
**NOS. 1 AND 2 BASE
FOR 15 TO 35-FT.
POLES**



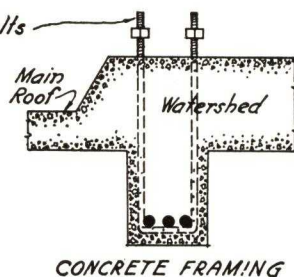
**NO. 3 BASE
FOR 40 TO 50-FT. POLES**



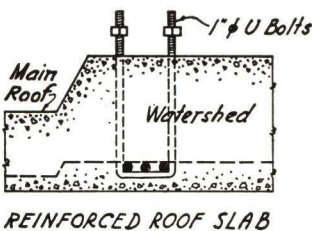
**NO. 4 BASE
FOR 60 TO 70-FT. POLES**



STEEL FRAMING

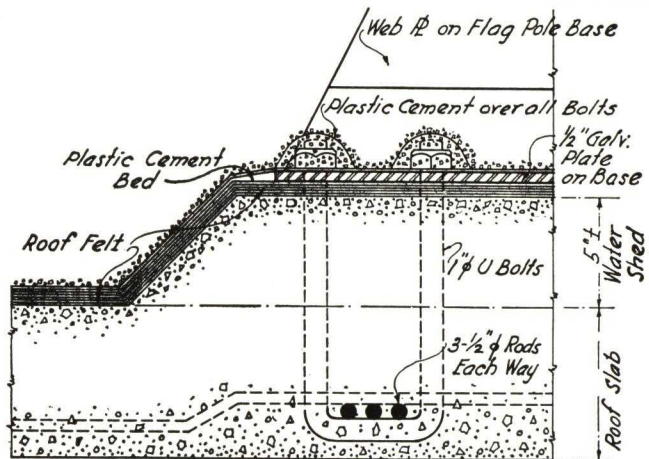


CONCRETE FRAMING



REINFORCED ROOF SLAB

**DETAILS,
SHOWING
SPACING OF
BOLTS FOR
BOLTING TO
ROOF**



**1/2-IN. SCALE DETAILS SHOWING METHOD
OF SECURING ANCHOR BOLTS TO
CONCRETE ROOF CONSTRUCTION**

B-D BALL BEARING, NON-FOULING REVOLVING HALYARD TOP

Patent Applied For

In selecting a flag pole, one very important point to consider is securing of halyard top which will always allow the flag to fly free and will not chafe or cut the halyards. The reasons why are clearly illustrated in the drawings below.

The new B-D Ball-bearing Halyard Top does not cut or chafe the halyards and allows the flag or flags to fly without fouling. It differs from the ordinary double halyard cap in principle in that the pulleys are on one side only, instead of opposite sides. For this reason the double halyards are always pulling together, straight over the pulleys of the B-D Cap, instead of across the edge of the pulley and petticoat of the ordinary type cap, thereby preventing chafing the halyard, especially if one flag is larger than the other. This chafing also occurs when only one flag is used on the ordinary type double halyard top.

The special ball bearing construction is so sensitive it

responds to the slightest shift of the breeze. The flag is always carried clear into the wind and cannot foul, no matter how strong or suddenly the wind shifts.

General Construction—Top either for single or double halyards is of two-bearing, free flying type. Bearings are made to rigid specifications, as compiled by U. S. Navy Department, governing all the control pulley bearings used for aeronautical purposes. There are 28 balls, 1/4-in. diameter in each top, encased so that rain or dirt cannot reach them.

Tops are made of aluminum with a cold rolled steel spire to take finial, which is a 20-oz. spun copper ball covered with 22 karat gold leaf, waterproof sized and soldered to a seamless brass tube. This spire will also accommodate any special design, such as eagles, vanes, etc., instead of the usual ball. The bronze halyard sheaves are roller bearing on a stainless steel pin. Top will be made of bronze if so specified.

*Pull of Flag on
of Pole*

*Note Halyard Leads
straight over Pulley*

*Pull of Flag on
of Pole.*

*Note How Halyard cuts
on Pulley and Petticoat
of ordinary type*

Pull of Flags

*Note Halyards Lead
straight over Pulleys*

*B-D Free Flowing
Double Top*

*Pull of Small Flag.
Pull of Large Flag*

*Note How Halyards cut
on Pulleys and Petticoat
of ordinary type.*

*B-D Free Flowing
Single Top*

*B-D
Invisible Halyard
Connector Makes
Continuous Halyard
No Free Ends
to lose*

*NEW B-D
HALYARD TOP*

*Avoid this type of
Halyard with two loose
ends. Flag takes entire
weight and strain with
the danger of losing
the free ends of the
Halyard*

OLD TYPE TOP

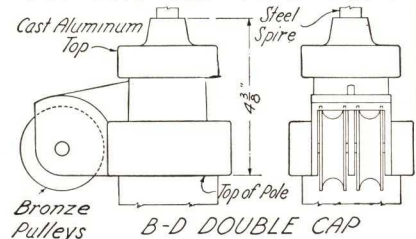
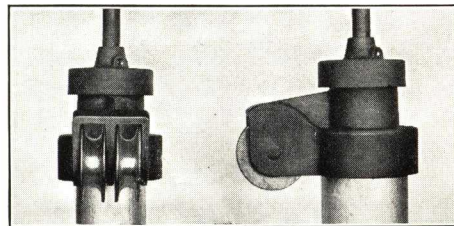
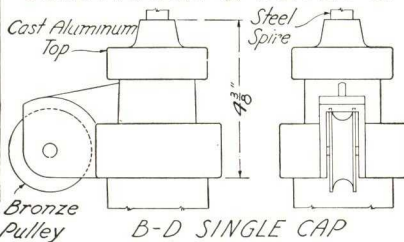
*Invisible Halyard
Connector*

*Note How
Halyards are clear
of Pole*

*NEW B-D DOUBLE
HALYARD TOP*

*Note How Halyard
Chafes on Pole*

*OLD TYPE
DOUBLE TOP*

COMPARISON OF ACTION OF NEW B-D FREE FLOWING HALYARD TOP AND OLD TYPE TOPS**A FEW INSTALLATIONS OF BABCOCK-DAVIS EASY ACCESS POLES**

ALABAMA: Toolen High School, Mobile
S. H. Kress Co., Montgomery

ARIZONA: Lowell School, Lowell

ARKANSAS: Park Hotel, Hot Springs

COLORADO: S. H. Kress Co., Colorado Springs
S. H. Kress Co., Pueblo

CONNECTICUT: First National Stores, Hartford
State Trade School, Hartford
State Armory, New Haven
Green Acres Farm, North Madison
The Edgar C. Stiles School, West Haven

DISTRICT OF COLUMBIA: Department of Interior Building
Woodward Lothrop Building, Washington
Cleveland-Emerson Telephone Building
Star Building, Washington
School, St. Augustine's Group, Washington

FLORIDA: S. H. Kress Co., Tampa

ILLINOIS: U. S. Post Office, Chicago
John Deere School, East Moline

KANSAS: Swift & Co., Kansas City
S. H. Kress Co., Wichita

KENTUCKY: Southern Bell Telephone Building, Louisville
Louisville Baseball Grounds, Louisville

LOUISIANA: American Bank Building, New Orleans

MAINE: Hancock County Courthouse, Ellsworth

MASSACHUSETTS: Boston City Hospital, Boston
Public Service Building, Boston
Edison Office Building, Boston
District Court Building, Springfield
St. Patrick's School, Stoneham

MICHIGAN: City National Bank Building, Lansing
Board of Water & Light Building, Lansing
Saranac High School, Saranac

NEBRASKA: Administration Building, Soldiers and Sailors Home, Grand Island
James Webb Store, Grand Island

NEW HAMPSHIRE: Armory, Dover

NEW JERSEY: Asbury Park Theatre, Asbury Park
L. F. Hersh Building, Elizabeth
First National Bank, Plainfield

NEW YORK: West Albany School, Albany
Clizbe Avenue Grade School, Amsterdam
Senior High School, Amsterdam
Auburn Senior High School, Auburn
Buffalo-Ammonia Company, Brooklyn
Abraham & Straus Dept. Store, Brooklyn
First National Bank, Lindenhurst, L. I.
First National Bank, Mamaroneck
Montauk Yacht Club, Montauk, L. I.
U. S. Courthouse, Buffalo

NO. DAKOTA: Leland Parker Hotel, Minot

OHIO: U. S. Post Office, Cleveland
Ohio Bell Telephone Co., Dayton
Norfolk & Western Railway, Portsmouth
First National Bank, Salem
Monroe Township School, Continental
Corapolis

PENNSYLVANIA: Municipal Building, Corapolis
Forest Oil Building, Bradford
St. Francis Hospital, Pittsburgh

RHODE ISLAND: R. I. Hospital Trust Co., Woonsocket

SO. CAROLINA: S. H. Kress Co., Spartanburg

SO. DAKOTA: City Hall, Sioux Falls

TENNESSEE: S. H. Kress Co., Elizabethton

TEXAS: High School, Brownsville
Negro Y. M. C. A., Dallas
Dreyfuss & Sons Store, Dallas
Montgomery Ward, Fort Worth
S. H. Kress Co., Laredo
San Angelo Junior College, San Angelo

UTAH: Bingham High School, Copperton

VIRGINIA: Brooks Transfer Co., Richmond
St. Joseph's Orphanage, Richmond
Norfolk & Western Railway, Roanoke

WASHINGTON: Larson Building, Yakima

WEST VIRGINIA: Chesapeake & Potomac Telephone Building, Charleston
Harrison County Courthouse, Clarksburg

MEMORANDA

ESTABLISHED 1888

HANSELL-ELCOCK COMPANY

Fabricators and Designers Structural Steel and Ornamental Iron
Manufacturers of Gray Iron Castings
Manufacturers and Distributors of the Carr Tilting Flagstaff

TELEPHONE
Crawford 3226

GENERAL OFFICE
3153 South California Avenue, CHICAGO, ILL.

STRUCTURAL STEEL AND ORNAMENTAL IRON

Experience and Facilities

For over fifty years this company has kept stride with the ever-changing construction methods, and as a result has developed a plant to meet the present day demands. We can well boast of our past achievements and point with pride to our contribution to the monuments of the construction industry. Our facilities are comprehensive in that we have a combination of Structural Steel, Ornamental Iron Plant and Gray Iron Foundry.

The wide variety of structures listed below suggest the magnitude and range of service HANSELL-ELCOCK COMPANY is equipped to render.

Structural Steel Work

Steel Frame Buildings, Public Buildings, Office, Mill,

Factory, Hotels and Apartment Houses; Auditoriums, Grand Stands, Freight Depots and Power Plants.

Ornamental Iron

HANSELL-ELCOCK COMPANY Ornamental Iron Work includes every type of Architectural Exterior and Interior Metal for Public Buildings, Office Buildings, Hospitals, Banks, Schools and Apartment Houses. We are equipped to manufacture to order such items as store fronts, directories, stairways, railings, grilles, counters, window frames, spandrels and wire work.

Foundry

We own and operate one of the largest gray iron, semi-steel and alloy casting jobbing foundries in the Middle West, specializing in the manufacture of machinery castings. Our Metallurgical Department is always in readiness to render service and fill the requirements of buyers demanding castings made to their own specifications.

THE CARR TILTING FLAGSTAFF ALSO STATIONARY FLAG POLES



Carr Flagstaff in Horizontal Position

Center of weight is constant whether pole is in vertical or horizontal position

The Carr Flagstaff is designed to overcome the disadvantages of the rigid, fixed pole. It has proved its outstanding advantages over all other types by increasing sales since 1914. Its simplicity of design, ease of operation and maintenance and its sturdy and well engineered construction has established its use by leading architects all over the United States.

brass nipple for connecting ball to truck; cleat, and half-yard of good quality with snap hooks.

CONSTRUCTION

Base—Supporting structure is of cast iron, which is recognized as better able to withstand the elements than ordinary structural shapes.

Socket

Pole socket is made of cast iron with steel trunnions cast in position with counterweights also made of cast iron.

Locking Bar

Locking bar and key are of heavy steel.

Pole and Pole Trimmings

The pole is made up of suitable lengths of steel tubing with lap joints welded.

Pole trimmings consist of seamless copper ball covered with gold leaf; truck with two bronze pulleys;

Workmanship

All workmanship is of the highest character. Castings are clean and free of defects.

Painting

All steel and cast iron sections are given one shop coat of paint.

SUGGESTED SIZES FOR FLAGSTAFF

No. 0—15 ft., for buildings 1 to 2 stories high.
No. 00—20 ft., for buildings 1 to 3 stories high.
No. 1—25 ft., for buildings up to 10 stories high.
No. 2—32½ ft., for buildings up to 16 stories high.
No. 3—40 ft., for buildings up to 24 stories and higher.

STATIONARY FLAG POLES

HANSELL-ELCOCK COMPANY also manufactures steel flag poles of the stationary type according to flag pole standard specifications. Prompt delivery from complete stock.

Prices and specifications submitted on request.

JOHN E. LINGO & SON, INC.

Flagpoles in Copper Bearing Seamless Steel, Stainless Steel, Bronze,
Nickel Silver and Aluminum

TELEPHONE
Camden 487

28th Street and Buren Avenue
CAMDEN, N. J.

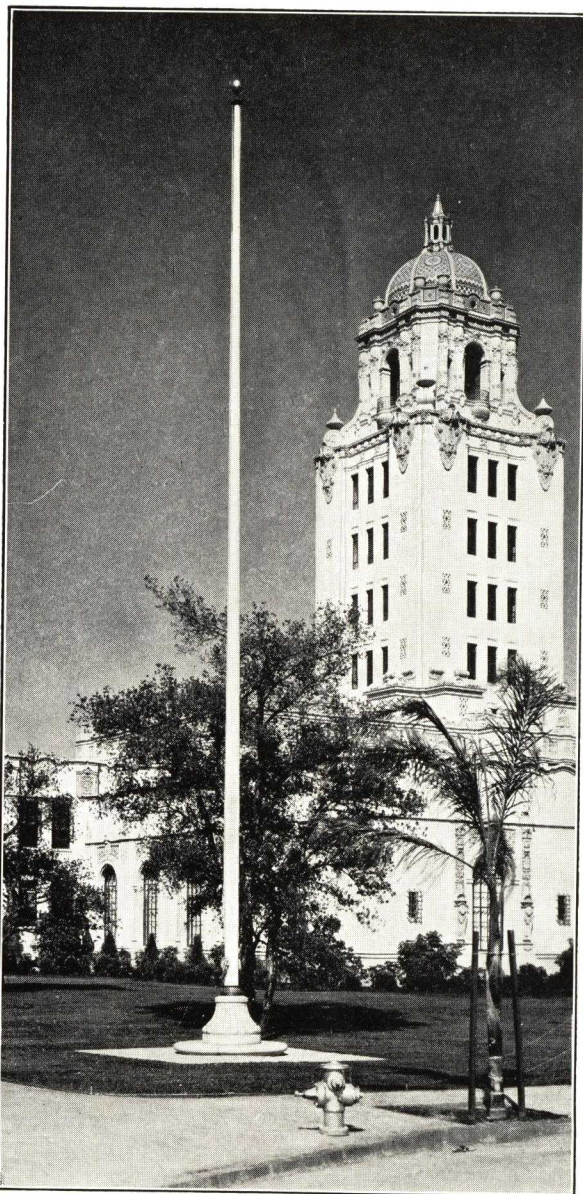
ESTABLISHED 1897

TWO DISTINCT TYPES OF STEEL FLAGPOLES**Continuous Straight Tapered Flagpoles**

Continuous Straight Tapered Flagpoles have a smooth uninterrupted exterior surface throughout without visible joints and offsets, and resemble a finished wooden flagpole in appearance. These poles taper conically and are produced in steel only. They have practically all the characteristics

of the original entasis tapered poles and yet sell in a lower price range. Continuous Straight Tapered Steel Flagpoles are standardized for ground setting or roof setting and carried in stock, assuring prompt shipments.

For further information please refer to pages 2 and 3.



50 Feet Above Grade, Continuous Straight Tapered Heavy Type Steel Flagpole, City Hall, Beverly Hills, Calif.

Swaged Sectional Flagpoles

Swaged Sectional Flagpoles are now fabricated in sections of new copper bearing seamless steel pipe with swaged, telescoped and shrunk joints without the use of bolts, rivets, pins, screw couplings or lead calking. They are standardized for ground and roof settings in lengths from 15 to 125 ft.

These poles are carried in stock and shipped in knock-down sections with field joints. The erector merely pushes or telescopes the knock-down sections together at the erection site and after the pole is erected the field joints are made airtight and watertight by calking steel to steel with an ordinary hammer and calking chisel.

For further information please refer to page 4.

Other Types

We also manufacture Continuous Entasis Tapered Copper Bearing Steel, Stainless Steel, Bronze, Nickel Silver and Aluminum Flagpoles, standardized in various heights and diameters especially suitable for monuments, memorials and buildings of exceptional architectural value; and also standardized for window or outrigger settings.

General catalog and pamphlets covering our complete line gladly furnished on application.

Quality

New material exclusively is used in the manufacture of Lingo Flagpoles.

You are guaranteed that our pipe and tubing is new, full weight and mill tested. We do not use second-hand, untested, mill rejected, rerolled or light weight material.

Your selection of a Lingo Flagpole assures a high quality product, designed by pioneer flagpole manufacturers, and constructed by competent mechanics.

CONTINUOUS STRAIGHT TAPERED STEEL FLAGPOLES

We offer to the architects and all flagpole users this latest and most modern development in steel flagpole construction. In the past, the only identified types of steel flagpoles were those of either the swaged sectional or continuous entasis tapered constructions. The swaged sectional poles, fabricated in sections of steel pipe, although structurally sound, did not have the same pleasing contour as a wooden pole, due to the visible joints. The original continuous entasis tapered poles, made by expensive handwork, with a smooth uninterrupted exterior surface throughout, resulted in a metal pole with the appearance of a wooden pole, but the cost of hand production often prohibited their purchase. We realized the necessity of developing a continuous tapered steel pole at a much lower cost and finally in 1931, after exhaustive experimental work, we perfected the new Continuous Straight Tapered Steel Flagpoles which have practically all the characteristics of the original entasis tapered poles and yet sell in a lower price range.

Architects quickly recognized the outstanding features of these new poles and hundreds of installations have been made. Continuous Straight Tapered Steel Flagpoles are ideal as replacements of wooden flagpoles, for not only is the appearance the same but the steel pole affords lightning protection, unlimited life and dependability not found in a wooden flagpole.

Continuous Straight Tapered Steel Flagpoles are produced of new high grade open hearth steel; have a smooth uninterrupted exterior surface throughout without visible joints and offsets, and resemble a finished wooden flagpole in appearance. They are suitable for ground setting or roof setting under any condition where a swaged sectional flagpole would be used.

These poles taper conically and are made of new steel only. The wall thickness is from $\frac{1}{4}$ to $\frac{3}{8}$ -in. depending upon the butt diameter of the flagpoles as shown in the table of dimensions following.

To all railroad shipping points in Official Classification and Trans-continental Classification these poles up to 65 ft. in length are shipped in one piece, without field joints, or if over 65 ft. in length they are shipped in two pieces with one machined fit field joint. To all railroad shipping points in other Classifications the poles 36 ft. and over are shipped in two pieces with one machined fit field joint.

After the two sections are pushed together at the erection site it is necessary to weld a small circumferential bead at the joint and then file or grind the bead smooth, giving the pole an unbroken exterior surface throughout without visible joints and offsets.

Continuous Straight Tapered Steel Flagpoles are standardized for ground setting or roof setting, as shown in the tables of dimensions following, and are carried in stock, assuring prompt shipments.

Specification "G"—Continuous Straight Tapered Steel Flagpoles for Ground Setting

Furnish and erect a continuous straight tapered steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J., and build concrete foundation in accordance with their standard details. Flagpole to be ground set [Heavy] [Extra Heavy] type with feet exposed height above ground by feet

total length with a butt diameter of inches tapering conically to a top diameter of inches. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—The flagpole shall be constructed of new open hearth steel of diameters, wall thickness, etc., as standardized by JOHN E. LINGO & SON, INC. for this type flagpole. The flagpole shall have a smooth uninterrupted exterior surface throughout, without visible joints or offsets.

Note: If over-all length of pole does not exceed 65 ft. for shipment to railroad points in Official Classification and Trans-continental Classification or is under 36 ft. for shipment to railroad points in other Classifications include the following: Flagpole to be shipped in one piece without field joints.

Note: If over-all length of pole exceeds 65 ft. for shipment to railroad points in Official Classification and Trans-continental Classification or is 36 ft. and over for shipment to railroad points in other Classifications include the following: Flagpole to be shipped from factory in two pieces with one machined fit field joint as designed by pole manufacturer. Pole erector must push the two sections together at the site, weld the small circumferential bead at the joint after assembly and grind or file the bead perfectly smooth.

Ball—The ball shall be of size recommended by JOHN E. LINGO & SON, INC., for this type flagpole and shall be constructed of 20-oz. copper, covered with Hastings XX gold leaf over three coats of galvanum and one coat of waterproof size. Ball to be mounted on a $\frac{3}{4}$ -in. seamless brass tube and slipped over a $\frac{5}{8}$ -in. diameter galvanized rod attached to truck.

Truck—(To be used on flagpoles with top diameter up to $3\frac{1}{2}$ in. only.) The truck is to be a "Lingo" standard ball bearing revolving truck, with cast iron body galvanized, revolving on manganese bronze spindle, with top and bottom ball races, with twenty-six $\frac{1}{4}$ -in. diameter bronze balls each. Truck to be fitted with two $2\frac{3}{8}$ -in. diameter bronze roller bushed sheaves for $\frac{3}{8}$ -in. diameter bronze pins.

Alternate for Truck—(To be used on flagpoles with top diameters of 4 in. or over.) The truck is to be a "Lingo" extra heavy ball bearing revolving truck, with bronze body, revolving on manganese bronze spindle, with bottom ball race with thirty $\frac{1}{4}$ -in. manganese bronze balls. Truck to be fitted with two 4-in. diameter bronze sheaves with bronze roller bushings and $\frac{1}{2}$ -in. monel pins.

Halyards—Provide two sets of $\frac{3}{8}$ -in. U. S. standard manila bolt rope halyards with bronze swivel snaps for securing to flag.

Cleats—Provide two 9-in. cast iron galvanized cleats tapped to flagpole with two $\frac{1}{8}$ -in. galvanized flat head stove bolts.

Ground Protector—Provide a copper bearing steel ground protector, 18 in. long, extending 12 in. above and 6 in. below the grade and to be shrunk to the pole, calked on the upper edge and electric-welded on the lower edge to the flagpole.

DIMENSIONS, CONTINUOUS STRAIGHT TAPERED FLAGPOLES FOR GROUND SETTING

Exposed height, ft.	Foundation depth, ft.	Total length, ft.	Diameter, in.			Shipping weight, lb.	Wall thickness, in.
			Butt	Top	Ball		
Heavy							
20	3	23	5	3 1/2	5	285	1/4
25	3 1/2	28 1/2	6	3 1/2	6	400	1/4
30	3 1/2	33 1/2	6 5/8	3 1/2	6	605	5/16 x 1/4
40	4	44	7 5/8	3 1/2	8	925	5/16 x 1/4
50	5	55	8 5/8	3 1/2	8	1275	5/16 x 1/4
60	6	66	10 3/4	3 1/2	10	1750	3/8 x 1/4
70	7	77	11 3/4	3 1/2	10	2200	3/8 x 1/4
75	7 1/2	82 1/2	12 3/4	4	12	2575	3/8 x 1/4
80	8	88	14	4	12	2950	3/8 x 1/4
90	9	99	15	4	14	3550	3/8 x 1/4
100	10	110	16	4	14	4475	3/8 x 1/4

Extra Heavy							
35	4	39	$7\frac{5}{8}$	$3\frac{1}{2}$	8	810	$\frac{5}{16} \times \frac{1}{4}$
40	4	44	$8\frac{5}{8}$	4	8	980	$\frac{5}{16} \times \frac{1}{4}$
45	$4\frac{1}{2}$	$49\frac{1}{2}$	$9\frac{5}{8}$	$4\frac{1}{2}$	8	1250	$\frac{5}{16} \times \frac{1}{4}$
50	5	55	$10\frac{3}{4}$	5	10	1600	$\frac{3}{8} \times \frac{1}{4}$
60	6	66	$11\frac{3}{4}$	$5\frac{1}{2}$	10	2150	$\frac{3}{8} \times \frac{1}{4}$
65	$6\frac{1}{2}$	$71\frac{1}{2}$	$12\frac{3}{4}$	$5\frac{1}{2}$	12	2560	$\frac{3}{8} \times \frac{1}{4}$
70	7	77	14	$5\frac{1}{2}$	12	2900	$\frac{3}{8} \times \frac{1}{4}$
75	$7\frac{1}{2}$	$82\frac{1}{2}$	15	$5\frac{1}{2}$	14	3450	$\frac{3}{8} \times \frac{1}{4}$
80	8	88	16	$5\frac{1}{2}$	14	3875	$\frac{3}{8} \times \frac{1}{4}$
90	9	99	18	$6\frac{1}{2}$	14	5585	$\frac{3}{8} \times \frac{1}{4}$
100	10	110	20	$6\frac{1}{2}$	14	6285	$\frac{3}{8} \times \frac{1}{4}$

Specification "H"—Continuous Straight Tapered Flagpoles for Roof Setting, Anchored to Roof with Braces

Furnish and erect a continuous straight tapered steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J. Flagpole to be roof set [Heavy] [Extra Heavy] type with feet exposed height above roof level with inches butt diameter tapering conically to a top diameter of inches. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—(See paragraph under Specification "G.")

Ball—(See paragraph under Specification "G.")

Truck—(See paragraph under Specification "G.")

Alternate for Truck—(See paragraph under Specification "G.")

Halyards—(See paragraph under Specification "G.")

Cleats—(See paragraph under Specification "G.")

Flash Collar—Provide bronze flash collar, place on the flagpole at the height indicated and calk metal to metal after roof flashing has been installed by the roofing contractor.

Pole Socket and Plate—Provide cast iron pole socket and steel plate of proper size to suit flagpole and secure with a bolt and bearing plate, fastened to [concrete] [steel] [wood] construction as indicated on drawing No. B-5-A of JOHN E. LINGO & SON, INC.

Braces—Provide [tubular turnbuckle] [adjustable telescope] braces of proper number, length and sizes as detailed on drawing No. B-5-A of JOHN E. LINGO & SON, INC., and complete with brace collar and brace anchors. Braces to be made of copper bearing tubular steel. Brace collar to be calked to flagpole after erection at the proper height to rigidly support the flagpole. All the necessary drilling of [steel] [wood] beams (or placing of anchors in concrete) to be located in accordance with detail drawings to be submitted to the architect for approval by JOHN E. LINGO & SON, INC.

Specification "J"—Continuous Straight Tapered Flagpoles for Roof Setting, without Braces and Penetrating Roof to Loft Floor

Furnish and erect a continuous straight tapered steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J. Flagpole to be roof set [Heavy] [Extra Heavy] type with feet exposed height above roof plus a distance of feet to loft floor; flagpole butt diameter inches tapering conically to a top diameter of inches. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—(See paragraph under Specification "G.")

Ball—(See paragraph under Specification "G.")

Truck—(See paragraph under Specification "G.")

Cleats—(See paragraph under Specification "G.")

Halyards—(See paragraph under Specification "G.")

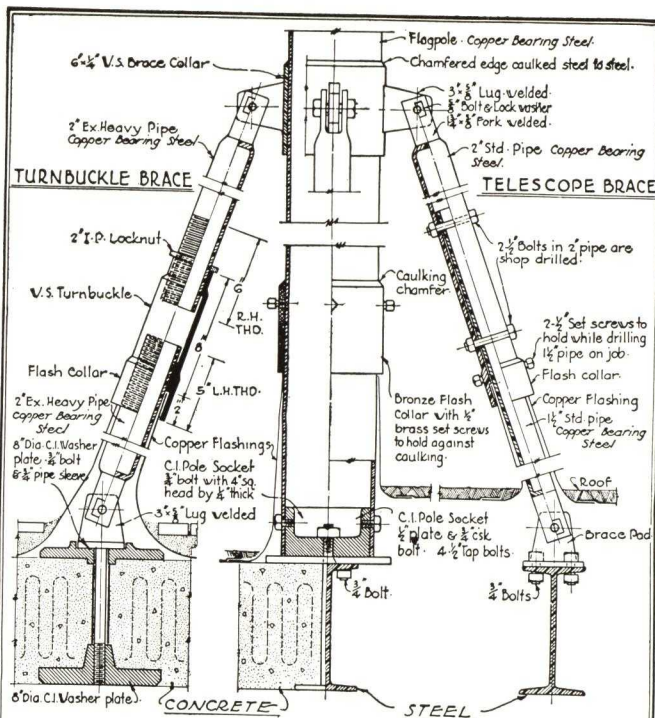
Flash Collar—(See paragraph under Specification "H.")

Roof Tube (if concrete slab) or Guide Flange (if steel or wood roof)—Provide [roof tube] [guide flange] of proper size to suit flagpole butt diameter; to be fastened to roof construction and calked metal to metal before roof flashing has been installed by the roofing contractor.

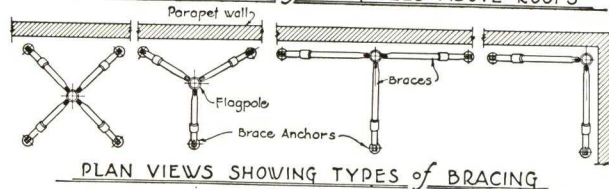
Pole Socket and Plate—(See paragraph under Specification "H.")

DIMENSIONS, CONTINUOUS STRAIGHT TAPERED FLAGPOLES FOR ROOF SETTING

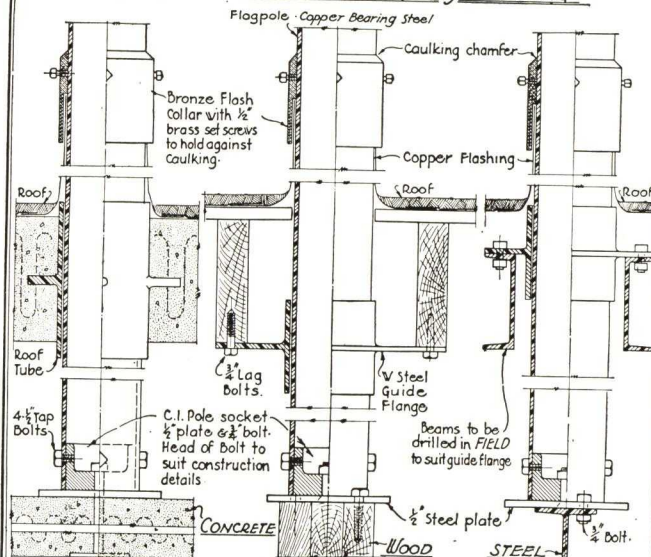
Exposed height, ft.	Diameter, in.		Shipping weight, lb.	Wall thickness, in.
	Butt	Top		
Heavy				
20	5	3 1/2	240	1/4
25	6	3 1/2	350	1/4
30	6 5/8	3 1/2	540	5/16 x 1/4
40	7 5/8	3 1/2	825	5/16 x 1/4
50	8 5/8	3 1/2	1130	5/16 x 1/4
60	10 3/4	3 1/2	1500	5/16 x 1/4
70	11 3/4	3 1/2	1880	5/8 x 1/4
75	12 3/4	4	2200	5/8 x 1/4
80	14	4	2510	5/8 x 1/4
90	15	4	3025	5/8 x 1/4
100	16	4	3850	5/8 x 1/4
Extra Heavy				
35	7 5/8	3 1/2	705	5/16 x 1/4
40	8 5/8	4	865	5/16 x 1/4
45	9 5/8	4 1/2	1090	5/16 x 1/4
50	10 3/4	5	1390	3/8 x 1/4
60	11 3/4	5 1/2	1865	3/8 x 1/4
65	12 3/4	5 1/2	2235	3/8 x 1/4
70	14	5 1/2	2515	3/8 x 1/4
75	15	5 1/2	3000	3/8 x 1/4
80	16	5 1/2	3370	3/8 x 1/4
90	18	6 1/2	4950	3/8 x 1/4
100	20	6 1/2	5500	3/8 x 1/4



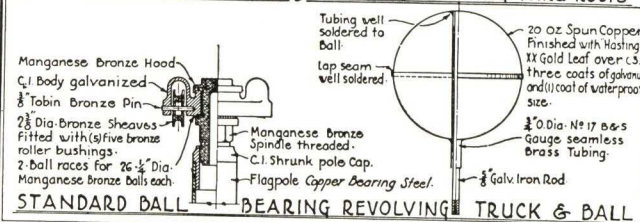
TYPICAL DETAIL ARRGT of FLAGPOLES ABOVE ROOFS



PLAN VIEWS SHOWING TYPES of BRACING



TYPICAL DETAIL ARRGT of FLAGPOLES PASSING THRU ROOFS



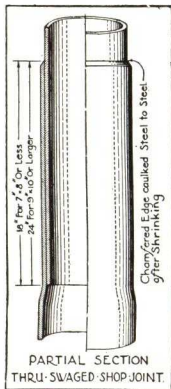
DRAWING
No B5-A

JOHN E. LINGO & SON, INC.
CAMDEN, NEW JERSEY.

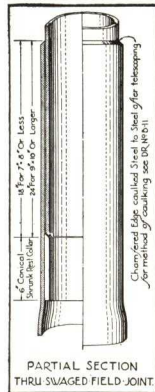
SCALE
1"=1FOOT

SWAGED SECTIONAL FLAGPOLES

These poles are now fabricated by joining consecutive diminishing diameters of new mill run of full weight standard, copper bearing seamless steel tested pipe with joints



either of the *shop* type (hydraulic bell die-swaged, telescoped and shrunk) or of the *field* type (hydraulic bell die-swaged and self-aligning), constructed without bolts, pins, rivets, screw couplings or lead calking and designed to withstand wind stresses up to 90 miles per hour with a conservative bending resistance. They are shipped in one or more knocked down sections and assembled on the ground by means of the field joints. Each section is made to suit car lengths which allows transportation at a



minimum rate (for less than carload lots) and each section may contain two or more pieces to produce the proper reduction. At the erection site the flagpole erector merely pushes or telescopes the sections together and after erection makes the field joints airtight and watertight by calking metal to metal with only an ordinary hammer and calking chisel. Inexperienced men may, in a minimum length of time, accomplish the erection of these flagpoles.

SWAGED SECTIONAL FLAGPOLES FOR GROUND SETTING

Exposed height, ft.	Founda- tion depth, ft.	Total length, ft.	Diameter, in.			Ship. wgt., lb.	Sections	
			Butt	Top	Ball		Num- ber	Num- ber k. d.
Light Pattern								
17	3	20	3½	2⅝	5	145	3	1
25	3½	28½	4	2⅝	5	242	4	2
33	4	37	4½	2⅝	6	360	5	2
41	4½	45½	5	2⅝	6	502	6	3
49½	4½	54	5⅝	2⅝	6	653	7	3
57½	5	62½	6⅝	2⅝	8	850	8	4
65½	6	71½	7⅝	2⅝	8	1100	9	4
73	6	79	7⅝	2⅝	8	1310	9	5
80	7	87	8⅝	2⅝	8	1625	10	5
90	8	98	9⅝	2⅝	10	2100	11	6
100	8	108	10¾	2⅝	10	2600	12	6
Heavy Pattern								
20	3	23	4	2⅞	5	218	3	1
25	3½	28½	4½	2⅞	5	314	4	2
30	3½	33½	5	2⅞	6	405	5	2
40	4	44	5⅝	2⅞	6	593	6	3
50	5	55	6⅝	2⅞	8	800	7	3
60	6	66	7⅝	2⅞	8	1200	8	4
70	7	77	8⅝	2⅞	8	1600	9	4
75	7½	82½	9⅝	2⅞	10	1960	10	5
80	8	88	10¾	2⅞	10	2410	11	5
90	9	99	11¾	2⅞	10	2840	12	6
100	10	110	12¾	2⅞	12	3600	13	6
125	12	137	14	2⅞	14	5414	14	7
Extra Heavy Pattern								
25	3½	28½	5	2⅞	6	380	5	2
30	3½	33½	5⅝	2⅞	6	498	6	2
35	4	39	6⅝	3½	8	716	6	2
40	5	45	7⅝	3½	8	960	7	3
47	6	53	8⅝	3½	8	1212	8	3
55	6	61	9⅝	3½	8	1661	9	4
62	7	69	10¾	3½	10	1950	10	4
70	7	77	11¾	4	10	2612	10	5
77	8	85	12¾	4	12	3183	11	5
85	8	93	14	4	12	4260	12	6
90	10	100	15	4	14	4932	13	6
100	10	110	16	4	14	5870	14	7

Specification "A"—Swaged Sectional Flagpoles for Ground Setting

Furnish and erect a hydraulic bell die-swaged sectional copper bearing seamless steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J., and build concrete foundation in accordance with their standard details. Flagpole to be ground set [Light] [Heavy] [Extra Heavy] pattern with feet exposed height above ground by feet total length with inches butt diameter. After erection, apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—Flagpole to be fabricated in sections of new standard full weight copper bearing seamless steel pipe of diameters, thicknesses, lengths and joints as detailed by JOHN E. LINGO & SON, INC., for this type pole. Shop joints to be hydraulic bell die-swaged, shrunk and calked steel to steel. Field joints to be calked steel to steel, airtight and watertight to prevent interior corrosion and deterioration. All joints to be constructed without the use of bolts, pins, rivets, screw couplings or lead calking.

Ball—(See paragraph under Specification "G.")

Truck—(See paragraph under Specification "G.")

Alternate for Truck—(For extra heavy pattern poles with 4-in. top diameter.) (See paragraph under Specification "G.")

Cleats—(See paragraph under Specification "G.")

Ground Protector—(See paragraph under Specification "G").

SWAGED SECTIONAL FLAGPOLES FOR ROOF SETTING

Exposed height, ft.	Diameter, in.			Shipping weight, lb.	Sections	
	Butt	Top	Ball*		Number	Number k. d.
Heavy Type						
20	4	2 7/8		159	3	1
25	4 1/2	2 7/8		245	4	2
30	5	2 7/8		325	5	2
40	5 9/16	2 7/8		500	6	3
50	6 5/8	2 7/8		680	7	3
60	7 5/8	2 7/8		990	8	4
70	8 5/8	2 7/8		1375	9	4
75	9 5/8	2 7/8		1620	9	5
80	10 3/4	2 7/8		1750	10	5
90	11 3/4	2 7/8		2500	11	6
100	12 3/4	2 7/8		3000	12	6
Extra Heavy Type						
20	5	2 7/8		244	5	1
25	5 9/16	2 7/8		341	6	2
30	6 5/8	3 1/2		500	6	2
35	7 5/8	3 1/2		668	7	2
43	8 5/8	3 1/2		953	8	3
51	9 5/8	3 1/2		1392	9	4
59	10 3/4	3 1/2		1796	10	4
67	11 3/4	4		2465	10	5
75	12 3/4	4		2970	11	5

*To suit height of building.

Specification "B"—Swaged Sectional Flagpoles for Roof Setting, Anchored to Roof with Braces

Furnish and erect a hydraulic bell die-swaged sectional copper bearing seamless steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J. Flagpole to be roof set [Heavy] [Extra Heavy] type with feet exposed height above roof level with inches butt diameter. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—(See paragraph under Specification "A.")

Ball—(See paragraph under Specification "G.")

Truck—(See paragraph under Specification "G.")

Alternate for Truck—(For extra heavy type poles with 4-in. top diameter.) (See paragraph under Specification "G.")

Halyards—(See paragraph under Specification "G.")

Cleats—(See paragraph under Specification "G.")

Flash Collar—Provide bronze flash collar, place on the flagpole at the height indicated and calk metal to metal after roof flashing has been installed by the Roofing Contractor.

Pole Socket and Plate—Provide cast iron pole socket and steel plate of proper size to suit flagpole and secure with a bolt and bearing plate, fastened to [concrete] [wood] [steel] construction as indicated on drawing No. B5A of JOHN E. LINGO & SON, INC.

Braces—Provide suitable number of [turnbuckle] [telescope] braces to be of sufficient length and of sizes as detailed on drawing No. B5A of JOHN E. LINGO & SON, INC., and complete with brace collar and suitable brace anchors. Braces to be made of copper bearing tubular steel. Brace collar to be calked to flagpole after erection at the proper height to rigidly support the pole. All the necessary drilling of [steel] [wood] beams (or placing of anchors in concrete) to be located in accordance with detail drawings to be submitted to the architect for approval by JOHN E. LINGO & SON, INC.

Specification "C"—Swaged Sectional Flagpoles for Roof Setting, without Braces and Penetrating Roof to Loft Floor

Furnish and erect a hydraulic bell die-swaged sectional copper bearing seamless steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J. Flagpole to be roof set [Heavy] [Extra Heavy] type with feet above roof plus a distance of feet to loft floor; flagpole butt diameter to be inches. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—(See paragraph under Specification "A.")

Ball—(See paragraph under Specification "G.")

Truck—(See paragraph under Specification "G.")

Alternate for Truck—(For extra heavy type poles with 4-in. top diameter.) (See paragraph under Specification "G.")

Halyards—(See paragraph under Specification "G.")

Cleats—(See paragraph under Specification "G.")

Roof Tube (if concrete slab) or Guide Flange (if steel or wood roof)—To be provided of proper size to suit flagpole butt diameter; to be fastened to roof construction and calked steel to steel before roof flashing has been installed by the roofing contractor.

Flash Collar—(See paragraph under Specification "B.")

Pole Socket and Plate—Provide cast iron pole socket and steel plate of proper size to suit flagpole and secure with a bolt and bearing plate, fastened to [concrete] [steel] [wood] construction as indicated on drawing No. B5A of JOHN E. LINGO & SON, INC. Detail drawings are to be submitted to the architect for approval by JOHN E. LINGO & SON, INC.

CONTINUOUS ENTASIS TAPERED OUTRIGGER FLAGPOLES

Extended from Face of Building at Fixed Angle of 45 Degrees

Outrigger or window flagpoles are suitable for bank buildings, office buildings, etc., where it is desirable to fly the flag at lower levels than a flagpole located on the roof.

For beauty and dignity we recommend the standard arrangement shown on drawing No. B-12 below. Poles of this arrangement are projected from the face of the building only at an angle of 45 degrees from the vertical and the poles have a smooth uninterrupted exterior surface throughout without visible joints and offsets. They are tapered with entasis and resemble a finished wooden flagpole in appearance.

These flagpoles are regularly produced in either bronze or copper bearing steel with bronze fittings in either case. B-12 flagpoles are also produced in bronze chromium plated, nickel silver and aluminum with the fittings of like metals.

Other Types of Outrigger Flagpoles

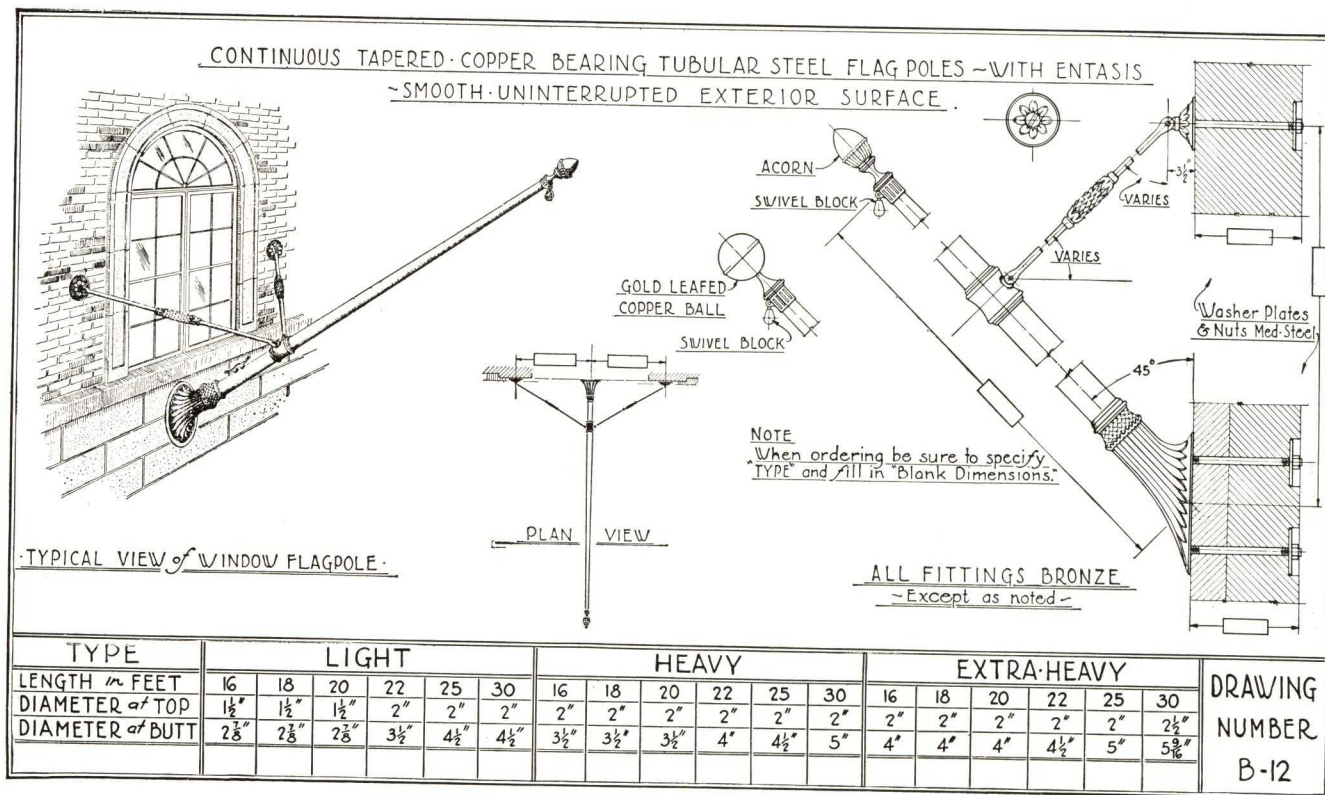
No. B-14—Similar to No. B-12 above without ornamental base. Poles of this type are provided with special hinged arrangement at butt permitting extension of pole from face of building at any definite angle desired. The poles may be righted for repainting or repairs at a minimum cost. Details and specifications gladly furnished on application.

No. B-15—Poles are 7 to 12 ft. long, supported without braces and furnished with standard ornamental bronze base. Bronze base is available in two different designs. Details and specifications gladly furnished on application.

Specifications for Continuous Entasis Tapered Outrigger Flagpoles Extended from Face of Building at Fixed Angle of 45 Degrees

Furnish and install a continuous entasis tapered [bronze] [copper bearing steel] [bronze chromium plated] [nickel silver] [aluminum] outrigger flagpole on the face of the building, where shown on plans, projected at an angle of 45 degrees from the vertical, all to be in strict accordance with drawing No. B-12 of JOHN E. LINGO & SON, INC., Camden, N. J. Flagpole to be [Light] [Heavy] [Extra Heavy] type, feet long, with inches outside butt diameter, tapering with Venetian entasis to inches outside top diameter.

Flagpole shall be of continuous entasis tapered construction, with smooth uninterrupted exterior surface throughout without visible joints and offsets and shall be shipped from factory in one piece without field joints. All fittings shall be [bronze] [bronze chromium plated] [nickel silver] [aluminum], except the halyards and shall consist of one standard acorn top (Alternate: 5-in. gold leafed copper ball), one pole cap with swivel block, one set of Silver Lake A No. 10 cotton braided halyards with swivel snaps, one standard base with anchor bolts, washer plates and nuts, one set of braces with ornamental couplers, brace collar, rosettes, etc. all in accordance with drawing No. B-12 of JOHN E. LINGO & SON, INC., Camden, N. J.

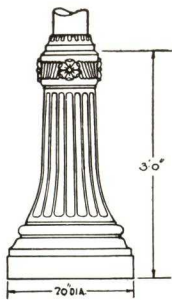


EXPERIENCE AND SERVICE

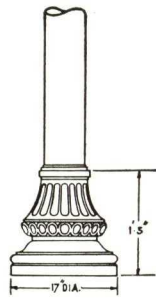
For over forty years flagpoles have been the exclusive specialty of this company and we believe we are responsible for most of the modern developments and refinements in this particular line.

We want architects to take advantage of the wealth of knowledge we have acquired by this long specialized experience. It is always a pleasure, therefore, to co-operate with you on problems involving the use of flag-

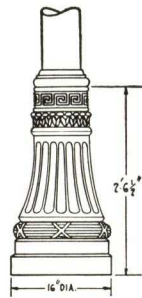
poles and we welcome opportunities to offer suggestions and prepare details with specifications, together with estimates of cost positively free of charge or obligation. Send us a rough sketch or idea of your contemplated flagpole requirements, before finally specifying, and we will promptly assist you in designing the best suited and yet most economical flagpole installation.



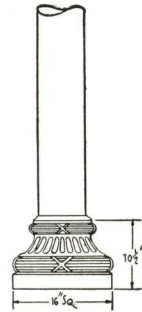
Design No. 2105
4 to 5 in.



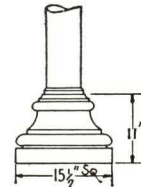
Design No. 2107
5 to 6 1/8 in.



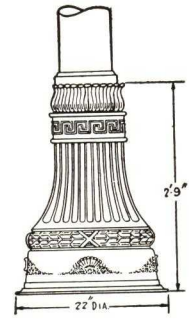
Design No. 2104
5 to 6 1/8 in.



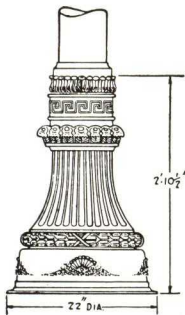
Design No. 2108
5 1/8 to 7 1/8 in.



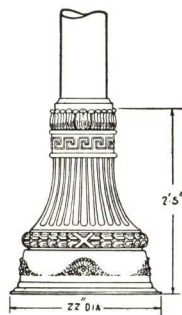
Design No. 1970
5 to 5 1/8 in.



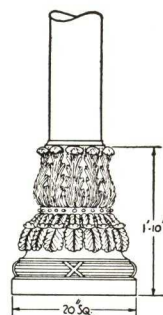
Design No. 2101
6 1/8 to 8 1/8 in.



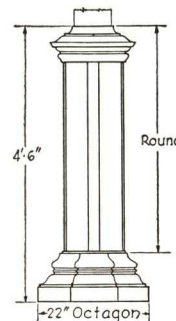
Design No. 2103
5 1/8 to 7 1/8 in.



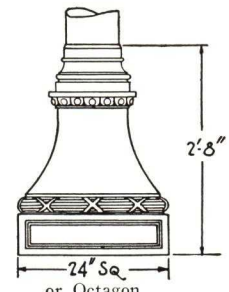
Design No. 2102
5 1/8 to 7 1/8 in.



Design No. 2109
6 1/8 to 8 1/8 in.

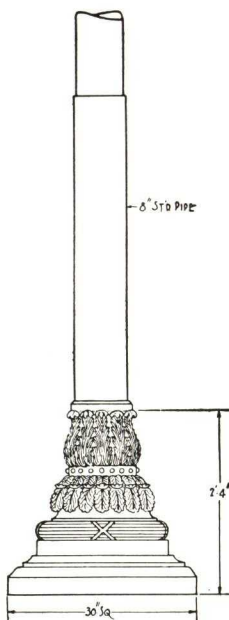


Design No. 1922
7 1/8 to 9 1/8 in.

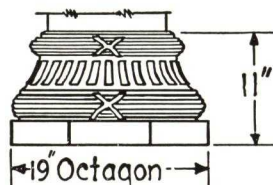


Design No. 1902
7 1/8 to 9 1/8 in.

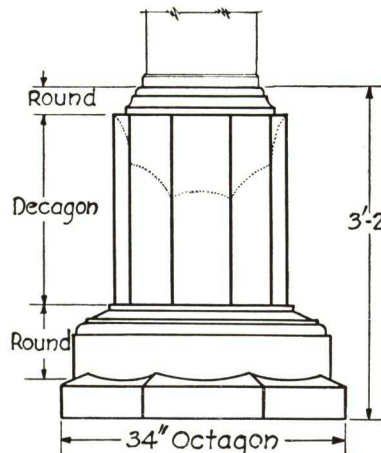
We carry in stock this complete line of ornamental cast iron flagpole bases, painted or galvanized. A ring collar is cast separate and furnished with the base to make a proper "joint" between the flagpole and the collar for hot lead calking. Each base fits certain flagpoles only the butt diameters of which are shown under each base. Before finally specifying one of these bases for a certain flagpole be sure to ascertain whether the butt diameter of the flagpole will fit the base selected.



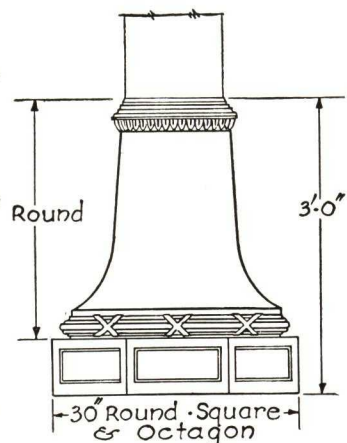
Design No. 2110
7 1/8 to 8 1/8 in.



Design No. 1928
9 1/8 to 11 1/4 in.



Design No. 1934
10 1/4 to 14 in.



Design No. 1999
10 3/4 to 16 in.

NO SCALE

JOHN E. LINGO & SON, INC.
FLAGPOLES IN COPPER BEARING STEEL, BRONZE AND ALUMINUM
CAMDEN, N. J.

DRAWING
NO. B-6

THE POLE AND TUBE WORKS, INC.

(Incorporated 1918 to Succeed Pole Department of John Simmons Co., Originators of Tubular Flag Poles)

TELEPHONE
Bigelow 3-1556-1557

230 Pacific Street
NEWARK, N. J.

Products

METALLIC FLAG POLES in Steel, Bronze and Aluminum; ORNAMENTAL PEDESTALS; COMPLETE POLE TRIMMINGS; COMPLETE SETTING APPURTENANCES.

Our record of 30 years' specialization includes the tallest free standing metal flag pole in the world, the first taper pole, the first non-corrodible metal pole, the

first hinged "Outtrigger" pole and the first of every improvement in metal flag pole construction.

Service

Typical installation plates and erection details for any flag pole project; monumental effects, roof poles, out-rigger and ground set type. Catalogue on request.

Types

"T"—Copper alloy steel pipe with telescopic, swaged and shrunk joints.

STANDARD FOR ROOF OR GROUND SETTING

Visible hgt., ft.	Diameter, in.		Visible hgt., ft.	Over-all lgth., ft.	Diameter, in.	
	Butt	Tip			Butt	Tip
20	4	2 3/8	17	20	3 1/2	2 3/8
25	4 1/2	2 3/8	25	28 1/2	4	2 3/8
30	5	2 3/8	33	37	4 1/2	2 3/8
40	5 5/8	2 3/8	41	45 1/2	5	2 3/8
50	6 3/8	2 3/8	49 1/2	54	5	2 3/8
60	7 5/8	2 3/8	57 1/2	62 1/2	6 5/8	2 3/8
70	8 5/8	2 3/8	65 1/2	71 1/2	7 5/8	2 3/8
75	9 5/8	2 3/8	73	79	7 5/8	2 3/8
80	10 3/4	2 3/8	80	87	8 5/8	2 3/8
90	11 3/4	2 3/8	90	98	9 5/8	2 3/8
100	12 3/4	2 3/8	100	108	10 3/4	2 3/8

Additional "butt" length should be provided for bracing to roof or embedment in concrete foundation if ground set—usually about 10% of height.

The "over-all" length of these Light Pattern poles cannot be changed without undue increase in cost.

"C"—"Conetaper" in steel. Smooth, uninterrupted exterior surface—a low cost product of superior appearance and service. The taper is 1 in. in 7 ft.; produced by special machinery and unchangeable.

HEAVY TYPE

EXTRA HEAVY TYPE

Visible hgt., ft.	Diameter, in.		Visible hgt., ft.	Diameter, in.	
	Butt	Tip		Butt	Tip
20	5	3 1/2	35	7 5/8	3 1/2
25	6	3 1/2	40	8 5/8	4
30	6 5/8	3 1/2	45	9 5/8	4 1/2
40	7 5/8	3 1/2	50	10 3/4	5
50	8 5/8	3 1/2	60	11 3/4	5 1/2
60	10 3/4	3 1/2	65	12 3/4	5 1/2
70	11 3/4	3 1/2	70	14	5 1/2
75	12 3/4	4	75	15	5 1/2
80	14	4	80	16	5 1/2
90	15	4	90	18	6 1/2
100	16	4	100	20	6 1/2

Provide additional "butt" length for setting; usually about 10% of height.

Approximately one-third of the height of above poles is cylindrical and thence tapered, truly conically, to the tip, combining the appearance of a perfectly dressed wood pole with all the superiority of steel. (See note "N".)

"E"—"Entasis" poles are individually designed, made to order and are a replica of the Venetian entasis—selected by many architects for projects of outstanding architectural value and monumental character with cost a secondary consideration. (See Note "N".)

Note "N"—Metals

Non-corrodible poles in bronze, aluminum or nickel alloy tubing, either conetaper or with entasis up to about 20 ft. long. For greater length we advise steel poles jacketed with such alloys, insulated against galvanic action and welded into a homogeneous jacket over the steel pole. Such jacketed poles are far safer, stronger

Bronze Taper Pole, 100 Feet above
Pedestal, Union Square, New York,
N. Y.

CHAS. B. MEYERS, Architect
ANTHONY DE FRANCISCI, Sculptor

Window or Outtrigger Poles

Both hinged at butt or with permanent 45° sockets; also in welded, galvanized iron or other than 45° inclination. Poles and fittings in steel, bronze, aluminum or nickel alloys. Descriptive circulars on request.

Pole Trimmings

Truck—"Poletube" Truck—Galvanized or bronze body with 1/4-in. bronze bearing balls to kingpin and two 2 3/4-in. bronze sheaves on bronze roller bearings for poles of 3 1/2-in. tip diameter or smaller.

"Simmons" Truck—Same as above but with 4-in. sheaves for poles 4-in. tip diameter or larger.

Finials—"Ball" or "Vane" finials of copper, gold leaf finish.

Cleats—Galvanized or brass 9-in.; two 1 5/8-in. cap screws to pole.

Halyards—U. S. manila bolt rope 3/8 in. or Silver Lake No. 10A.

Flash Collar—For permanent weathertight, flexible juncture to roof waterproofing—bronze up to 10 3/4-in. diameter, steel up to 20-in.

Braces for Roof Setting—Minimum two at 90° in three types:

Tension braces with turnbuckles and integral flashing pettycoat for poles up to 25 ft. unsupported height.

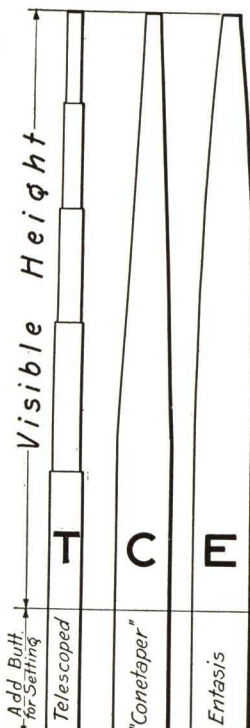
Telescoped adjustable braces with flashing pettycoat for poles up to 50 ft. unsupported height.

Standard tubular with bronze turnbuckles and flashing pettycoats for poles up to 75 ft. unsupported height.

Drawings, etc.—Typical installation drawings (for blueprinting) and special layouts for unusual construction will be submitted on request giving details of roof construction—structural steel, concrete or wood.

Bases or Pedestals

Large assortment of patterns for stock types. Illustrated circular on request.



TRAFFIC & STREET SIGN COMPANY

Flagpoles Made of Steel, Copper Bearing Steel, Stainless Steel,
Bronze and Aluminum

88 Foundry Street
NEWARK, N. J.

TELESCOPED SECTIONAL FLAG POLES

Telescoped sectional flag poles are manufactured in three types: *standard*, *heavy* and *extra heavy*. Stock sizes in copper-bearing steel furnished in lengths up to 100 feet in both roof and ground-set poles. Quick delivery can be made on poles up to 200 feet. All the joints are die swaged and shrunk.

CONTINUOUS TAPERED FLAG POLES

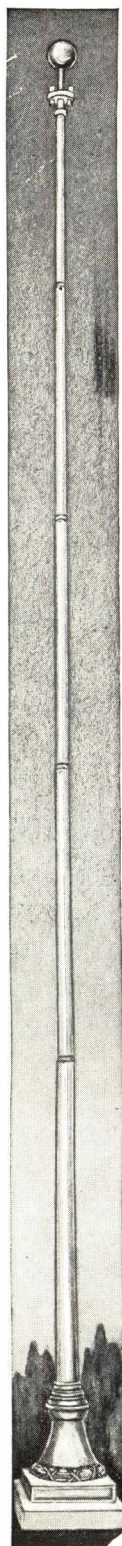
Continuous tapered flag poles are manufactured in two types: *Continuous Straight Taper*, and *Continuous Entasis Taper*. Straight tapered poles for roof and ground setting in copper-bearing steel are carried in stock up to 80 feet, and have a standard taper of approximately 1 inch in 7 feet. Quick delivery can be made on entasis taper, special taper, and standard taper poles up to 200 feet.

WINDOW OR OUTRIGGER FLAG POLES

Window or outrigger flag poles are manufactured in both telescoped and tapered styles with both stock and special bracing.

All poles are furnished with complete fittings and finials. We can supply any standard or special fitting. Our standard ball bearing revolving halyard truck is the only fully machined life-time truck on the market.

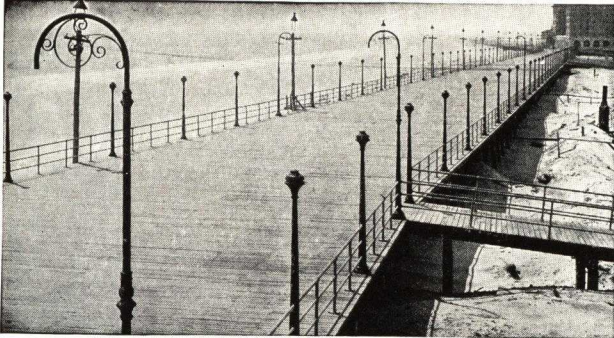
Specifications, Design Details, Proper Roof Construction and Other Details will be Gladly Submitted on Request.



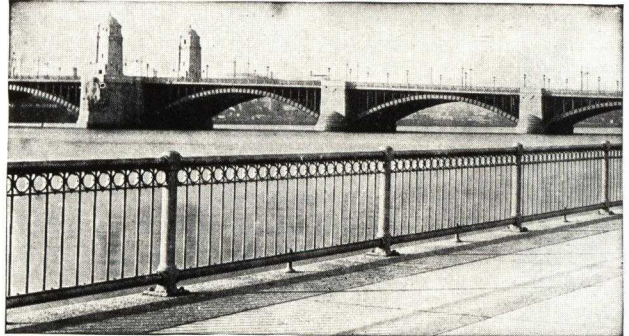
VULCAN RAIL & CONSTRUCTION COMPANY

MAIN OFFICE AND WORKS
Grand Street and Garrison Avenue, MASPETH, N. Y.
FABRICATED STEEL PRODUCTS PLANT
Benwood, WHEELING, W. VA.

VULCAN PIPE AND BRIDGE RAILINGS AND FENCES



Boardwalk Railing with Lamp Posts



Typical Bridge Railing



Pipe Railings with Fittings or of Welded Construction; Fences and Special Construction

For auditoriums, boardwalks, bridges, elevated structures, grandstands, prisons, sewage treatment works, stadia, stairs, theatres, warehouses, etc.

Special Pipe Work

For fur storage racks, platform shelters, table supports, turnstiles, etc.

Stairs, Ladders, etc., with Railings

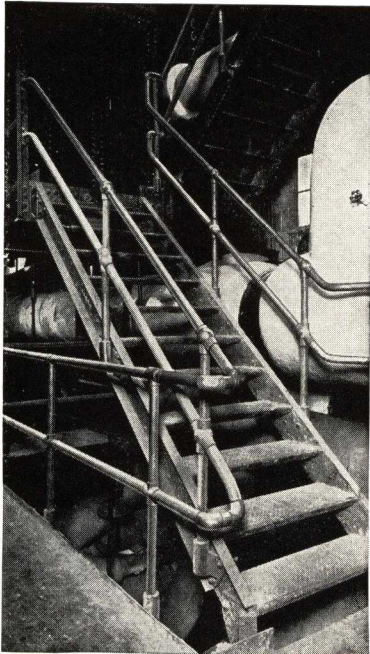
For coal breakers, subways, dams and power plants.

Other Products

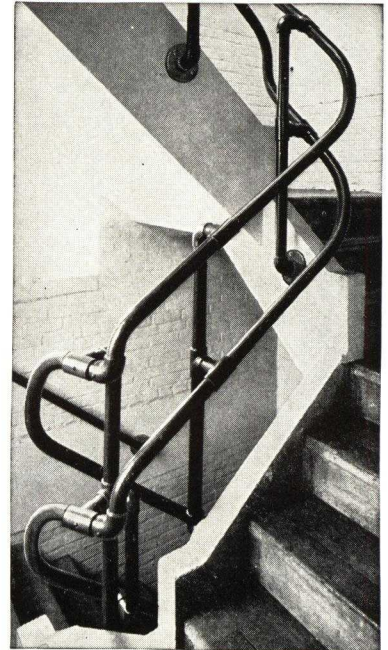
Pipe hand railings (both fitting and welded type), columns, welded poles, pipe structures.

Exclusive manufacturers of: "All-welded All-steel Jointless Post" Pipe Railings simulating in appearance fitting or flush railings with all joints reinforced on interior or exterior. No exposed welds.

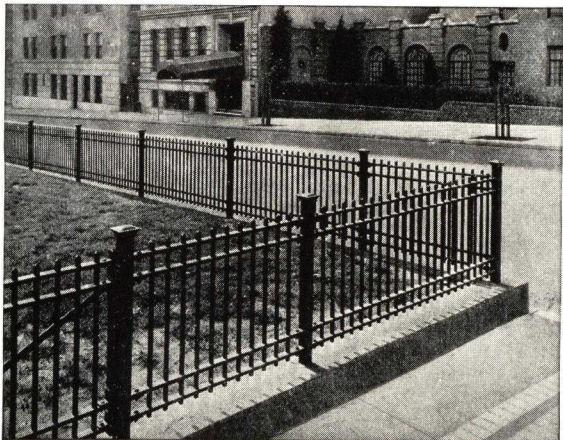
Also Vulcan "All-Steel" Underwriters' Fire Doors for protection of corridors and partition openings in storage warehouses.



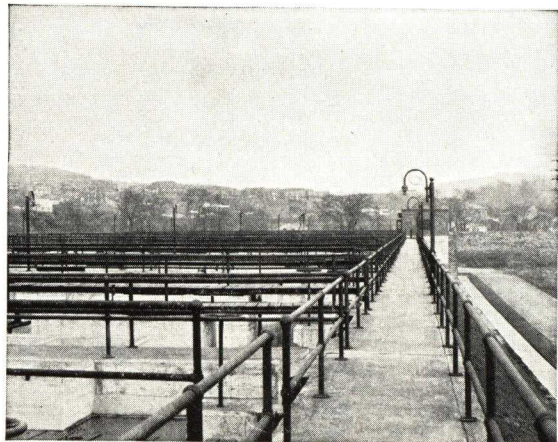
Pipe Railing in Power House



Pipe Railing on Concrete Stairs



Picket Fence, Park Avenue, New York, N. Y.



Pipe Railing in Sewage Disposal Plant

PIPE RAILINGS FOR EVERY PURPOSE

The VULCAN RAIL & CONSTRUCTION COMPANY are specialists in the manufacture of metal railings for every architectural and engineering requirement.

Our standard pipe fitted type railings are constructed of first quality pipe, using Vulcan Standard Malleable Iron Railing Fittings and Vulcan Standard Cast Iron Flanges throughout. The wide variety of fittings, flanges, elbows, etc., which we carry in stock for fabrication, has firmly established our reputation to efficiently fill orders involving many different construction problems.

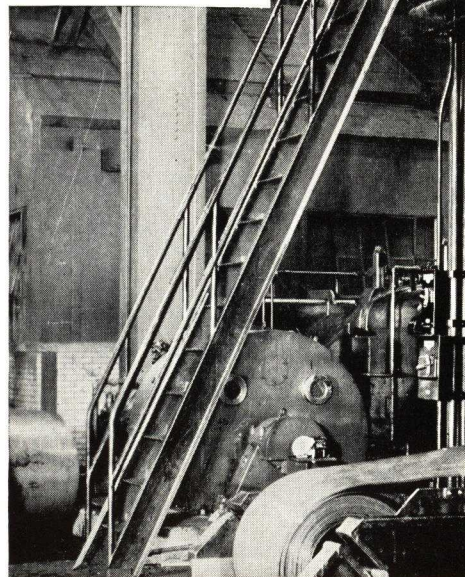
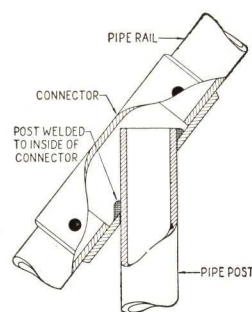
We also manufacture the modern flush "All-Welded All-Steel Jointless Post" type of Railing (patented and patents pending), which has distinct structural advantages. This railing is also made with "connectors", whereby all joints are reinforced. It is particularly well suited to applications where simplicity of design is desired.

Vulcan Bridge Railings

Our Standard Bridge Railings are constructed of various combinations of pipe, fittings, bars (round and square), flats, channels, angles, etc. They fill all requirements for the present day design of bridge railings, employing pipes or tubing for the rails and posts with a filling of round or square pickets or other structural shapes as the basic principle. They are designed to combine simplicity, good appearance and strength with greater resistance to the action of the elements. Our faithful adherence to this principle in the manufacturing process

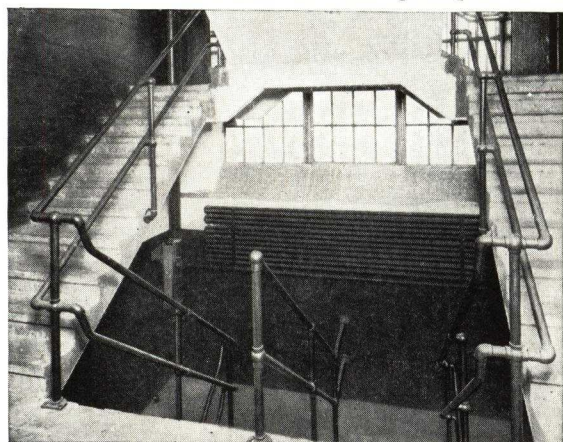
results in the reduction of maintenance costs to a minimum.

Vulcan designs vary from the simpler types to the more elaborate; introducing cast iron posts with rings and other shapes into the railing panels. The number of unique combinations made possible by the variety and versatility of these shapes is nearly inexhaustible, and thereby assure the architect of an almost unlimited selectivity.

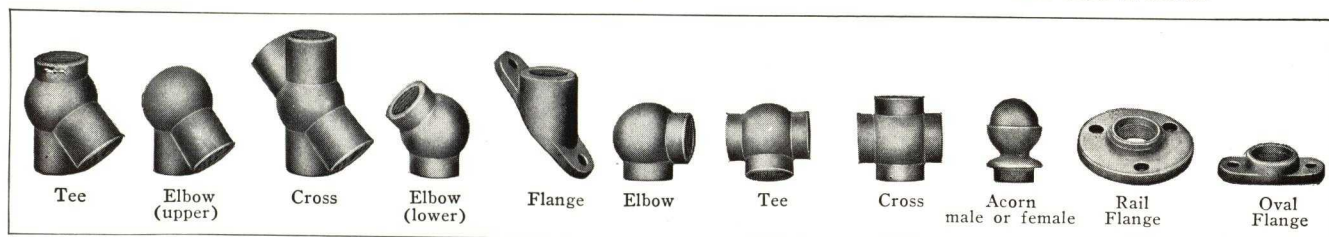


Installation of "All-Welded All-Steel Railing"

Note detail of method



Pipe Rail on Double Concrete Stairs



"Vulcan" Standard Railing Fittings

VULCAN FACILITIES AND SERVICE

Facilities

Our main plant at Maspeth, N. Y. and branch at Wheeling, W. Va., are both fully equipped to manufacture railing products in any required quantities. We maintain a trained force of experienced and skillful workmen and have private sidings on main line railroads. The prompt and efficient execution of all orders is thus assured.

Service

The use of our Engineering Department is freely offered to architects and engineers to advise and aid them in problems involving the use of railing, pipe and fittings, columns, welded poles and all other structural products we manufacture.

Specification Information

Complete information including estimates and preliminary designs for any of the products listed will be promptly supplied on request.

Special note—General estimating is handled at the Maspeth, New York Office. Inquiries regarding estimates should be addressed accordingly.

Information and Literature

Detailed information relative to standard bridge and pipe railing designs, as well as special designs to suit architects' and engineers' requirements, will be submitted on request.

When requesting estimates it is suggested that inquiries be accompanied by blue prints or sketches of requirements showing full dimensions and all possible information on size of pipe, type of fitting, finish, etc. Inquiries for pipe railings should mention the number of posts required and the spacing between posts; also the number of horizontal rails, and the method of anchorage to foundation or support.

Catalogues or Standards Sent on Request.

BILCO MANUFACTURING COMPANY

Manufacturers of All-Steel Bulkheads for Residences
Also Sidewalk Doors
164 Hallock Avenue, NEW HAVEN, CONN.

BILCO BULKHEADS FOR RESIDENCES

These bulkheads, manufactured throughout of 12 gauge copper steel, are designed to last as long as the building itself. They are neat in appearance; corrosion, termite and burglar proof; cannot warp out of shape and will function perfectly almost indefinitely.

They are shipped knocked down in five parts with the necessary assembly bolts and can be assembled and built into place in less than one hour when provision is made to receive them.

They are given a shop coat of gray paint when shipped but may be painted any color desired.

Types and Sizes

Bilco Bulkheads are made in three types, designed for use with either masonry or frame construction. Each type is made in three stock sizes.

Type O-1—Of 12 gauge copper steel and has paneled doors and sides.

Type O-3—Essentially the same as Type O-1, except it is of smooth construction throughout; 12 gauge copper steel is used in its construction.

Type O-2—Similar in construction to the other two types, except that doors are 10 gauge diamond pattern plate. This construction gives underfoot security and is intended for use where unusually rough usage will be encountered.

Sizes—Each of these types is made in 3 sizes as shown by the accompanying table and diagram.

In addition to the stock sizes shown, bulkheads may be had in special sizes when so specified.



Hardware

Bulkheads are regularly equipped with 2 hinges to each door, a sliding bolt for locking the doors from inside and a lift-handle.

Hinges are of $\frac{1}{2} \times \frac{3}{4}$ -in. bar iron secured to the underside of the doors and are inaccessible from the outside when doors are closed and bolted. Lower hinge on each door is equipped with an automatic safety catch so that when either or both doors are fully opened, they are automatically held in that position until the hinge device is tripped by hand or foot. It is of very simple construction and prevents the doors being blown or knocked shut.

A substantial bolt securely locks the doors from inside.

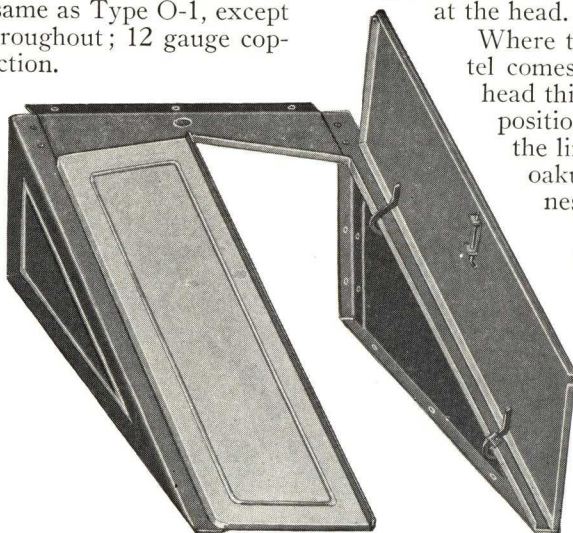
Installation of Bilco Bulkheads

These bulkheads are made for use with masonry or frame construction, and the construction is similar throughout with the exception of the projecting flange at the head.

Where the lower edge of the masonry lintel comes flush with the head of the bulkhead this flange is supplied in a horizontal position for bolting to the underside of the lintel; the joint is then caulked with oakum and plastic for weathertightness.

In frame construction or where the lower edge of the masonry lintel comes below the head of the bulkhead the flange is supplied in a vertical position. In frame construction the flange is secured to the sheathing and the siding; shingles or stucco carried down over it. With this installation, the bulkhead frame is put in place during the progress of construction.

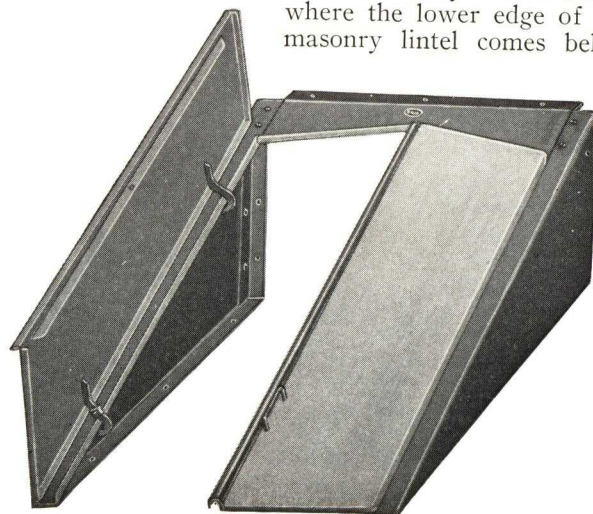
In masonry construction where the lower edge of the masonry lintel comes below



Type O-1 Bulkhead



Type O-2 Bulkhead



Type O-3 Bulkhead

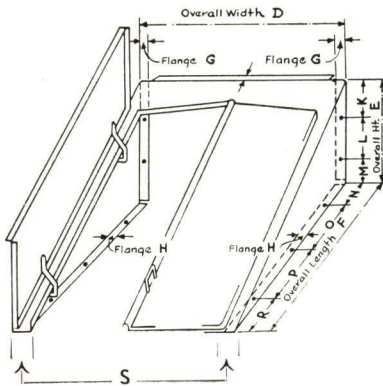
the head of the bulkhead, the bulkhead is shipped with the vertical flange turned down. After setting in place the joint between the masonry and steel is then caulked as previously described.

The dimension diagram herewith shows the location of all anchor bolts. These bolts may be set in place by the

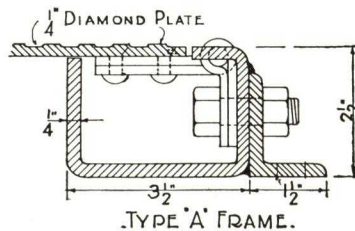
mason during construction to receive the bulkhead when all rough work is completed. At the time of installation the flanges at the bottom and ends of side members should be embedded firmly in a cushion of roofing cement or Vulcatex, to insure weathertightness.

TABLE OF DIMENSIONS, WEIGHTS, ETC.

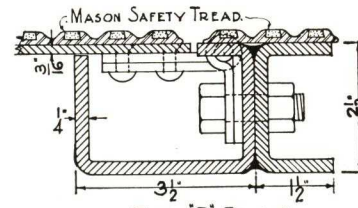
Dimensions	Type O-3			Type O-2			Type O-1		
	Size			Size			Size		
	A	B	C	A	B	C	A	B	C
D	3' 11"	4' 3"	4' 7"	3' 11"	4' 3"	4' 7"	3' 11"	4' 3"	4' 7"
E	2' 0 1/2"	1' 10"	1' 7 1/2"	2' 0 1/2"	1' 10"	1' 7 1/2"	2' 0 1/2"	1' 10"	1' 7 1/2"
F	4' 10 1/2"	5' 4"	6' 0"	4' 10 1/2"	5' 4"	6' 0"	4' 10 1/2"	5' 4"	6' 0"
G	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
H	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
I	4"	4"	4"	4"	4"	4"	4"	4"	4"
J	1' 4"	1' 2"	1' 0"	1' 4"	1' 2"	1' 0"	1' 4"	1' 2"	1' 0"
K	4"	4"	4"	4"	4"	4"	4"	4"	4"
L	4"	4"	4"	4"	4"	4"	4"	4"	4"
M	6"	6"	6"	6"	6"	6"	6"	6"	6"
N	1' 10"	2' 1"	2' 4"	1' 10"	2' 1"	2' 4"	1' 10"	2' 1"	2' 4"
O	1' 10"	2' 1"	2' 4"	1' 10"	2' 1"	2' 4"	1' 10"	2' 1"	2' 4"
P	8"	8"	10"	8"	8"	10"	8"	8"	10"
Q	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"
R									
S									
Price.....	\$30.00	\$32.00	\$34.00	\$34.00	\$35.00	\$36.50	\$40.00	\$42.00	\$44.50
Shipping weight, lbs.	180	200	225	180	200	225	180	200	225



BILCO PATENT SIDEWALK DOORS



TYPE A FRAME.



TYPE B FRAME.

TYPE A—STOCK SIZES

Type	Clear opening		Shipping wt., lbs.	Price
	Width	Length		
A-1	2' 10"	3' 4"	230	\$46.00
A-2	3' 4"	3' 10"	255	48.50
A-3	3' 10"	3' 10"	280	52.00

Type A doors made to special sizes; clear openings from 9 to 60 sq. ft. using standard door frame.

TYPE B—STOCK SIZES

Type	Clear opening		Shipping wt., lbs.	Price
	Width	Length		
B-1	2' 10"	3' 4"	265	\$65.00
B-2	3' 4"	3' 10"	290	70.00
B-3	3' 10"	3' 10"	320	75.00

Type B doors made in special sizes; clear openings from 9 to 60 sq. ft. using standard or heavy duty door frame.

Bilco Sidewalk Doors embody the finest quality materials and workmanship. They are made in two models. Standard Model for use where maximum loading will not exceed 100 lbs. per sq. ft. and the span is 6 ft. or less and the Heavy Duty Model for loads of over 100 lbs. per sq. ft. and spans of over 6 ft. For Heavy Duty Doors the standard frame is specially reinforced with 1/2-in. square cross ties welded in and spaced so as to suit the required loading. The Standard Model is made in three standard sizes. The Heavy Duty Model is not made to standard dimensions but is furnished to meet customers' special requirements. Standard as well as Heavy Duty Models can be supplied with diamond pattern plate surfacing or Mason safety tread surface.

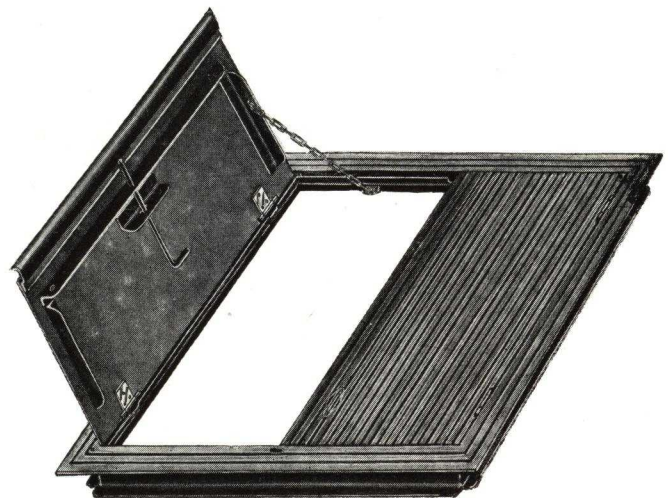
All models are guaranteed absolutely watertight.

All models are equipped with Bilco, non-breakable, rolled brass hinges, rugged bolt for locking from inside and chain to hold doors in upright position when open.

An excellent grade cover for sidewalk elevators of any size.



Type A Sidewalk Door



Type B Sidewalk Door

THE CANTON FOUNDRY & MACHINE CO.

DIVISION OF THE HILL CLUTCH MACHINE & FOUNDRY CO.

Manufacturers of Building Specialties
6400 Breakwater Avenue, CLEVELAND, OHIO

NEW YORK OFFICE: Room 401, 401 Broadway—Telephone, CAnal 6-2065

PRODUCTS

BUILDING SPECIALTIES, which include:

Sidewalk Doors; Coalhole Covers; Sidewalk Ventilators; Area Gratings; Illuminating Iron Sidewalk Plates; Sidewalk Gutter Boxes; Conductor Connections; Conductor Boots; Ash Pit Doors; Stack

Doors; Coal Chutes (Foundation); Coal Doors; Wheel Guards; Valve Covers; Drain Covers; Water Meter Covers; Lamphole Covers; Catchbasin Covers; Manhole Covers; Street Drain Boxes; Street Castings and Automobile Turntables.

Construction

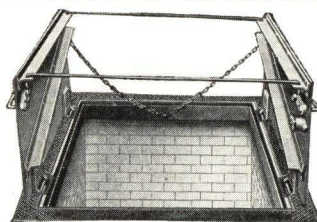
Our doors are constructed with a heavy cast iron frame cast in one piece, which will last indefinitely, because cast iron has a very great resistance to corrosion. Frame has a large water drain cast entirely around the inside and is provided with a drain through the center where the doors meet. The leaves are $\frac{1}{4}$ -in. checkered steel plate reinforced with angles and provided with heavy removable cast iron hinges having bronze hinge pins.

CLEAR OPENING SIZES

All dimensions in inches

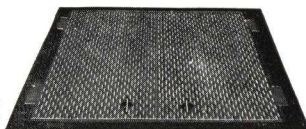
A	B	A	B	A	B
Double Leaf					
30	42	48	36	60	60
30	48	48	48	66	36
36	36	54	48	66	48
36	48	57	57	72	36
40	48	60	36	72	48
44	44	60	48	72	60
Single Leaf					
20	18	24	24	30	30
24	18	30	24	36	30

WATERPROOF SIDEWALK DOORS

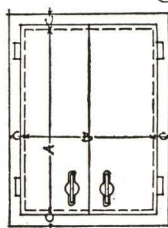


OPEN WITH STAY ROD AND CHAIN

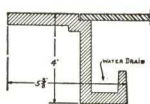
Furnished in sizes shown by the three tables on this page



CLOSED



PLAN



Section Thru C.I. Frame

All our Sidewalk Doors are flush and comply with city laws.

Specifications

Double Leaf Doors—Furnish and install, flush type, Double Steel Leaf Sidewalk Doors, of the clear opening size as shown on the plans, and as manufactured by THE CANTON FOUNDRY & MACHINE CO., Cleveland, Ohio.

Doors to be constructed with a heavy cast iron frame, cast in one piece, with a $1\frac{1}{4}$ x1-in. water drain, cast around the inside of frame, this drain to be provided with two $\frac{3}{4}$ -in. pipe taps for attaching pipe drains to sewer or sump.

Checkered steel door leaves to be $\frac{1}{4}$ in. thick, reinforced with $3\times 2\times \frac{1}{4}$ -in. angles, and provided with a $2\times \frac{1}{8}$ -in. channel drain through center where doors meet.

Door leaves to be provided with heavy removable cast iron hinges with bronze hinge pins.

Doors to lock and unlock from inside only, by means of sliding bolt type lock, and provided with stay rod and chains to hold the same in open position.

Single Leaf Doors—Furnish and install, flush type, Single Leaf Steel Sidewalk Doors of the clear opening size as shown on the plans and as manufactured by THE CANTON FOUNDRY & MACHINE CO., Cleveland, Ohio.

Doors to be constructed with a heavy cast iron frame, cast in one piece, with a $1\frac{1}{4}$ x1-in. water drain around the inside of frame, this drain to be provided with two $\frac{3}{4}$ -in. pipe taps for attaching pipe drains to sewer or sump.

Checkered steel door leaf to be $\frac{1}{4}$ in. thick, provided with heavy removable cast iron hinges with bronze hinge pins and sectors for holding door open, and locking same when closed.

UNIVERSAL CAST IRON LEADER BOOTS AND AUTOMOBILE TURNTABLES

The use of cast iron boots eliminates any possible chance of having an unsightly, rusted out down-spout. They cannot become broken or displaced, and when installed have a very neat appearance and are an added attraction to the finished building.

Construction and Finish—"Universal" Leader Boots and Connections are constructed of cast iron. The castings are sand-blasted and all fins are carefully removed. They are easily installed, being provided with lugs for attaching them to wall brackets. They are designed to correspond with plain round, round corrugated and square corrugated copper or galvanized iron conductor pipe.

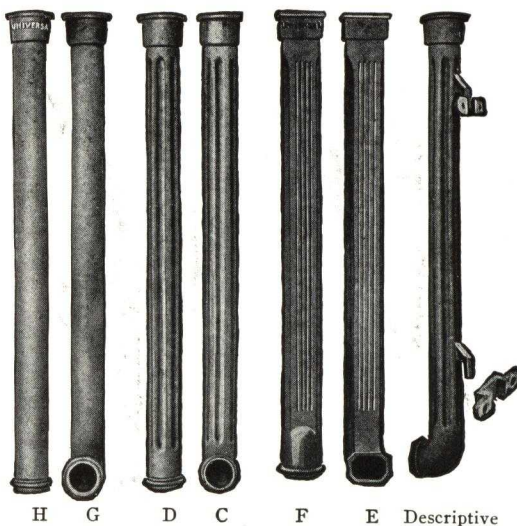
SIZES

Style	Size, in.	Style	Size, in.
C, D, H, G	3	F, E	$2\frac{3}{4} \times 3\frac{1}{2}$
	4		$3\frac{1}{4} \times 4\frac{1}{2}$
	5		$4\frac{1}{4} \times 5\frac{1}{2}$
	6		$5\frac{1}{4} \times 6\frac{1}{2}$

Standard stock sizes are 4 ft. 6 in. over all. Can furnish any length desired, also special sizes. Styles H, D

and F are used with underground soil pipe or tile drains. Styles G, C and E discharge water on sidewalk or driveway.

Specifications—Furnish and install for all downspout connections "Universal" Cast Iron Leader Boots or Connections manufactured by THE CANTON FOUNDRY & MACHINE CO., Cleveland, Ohio, of the style, size and length as shown on the plans. Same to be provided with lugs and $1\frac{1}{2}$ -in. wall brackets for attaching to building.



Automobile Turntables

Made in two styles; one without pit which may be placed anywhere on a solid base; the other placed over a pit which is furnished with or without a washrack extension which may be connected to the drain to take away water used in washing cars.

Made for passenger cars in diameters from 14 to 16 ft. and for trucks and busses up to 30 ft. Capacities range from 3 to 15 tons. Furnished for manual or electric operation. Complete directions for erecting are furnished with each order. Any careful mechanic can install them.

ARMORED CONCRETE *and* STANDARD CONSTRUCTION CASTINGS

NOVEMBER, 1938

CATALOG NO. 110



Exit from Holland Tunnel — New York City

THE CONSTRUCTION CASTINGS CORPORATION
THE ARMORED CONCRETE CORPORATION
FLOCKHART FOUNDRY COMPANY

NEWARK, N. J.

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Rectangular	18
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THE CONSTRUCTION CASTINGS CORPORATION

THE ARMORED CONCRETE CORPORATION

F L O C K H A R T F O U N D R Y C O M P A N Y

ARMORED CONCRETE

UNEQUALED FOR USE IN CONSTRUCTING

Curbs
Driveways
Edges of Pavement
Traffic Markers

Wheel Guards
Loading Platforms
Railway Platforms
Subbases

Doorways
Column Guards
Wainscoting
Trench Frames

ARMORED CONCRETE is concrete with the exposed vertical surfaces armored with gray cast iron. This armor is bonded to the concrete in such a manner that no part of it can vibrate in the slightest degree. Consequently there can be no fracture of the iron. Since cast iron is substantially incompressible the force of an impact is so widely distributed that the concrete is undamaged. The resistance of the cast iron element to abrasion and corrosion is evident. The coefficients of expansion of cast iron and concrete are for all practical purposes identical so that the armored concrete is unaffected by variations of temperature.

Guarantee *Providing the method of installation is approved by us, any cast iron component which may crack within ten years from invoice date will be replaced gratis, F.O.B. nearest railroad station. In addition a cash refund equal to the purchase price of the cast iron component, excepting gratings and covers, will be made.*

WHY CAST IRON IS USED

Concrete cannot withstand abrasion or impact without surface damage. Steel shapes have been long used in an effort to protect concrete from impact and abrasion, but because steel is flexible it transmits impacts directly into the concrete, thereby breaking down the concrete.

Cast iron is markedly superior to steel from the standpoint of abrasion, corrosion and facility of shaping. Its single fault has been that it failed under impact. This difficulty is entirely eliminated by the Armored Concrete system of construction which makes cast iron the perfect armoring material.

ARMORED CONCRETE HAS BEEN ADEQUATELY TESTED

In 1924 initial Armored Concrete installations were made at selected points in Metropolitan New York where they would be subjected to the most severe conditions of impact and abrasion. Locations were purposively selected which would subject the construction to the most grueling punishment. Not one failure occurred.

Since then hundreds of Armored Concrete installations have been made, in cases where other types of construction have failed, and they have withstood in all instances the double test of time and performance.

AVAILABILITY

On the following pages are described the more common types of Armored Concrete construction. Because cast iron can be cast into the most complex shapes, Armored Concrete can be adapted to many situations not described there. The Engineering Department of the Armored Concrete Corporation is prepared to make detailed recommendations covering all phases and application of its products. Estimates will be prepared without obligation.

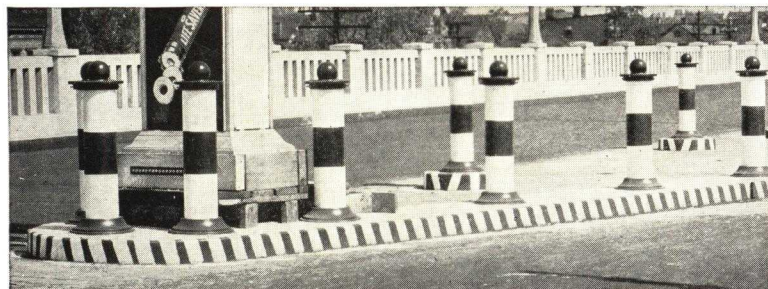
The composite cast iron and concrete structure are both protected by U. S. letters patent No. 1789829.



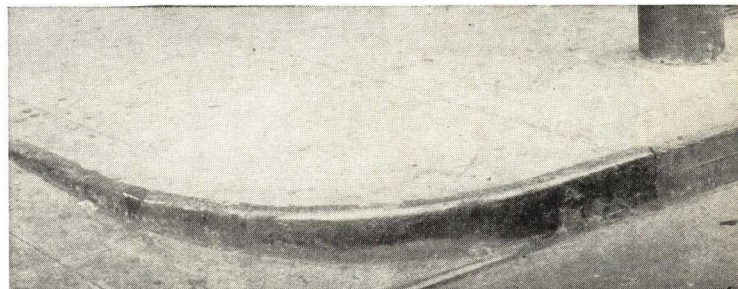
Cast Iron Components before Cove Was Poured
Pennsylvania Railroad Station, Newark, N. J.



Armored Concrete Curb at Toll Booth, New Jersey
Approach of Holland Tunnel, N. Y. C.



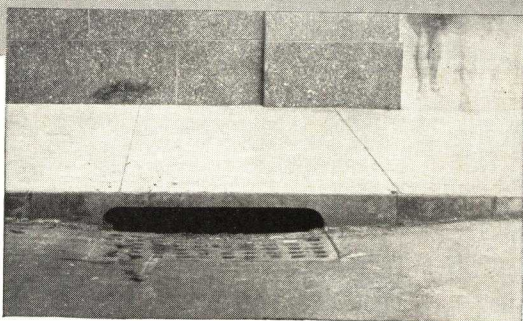
Armored Concrete Traffic Island at Jersey City Approach to
Holland Tunnel, N. Y. C.



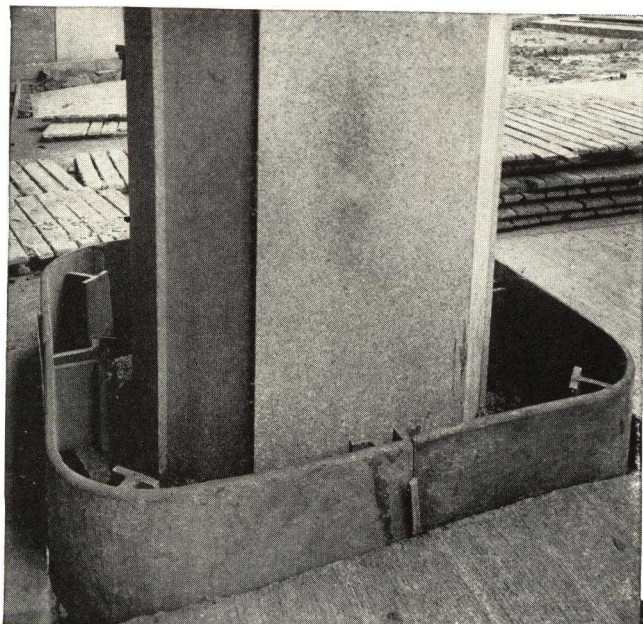
Armored Concrete Drop Curb at L. Bamberger and Co.,
Newark, N. J.

ARMORED CONCRETE FOR PERMANENCE

CHARACTERISTICS AND SOME REPRESENTATIVE



Armored Concrete Curb Inlet, L. Bamberger & Co.,
Newark, N. J.



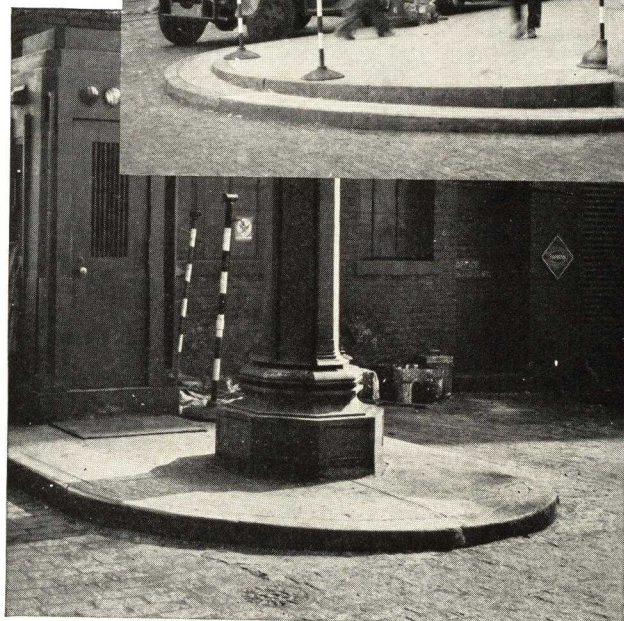
CHARACTERISTICS OF ARMORED CONCRETE

1. **IMPACT RESISTANCE**—Armored Concrete is the only commercially known structure that resists impacts perfectly.
2. **ABRASION RESISTANCE**—All surfaces subject to abrasion are protected by the cast iron component. The performance of cast iron under abrasion is evident.
3. **CORROSION RESISTANCE**—The corrosion of cast iron as used in Armored Concrete is negligible.
4. **VARIATION OF TEMPERATURE**—The coefficients of expansion of cast iron and concrete are so very slightly different that Armored Concrete is not damaged by temperature variations.
5. **FIRE RESISTANCE**—The cast iron prevents Armored Concrete from being damaged by fire.
6. **ELIMINATION OF FORMS**—When Armored Concrete is used much form work is eliminated. This greatly simplifies construction and reduces costs.
7. **MAINTENANCE**—None.
8. **APPEARANCE**—Armored Concrete is exceptionally pleasing in appearance, the cast iron component being hardly detectable. The cast iron looks like gun metal.



(Upper) Cast Iron Components before Pouring Concrete, Pennsylvania
Railroad Station, Newark, N. J.

(Lower) Armored Concrete Curb at
Exit of Holland Tunnel, N. Y. C.



Armored Concrete Curb at Jersey City Entrance of Holland
Tunnel, N. Y. C.



Armored Concrete Curb at U. S. Military Academy,
West Point, N. Y.

INSTALLATIONS OF ARMORED CONCRETE

SOME REPRESENTATIVE INSTALLATIONS

Port of New York Authority	Holland Tunnel Approach
Port of New York Authority	Inland Terminal
U. S. Government	U. S. Military Academy
Pennsylvania R. R. Co.	Newark Station
N. Y. Central R. R. Co.	St. John's Park Terminal
N. Y. Central R. R. Co.	Grand Central Terminal
New York Dock Dept.	Piers 88—90—92
Pennsylvania R. R. Co.	Pier F
Western Electric Co.	Industrial Plant
General Electric Co.	Industrial Plant
Sheffield Farms Co.	Milk Depots
Borden's Farm Product Co., Inc.	Milk Depots
Prudential Insurance Co.	Office Building
L. Bamberger & Co.	Department Store
Daniel Reeves	Warehouse
City of Mt. Vernon, N. Y.	4000 ft. of Curb
Knickerbocker Ice Co.	Industrial Plant
City of Newark, N. J.	Several Hundred Corners
Continental Can Co., Inc.	Industrial Plants
City of Chicago	Safety Islands
Tri-Borough Bridge, N. Y. C.	Safety Islands
Henry Hudson Parkway, N. Y. C.	Toll Booth Islands
Baltimore and Ohio R. R. Co.	Passenger Station Platform
Panama Canal	Loading Platforms
Port of New York Authority	Lincoln Tunnel Approach



Armored Concrete Curb at Inland Terminal Number 1, Port of New York Authority, N. Y. C.

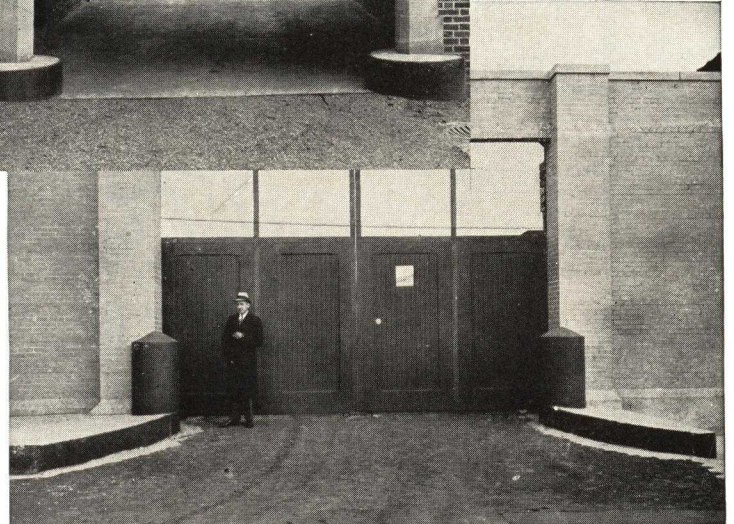
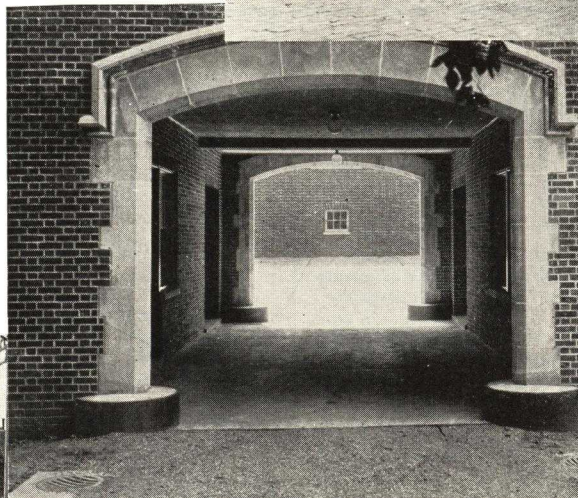


(Above) Loading Platform, New York Central Railroad, New York City

(Right) Wheel Guards at Tuscan School, Maplewood, N. J.



Armored Concrete Monolithic Sidewalk and Curb, Mt. Vernon, N. Y.

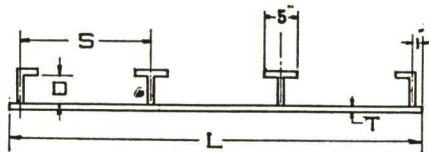
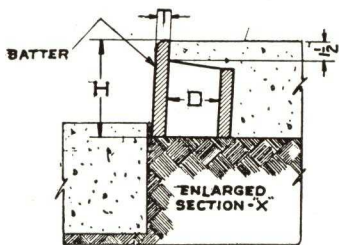
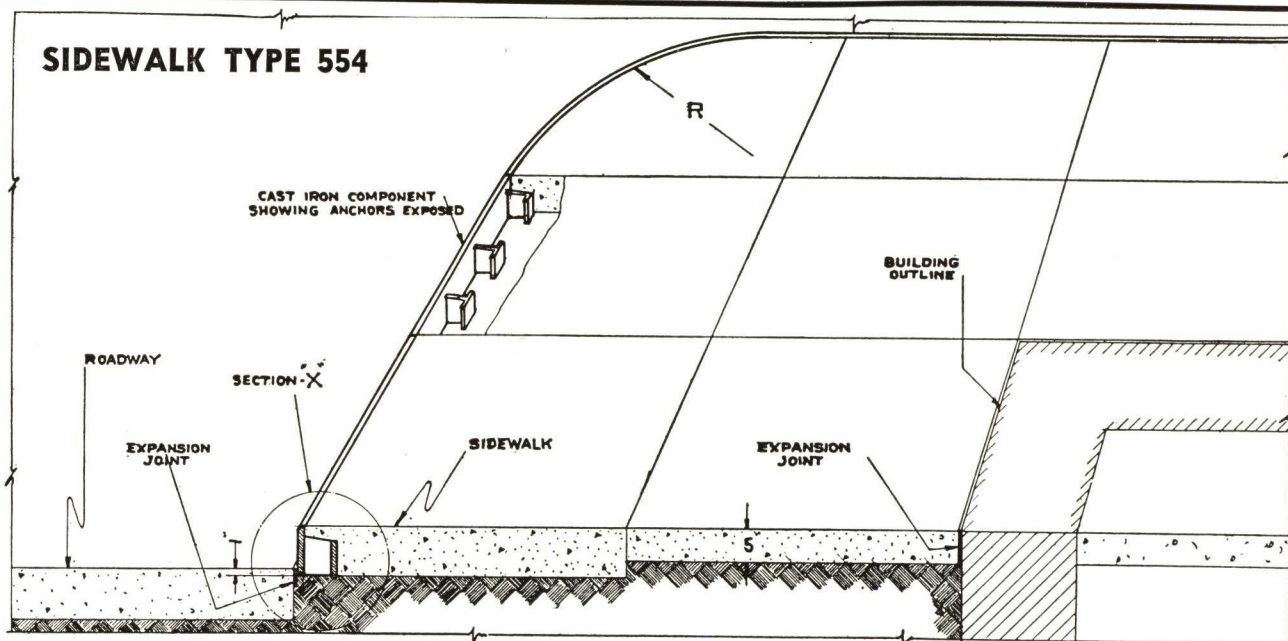


Armored Concrete Doorway Guard, Borden's Farm Products Co., Long Island City, N. Y.

ARMORED CONCRETE FOR PERMANENCE

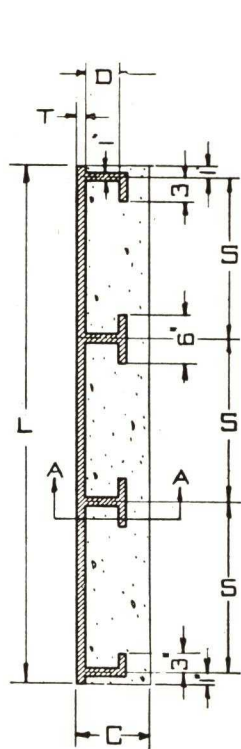
ARMORED CONCRETE SIDEWALK AND CURB

SIDEWALK TYPE 554

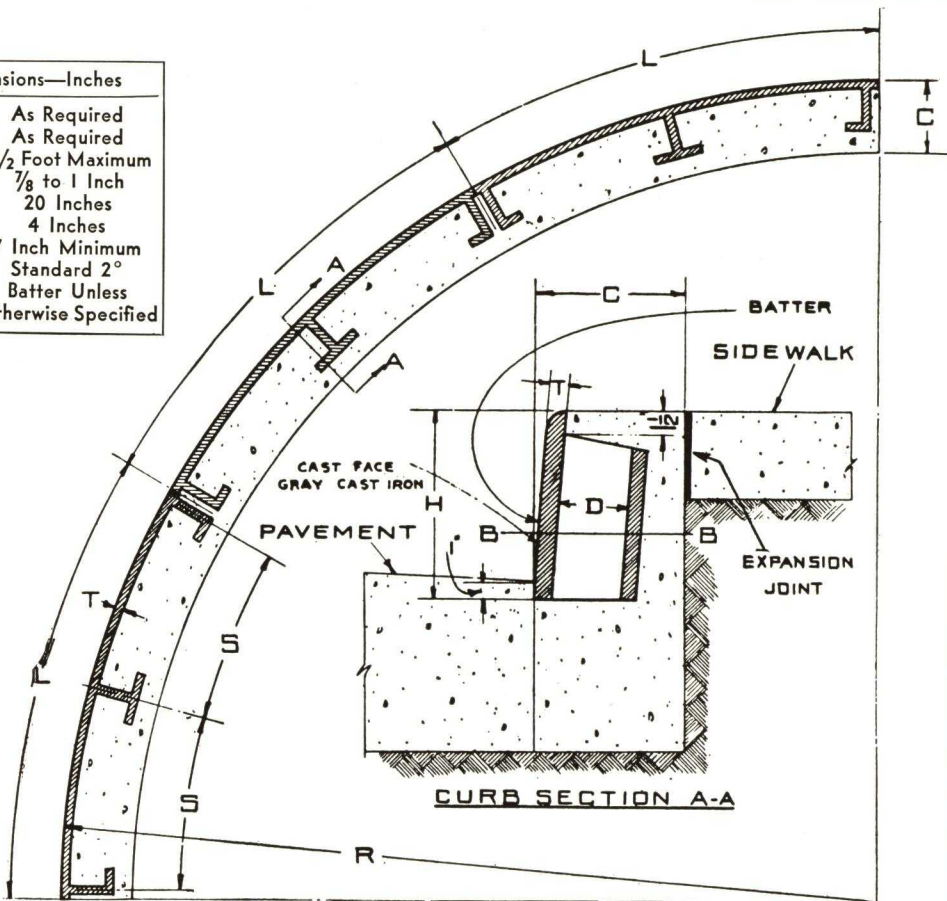


Dimensions—Inches		Dimensions—Inches	
H	As Required	R	As Required
L	6 1/2 Feet Maximum		Standard 2°
T	3/4 to 7/8 Inches		Batter Unless
S	18 Inches Maximum		Otherwise
D	4 Inches		Specified

CURB TYPE 520



Dimensions—Inches	
R	As Required
H	As Required
L	6 1/2 Foot Maximum
T	7/8 to 1 Inch
S	20 Inches
D	4 Inches
C	7 Inch Minimum
	Standard 2°
	Batter Unless
	Otherwise Specified



ARMORED CONCRETE DROP CURB LOADING PLATFORM

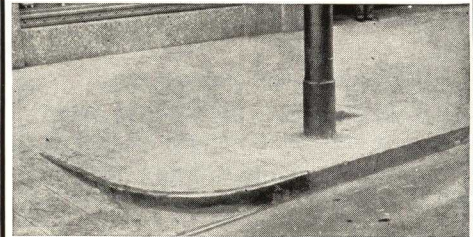
13
44

DROP CURB "TYPE A"

No. 521

DIMENSIONS—INCHES

R	12, 18, 24, 30 and 36 Inches
H	6, 8, 10 and 12 Inches
T	$\frac{7}{8}$ to 1 Inch
S	20 Inches
D	5 Inches
C	8 Inches
L	As Required
Batter	$\frac{1}{2}$ to 8 Inches



DROP CURB "TYPE B"

No. 523

DIMENSIONS—INCHES

H	6, 8, 10 and 12 Inches
T	$\frac{7}{8}$ to 1 Inch
E	18, 24 and 30 Inches
L	As Required
V	Variable
D	4 Inches
S	20 Inches

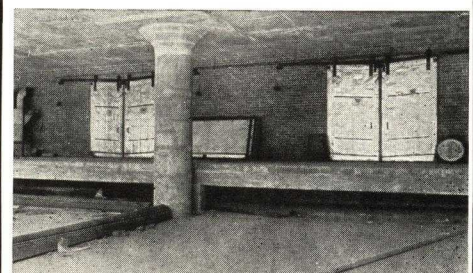
This is an alternate type of drop curb to No. 521 shown above.

LOADING PLATFORM

No. 525

DIMENSIONS—INCHES

H	6, 8, 10 and 12 Inches
T	$\frac{7}{8}$ to 1 Inch
S	20 Inches
D	6 Inches Minimum
L	As Required



ARMORED CONCRETE LOADING PLATFORM AND DOORWAY GUARD

13
44

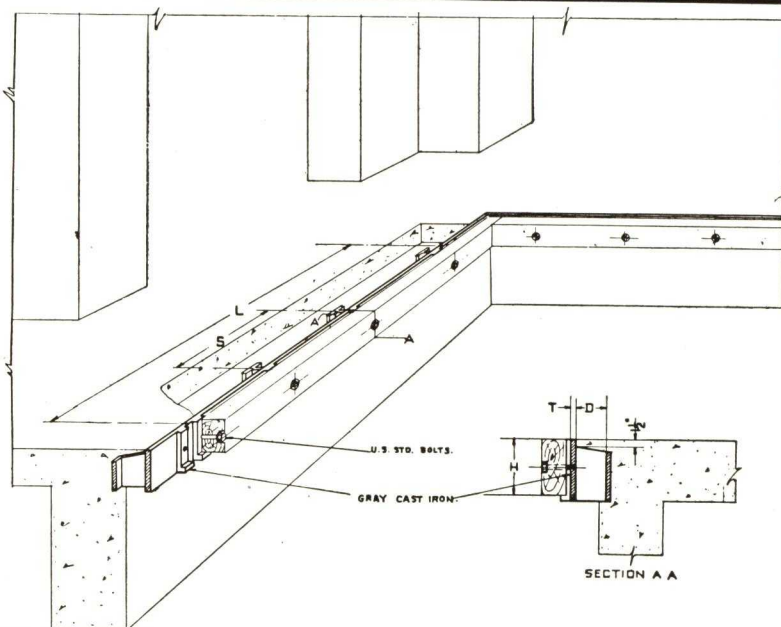
LOADING PLATFORM WITH WOOD BUMPER

No. 536

DIMENSIONS—INCHES

H	6, 8, 10 and 12 Inches
T	$\frac{7}{8}$ to 1 Inch
S	20 Inches
D	6 Inches Minimum
L	As Required

In this type provision is made for a renewable wooden bumper to prevent injury to vehicles.

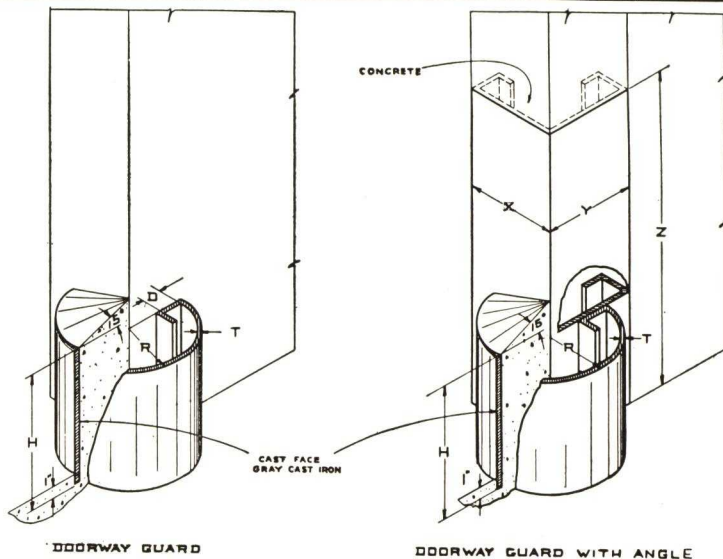
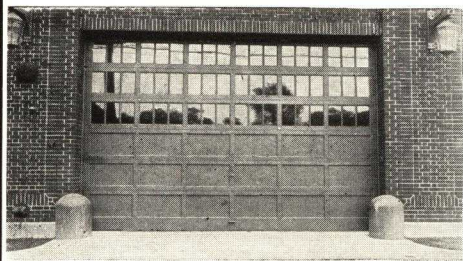


DOORWAY GUARD

No. 532

DIMENSIONS—INCHES

R	8 and 12 Inches
H	8, 16, and 24 Inches
T	1 Inch
S	20 Inches
D	4 Inches
C	8 Inches Minimum
X	6, 8, 10 and 12 Inches
Y	6, 8, 10 and 12 Inches
Z	2, 3, 4, 5, 6 and 7 Feet

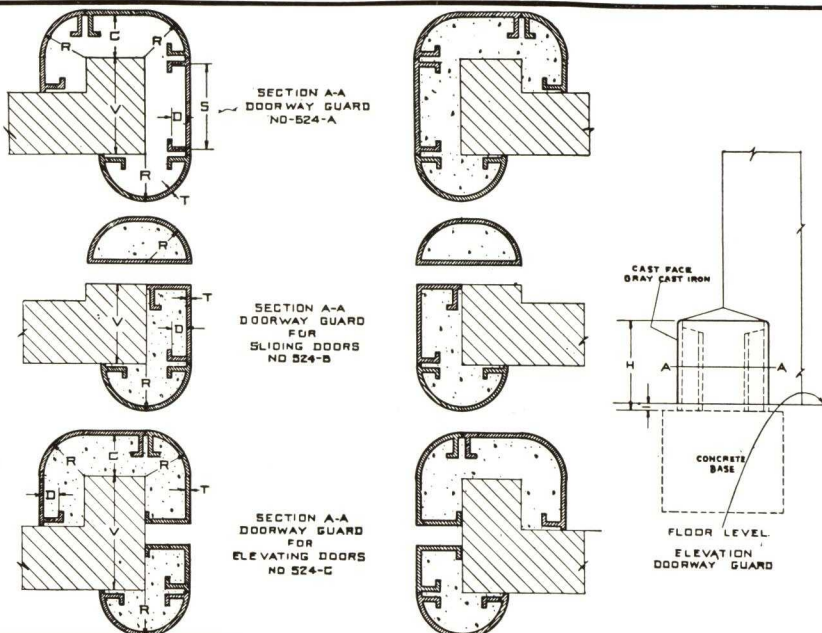
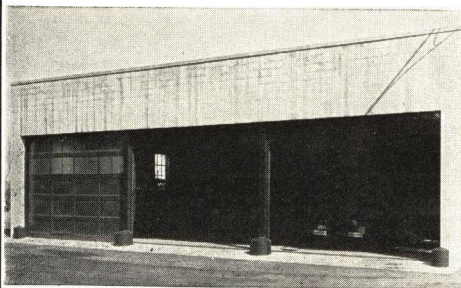


DOORWAY GUARD

No. 524

DIMENSIONS—INCHES

R	8 and 12 Inches
H	8, 16 and 24 Inches
T	$\frac{7}{8}$ to 1 Inch
S	20 Inches
D	4 Inches
C	7 Inches Minimum
V	Variable



8

COPING GUARD

No. 112

DIMENSIONS—INCHES

H	4 and 5 Inches
T	$\frac{7}{8}$ to 1 Inch
S	20 Inches
D	5 Inches Minimum
L	As Required

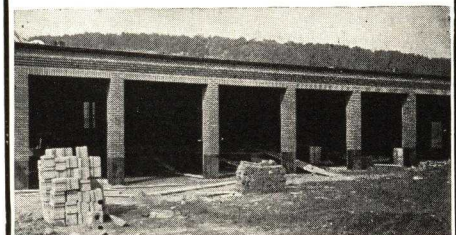
This is the only known successful type of cope for walls exposed to traffic.

WALL CORNER and END PROTECTION

No. 531

DIMENSIONS—INCHES

H	2, 3, 4, 5, 6 and 7 Inches
Z	6, 8, 10 and 12 Inches
V	Variable
W	12 Inches
L	Variable
T	1 Inch
S	20 Inches Maximum
D	4 Inches



COLUMN GUARDS CIRCULAR and SQUARE

No. 522

DIMENSIONS—INCHES

RECTANGULAR

R	8 and 12 Inches
H	8, 16 and 24 Inches
T	$\frac{7}{8}$ to 1 Inch
L	As Required
S	20 Inches
D	4 Inches
C	7 Inches Minimum

CIRCULAR

Dia.	As Required
H	8, 16 and 24 Inches
T	$\frac{7}{8}$ to 1 Inch
S	20 Inches
D	4 Inches
C	7 Inches

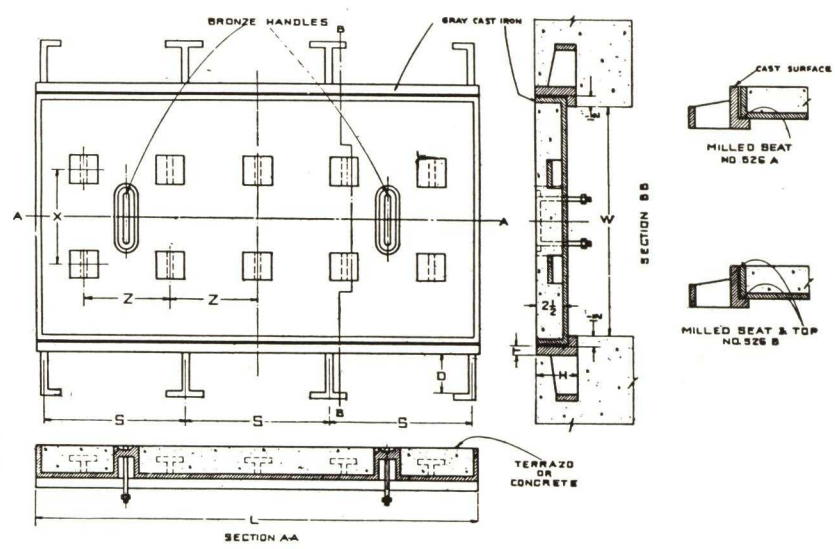
ARMORED CONCRETE TRENCH FRAMES COVERS or GRATINGS

TRENCH FRAMES and COVERS For CONCRETE or TERRAZZO FILL

No. 526

DIMENSIONS—INCHES	
W	6, 12, 18 and 24 inches
L	36 Inches
H	4 1/2 Inches
T	1/2 Inch
S	20 Inches Maximum
D	4 Inches
X	10 Inches
Z	10 Inches

The use of cast iron is especially indicated for covers which are to be filled with concrete or terrazzo as the rigidity of cast iron prevents cracking of the fill.

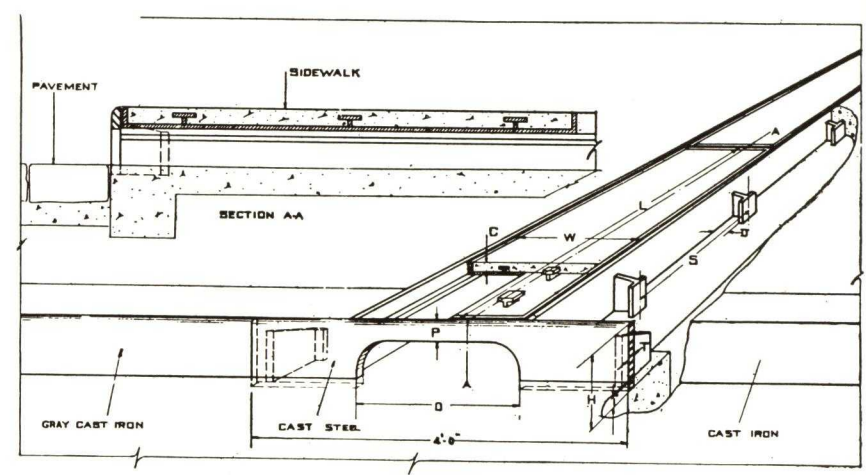


LEADER DRAIN UNDER SIDEWALK

No. 542

DIMENSIONS—INCHES	
O	6, 8, 10 and 12 Inches
P	2 1/2 Inches Minimum
H	6, 8, 10 and 12 Inches
T	1 Inch
W	6, 8, 10 and 12 Inches
L	4 1/2 Foot Maximum
C	2 1/2 Inches
S	20 Inches
D	5 Inches

Note that the curb section is made of cast steel owing to the necessarily fragile design. Horizontal bearing surfaces of frame and cover are milled.

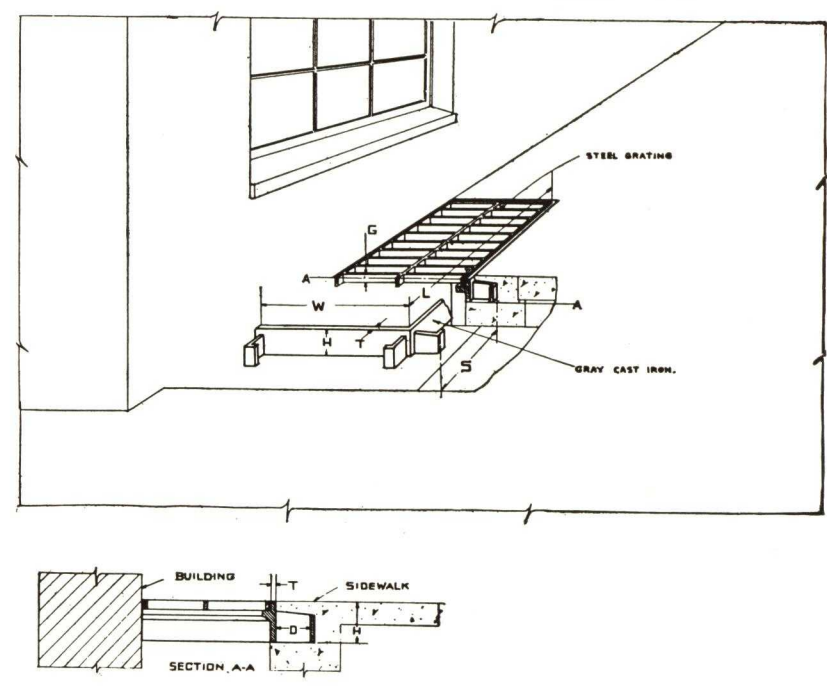


SIDEWALK FRAMES AND GRATINGS

No. 541

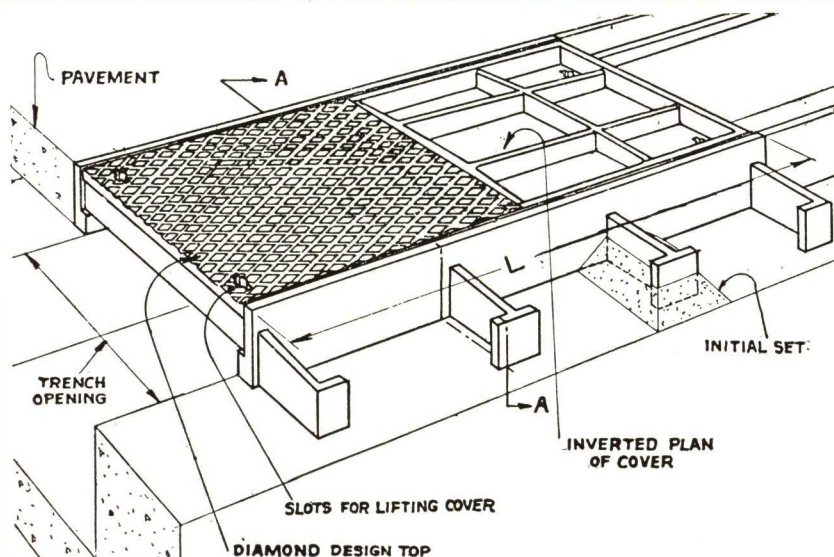
DIMENSIONS—INCHES	
L	As Required
W	As Required
H	4 1/2 Inches
T	5/8 Inches
S	20 Inches Maximum
D	4 Inches
G	As Required

The advantage of this type of construction is that the cast iron frame is not destroyed by corrosion.

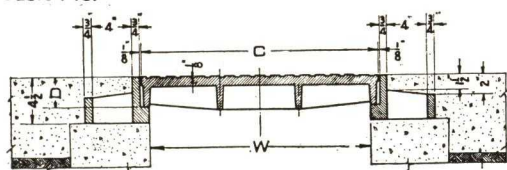


ARMORED CONCRETE TRENCH FRAMES COVERS OR GRATINGS

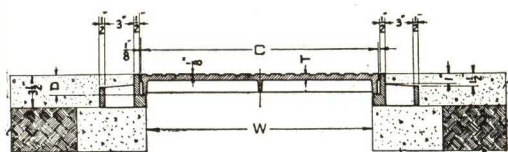
13
44



(At Right) TYPE 551
ROADWAY



(At Left) TYPE 550
WALKWAY



TRENCH FRAMES AND COVERS

B Indicates Milled Horizontal Fitting Surfaces.
C Indicates Milled Hor. & Vert. Fitting Surfaces.

TYPE 551 FOR ROADWAYS

TYPE AND CODE NUMBER		DIMENSIONS INCHES			
		W	L	C	D
41764	41778	6	48	7 ³ / ₄	2
41765	41779	8	48	9 ³ / ₄	2
41766	41780	10	48	11 ³ / ₄	2
41767	41781	12	48	13 ³ / ₄	2
41768	41782	14	48	15 ³ / ₄	2 ¹ / ₂
41769	41783	16	48	17 ³ / ₄	2 ¹ / ₂
41770	41784	18	48	19 ³ / ₄	2 ¹ / ₂
41771	41785	20	48	21 ³ / ₄	2 ¹ / ₂
41772	41786	22	48	23 ³ / ₄	2 ¹ / ₂
41773	41787	24	48	25 ³ / ₄	3
41774	41788	30	48	31 ³ / ₄	3
41775	41789	36	48	37 ³ / ₄	3
41776	41790	42	48	43 ³ / ₄	3
41777	41791	48	48	49 ³ / ₄	3

TYPE 550 FOR WALKWAYS

TYPE AND CODE NUMBER		DIMENSIONS INCHES			
		W	L	C	D
41564	41578	6	48	7 ³ / ₄	1 ¹ / ₂
41565	41579	8	48	9 ³ / ₄	1 ¹ / ₂
41566	41580	10	48	11 ³ / ₄	1 ¹ / ₂
41567	41581	12	48	13 ³ / ₄	1 ¹ / ₂
41568	41582	14	48	15 ³ / ₄	2
41569	41583	16	48	17 ³ / ₄	2
41570	41584	18	48	19 ³ / ₄	2
41571	41585	20	48	21 ³ / ₄	2
41572	41586	22	48	23 ³ / ₄	2
41573	41587	24	48	25 ³ / ₄	2 ¹ / ₂
41574	41588	30	48	31 ³ / ₄	2 ¹ / ₂
41575	41589	36	48	37 ³ / ₄	2 ¹ / ₂
41576	41590	42	48	43 ³ / ₄	2 ¹ / ₂
41577	41591	48	48	49 ³ / ₄	2 ¹ / ₂

TRENCH FRAMES AND GRATINGS

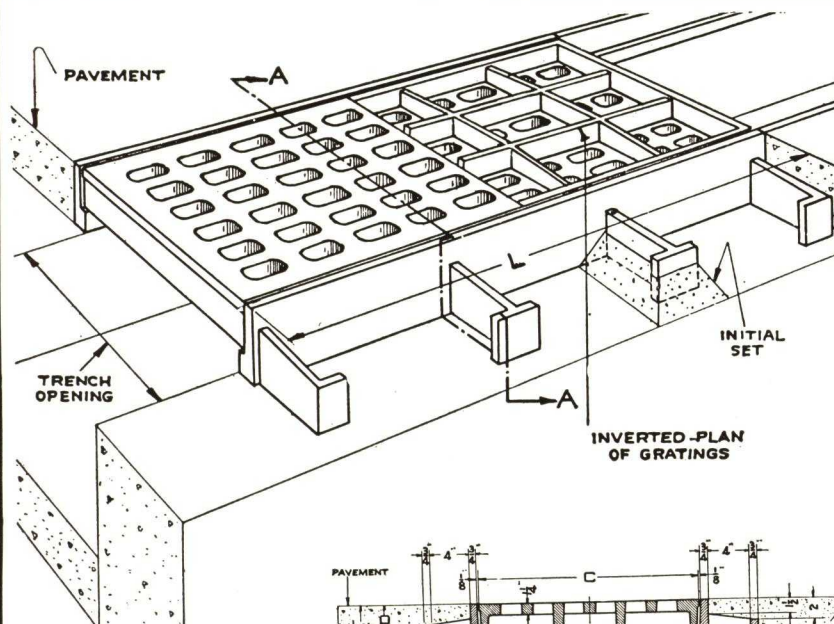
B Indicates Milled Horizontal Fitting Surfaces.
C Indicates Milled Hor. & Vert. Fitting Surfaces.

TYPE 552 FOR ROADWAYS

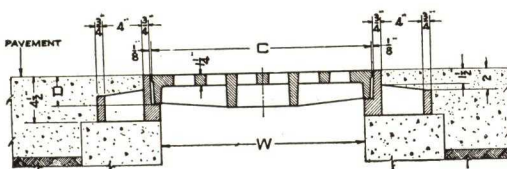
TYPE AND CODE NUMBER		DIMENSIONS INCHES			
		W	L	C	D
41864	41878	6	48	7 ³ / ₄	2
41865	41879	8	48	9 ³ / ₄	2
41866	41880	10	48	11 ³ / ₄	2
41867	41881	12	48	13 ³ / ₄	2
41868	41882	14	48	15 ³ / ₄	2 ¹ / ₂
41869	41883	16	48	17 ³ / ₄	2 ¹ / ₂
41870	41884	18	48	19 ³ / ₄	2 ¹ / ₂
41871	41885	20	48	21 ³ / ₄	2 ¹ / ₂
41872	41886	22	48	23 ³ / ₄	2 ¹ / ₂
41873	41887	24	48	25 ³ / ₄	3
41874	41888	30	48	31 ³ / ₄	3
41875	41889	36	48	37 ³ / ₄	3
41876	41890	42	48	43 ³ / ₄	3
41877	41891	48	48	49 ³ / ₄	3

TYPE 553 FOR WALKWAYS

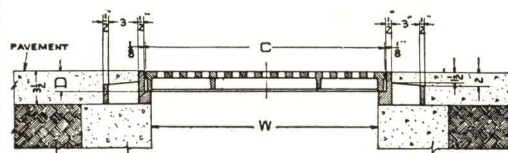
TYPE AND CODE NUMBER		DIMENSIONS INCHES			
		W	L	C	D
41664	41678	6	48	7 ³ / ₄	1 ¹ / ₂
41665	41679	8	48	9 ³ / ₄	1 ¹ / ₂
41666	41680	10	48	11 ³ / ₄	1 ¹ / ₂
41667	41681	12	48	13 ³ / ₄	1 ¹ / ₂
41668	41682	14	48	15 ³ / ₄	2
41669	41683	16	48	17 ³ / ₄	2
41670	41684	18	48	19 ³ / ₄	2
41671	41685	20	48	21 ³ / ₄	2
41672	41686	22	48	23 ³ / ₄	2
41673	41687	24	48	25 ³ / ₄	2 ¹ / ₂
41674	41688	30	48	31 ³ / ₄	2 ¹ / ₂
41675	41689	36	48	37 ³ / ₄	2 ¹ / ₂
41676	41690	42	48	43 ³ / ₄	2 ¹ / ₂
41677	41691	48	48	49 ³ / ₄	2 ¹ / ₂



(At Right) TYPE 552
ROADWAY



(At Left) TYPE 553
WALKWAY



11

CONSTRUCTION CASTINGS

GUARANTEE

Any casting designated for "Roadway" duty which shall break in service from any cause whatsoever within a period of ten years from date of invoice will be replaced gratis f.o.b. nearest railroad station.

THE RETURN OF GRAY IRON

GRAY CAST IRON

Gray Iron, long practically forgotten, has within the past fifteen years been developed to a wide range of utility. Its return as a major material for specific uses is now widely acknowledged.

Both architects and engineers have always academically recognized gray iron as unequaled in its resistance to corrosion and abrasion. Due to inadequate understanding of its nature, its performance has been so unsatisfactory under impact and that its use had become vestigial.

RESEARCH AND DEVELOPMENT

Fifteen years ago our Department of Research and Development initiated an extensive program to determine:

1. The limits to which gray iron could be relied upon.
2. The design of gray iron structures adequate to resist heavy oblique impacts.
3. The development of a definite system of design with the purpose of establishing gray iron as a reliable and economical material.

Some of the results of this research are embodied in this catalog, featuring guaranteed simple gray cast iron constructions.

DESIGN

The essential principle in producing an effective and economical casting is proper design. Our effort is to produce constructions adequate for the conditions imposed and simple in design.

SCOPE

Research indicates conclusively that gray iron, properly designed, is one of the best and most economical materials for stationary, permanent structures. This is especially true where the factors of corrosion, abrasion and oblique impact occur.

Research also indicated that castings had been improperly designed, being too heavy in some cases and too light in others. While gray iron had been used in finest machinery its application in the construction field is only partially developed.

PROTECTION

Painting or galvanizing are required for aesthetic reasons only.

AVAILABILITY OF GUARANTEED CONSTRUCTION CASTINGS

WIDE RANGE OF TYPES AND SIZES

On the following pages are described the more common types of construction castings. They do not represent our full line which is most complete.

ENGINEERING SERVICE

For situations not described here we ask architects and engineers to address our Department of Research and Development. Special design service will be rendered without cost or obligation.

ORDERS

In ordering specify Type and Code Number. Modifications should be clearly explained.

NOTES

Material. All castings are made of close-grained gray cast iron and are readily machineable. Gray cast iron properly designed is one of the most desirable architectural materials.

Milled Fitting Parts. Frames, covers, etc., supplied with milled horizontal bearing surfaces, or with milled horizontal and vertical bearing surfaces when specified. This eliminates rocking and insures a perfect fitting unit.

Lift Handles. Covers will be supplied with lift handles instead of pick holes when specified.

Locks. Covers may be fitted with external or internal locking device, opened with a socket wrench.

ROADWAY

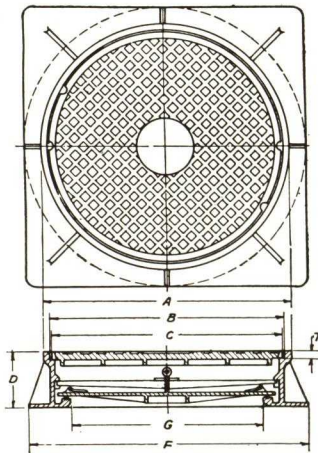
FRAMES FOR PIT OR SLAB CONSTRUCTION SEALED AND LOCKED COVERS—

13
44

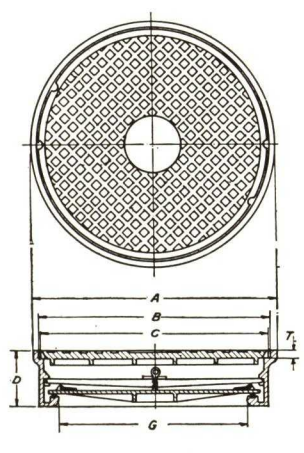
CIRCULAR

FOR PIT, SLAB OR
WATER-PROOF
SLAB CONSTRUCTION.

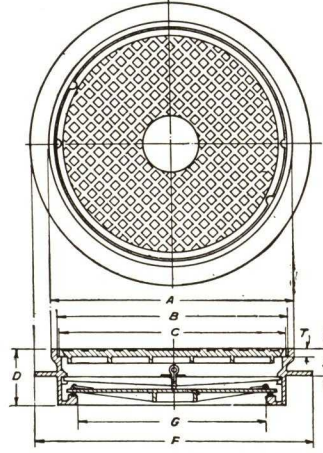
TYPES AND CODE NUMBERS								DIMENSIONS—INCHES							
154-A Circular Flange		154-A Square Flange		154-RA		154-SA		G	A	B	D	F	C	*T	
Roadways	Walkways	Roadways	Walkways	Roadways	Walkways	Roadways	Walkways								
28478	28486	27482	27483	27700	27706	27481	27484	24	34 ³ / ₄	31 ³ / ₄	10	40 ¹ / ₂	31 ¹ / ₂	1 ¹ / ₄	
28479	28487	26140	26180	27701	27707	26145	26185	27	36 ¹ / ₂	33 ¹ / ₂	11	43 ¹ / ₂	33 ³ / ₄	1 ¹ / ₂	
28480	28488	26150	26190	27702	27708	26155	26195	30	39 ¹ / ₂	36 ¹ / ₂	11	46 ¹ / ₂	36 ¹ / ₄	1 ¹ / ₂	
28481	28489	25910	27888	27790	27791	28494	28495	31	41 ¹ / ₄	38 ¹ / ₄	11	47	38	1 ¹ / ₂	
28482	28490	27887	27886	27703	27709	27889	27890	36	47	44	10	52 ¹ / ₂	43 ⁵ / ₈	1 ¹ / ₂	
28483	28491	27864	27885	27704	27710	27891	27892	40	51	48	10	55 ¹ / ₂	47 ⁵ / ₈	1 ¹ / ₂	
28484	28492	28496	28497	27705	27711	27473	27474	42	53	50	10	57 ¹ / ₂	49 ⁵ / ₈	1 ¹ / ₂	
28485	28493	27792	27793	27794	27795	27796	27797	48	58	55	10	63	54 ⁵ / ₈	1 ¹ / ₂	



TYPE 154-A FOR PITS
Circular or Square Flange



TYPE 154-RA FOR SLABS



TYPE 154-SA FOR WATER-
PROOF SLAB

Gasket $\frac{3}{4}$ in. diameter
rubber. Set screw bronze.
Saddle soft steel. Bar cast
steel.

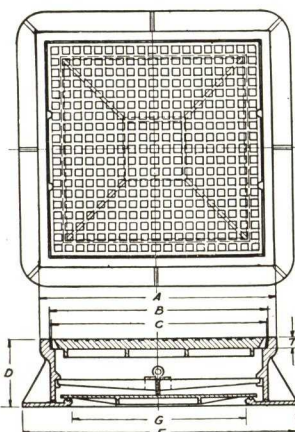
*Horizontal or Horizontal
and Vertical Bearing Sur-
faces milled when specified.*

All covers showing a "C"
dimension of 36 in. or more
are, when specified, made
in two concentric parts.

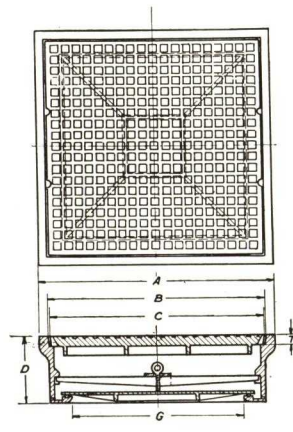
SQUARE

FOR PIT, SLAB OR WATERPROOF
SLAB CONSTRUCTION.

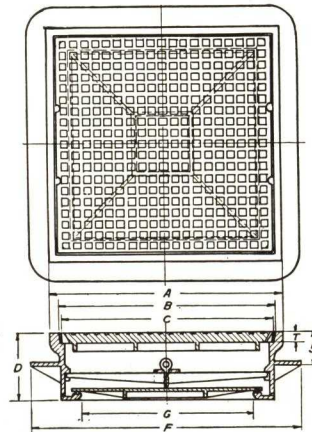
TYPES AND CODE NUMBERS						DIMENSIONS—INCHES						
174-A		174-RA		174-SA		G	A	B	D	F	C	*T
Roadways	Walkways	Roadways	Walkways	Roadways	Walkways							
28000	28001	28002	28003	28004	28005	20	31	28	10	36½	27¾	1½
28006	28007	28008	28009	28010	28011	24	35	32	10	40½	31¾	1½
28012	28013	28014	28015	28016	28017	27	38	35	10	43½	34¾	1½
28018	28019	28020	28021	28022	28023	30	41	38	10	46½	37¾	1½
28024	28025	28026	28027	28028	28029	33	44	41	10	49½	40¾	1½
28030	28031	28032	28033	28034	28035	36	47	44	10	52½	43⅞	1½
28036	28037	28038	28039	28040	28041	40	51	48	10	55½	47⅞	1½
28042	28043	28044	28045	28046	28047	42	53	50	10	57½	49⅞	1½
28048	28049	28050	28051	28052	28053	48	59	56	10	63½	55⅞	1½



TYPE 174-A FOR PITS



TYPE 174-RA FOR SLABS



TYPE 174-SA FOR WATERPROOF
SLABS

Gasket $\frac{3}{4}$ in. diameter
rubber. Set screw bronze.
Saddle soft steel. Bar cast
steel.

*Horizontal or Horizontal
and Vertical Bearing Sur-
faces milled when specified.*

All covers showing a "C"
dimension of 36 in. or more
are, when specified, made
in two equal and identical
parts.

WALKWAY

FRAMES FOR PIT OR SLAB CONSTRUCTION SEALED AND LOCKED COVERS—

*Both type 154 and 174 are supplied with 1 in. thick covers for walkway service. For dimensions and code numbers see above.

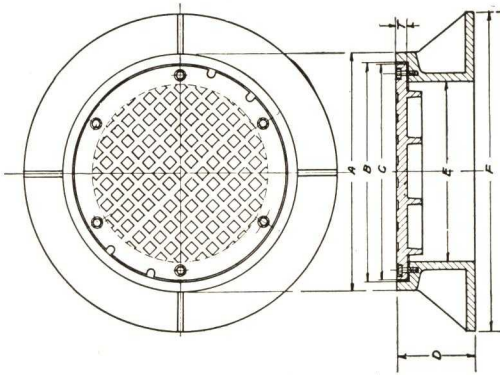
13

GUARANTEED GRAY CAST IRON FOR PERMANENCE

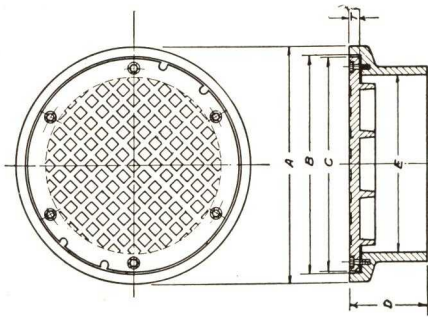
ROADWAY FRAMES FOR PIT OR SLAB CONSTRUCTION GASKETED AND BOLTED COVERS

13
44

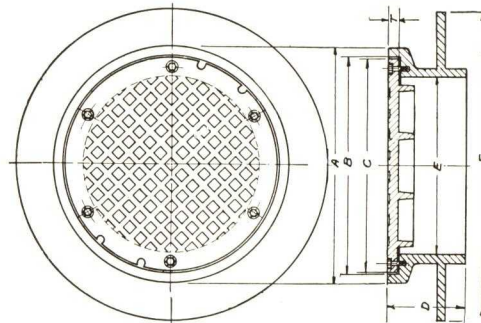
CIRCULAR



TYPE 194-C FOR PITS



TYPE 194-CD FOR SLABS



TYPE 194-CE FOR WATER-PROOF SLABS

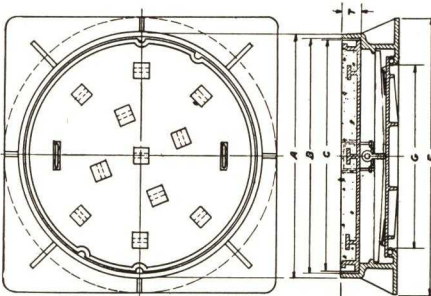
TYPE AND CODE NUMBER			DIMENSIONS—INCHES							No. of Cap Screws
194-C	194-CD	194-CE	E	A	B	D	F	C	T	
28350	28357	28364	12	18	16	8	26	15 $\frac{7}{8}$	1 $\frac{1}{4}$	4
28351	28358	28365	18	24	22	8	32	21 $\frac{7}{8}$	1 $\frac{1}{4}$	4
28352	28359	28366	24	30	28	8	38	27 $\frac{7}{8}$	1 $\frac{1}{4}$	6
28353	28360	28367	30	36	34	8	44	33 $\frac{7}{8}$	1 $\frac{1}{2}$	6
28354	28361	28368	36	42	40	8	50	39 $\frac{7}{8}$	1 $\frac{1}{2}$	8
28355	28362	28369	42	48	46	8	56	45 $\frac{7}{8}$	1 $\frac{1}{2}$	8
28356	28363	28370	48	54	52	8	62	51 $\frac{7}{8}$	1 $\frac{1}{2}$	10

Gasket $\frac{1}{4}$ in. thick flat rubber between milled bearing surface.
Cap screws bronze.

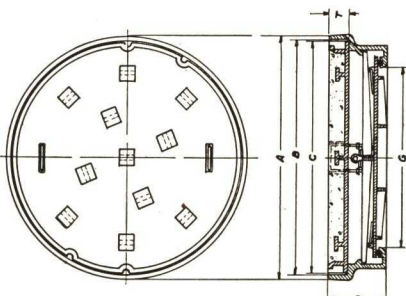
Walkway Covers or Concrete Filled Covers supplied when specified.

WALKWAY FRAMES FOR PIT OR SLAB CONSTRUCTION SEALED AND LOCKED COVERS FOR CONCRETE FILL

CIRCULAR

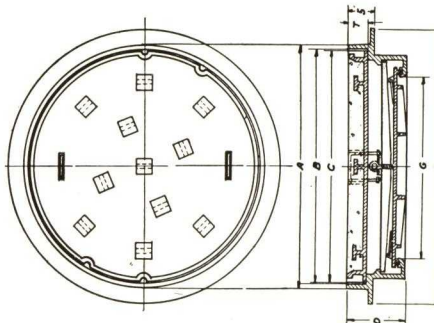


TYPE 201-AC FOR PIT CONSTRUCTION
CIRCULAR SQUARE FLANGE



TYPE 201-RAC FOR SLAB CONSTRUCTION

TYPE AND CODE NUMBER				DIMENSIONS—INCHES						
201-AC	201-AC	201-RAC	201-SAC	G	A	B	D	F	C	T
Circular Flange	Square Flange	Circular Flange	Circular Flange							
28550	28551	28552	28553	20	31 $\frac{1}{4}$	29 $\frac{3}{4}$	11 $\frac{1}{2}$	36 $\frac{1}{2}$	29 $\frac{1}{2}$	3 $\frac{1}{2}$
28554	28555	28556	28557	24	35 $\frac{1}{4}$	33 $\frac{3}{4}$	11 $\frac{1}{2}$	40 $\frac{1}{2}$	33 $\frac{1}{2}$	3 $\frac{1}{2}$
28558	28559	28560	28561	27	38 $\frac{1}{4}$	36 $\frac{3}{4}$	11 $\frac{1}{2}$	43 $\frac{1}{2}$	36 $\frac{1}{2}$	3 $\frac{1}{2}$
28562	28563	28564	28565	30	41 $\frac{1}{4}$	39 $\frac{3}{4}$	11 $\frac{1}{2}$	46 $\frac{1}{2}$	39 $\frac{1}{2}$	3 $\frac{1}{2}$
28566	28567	28568	28569	36	47 $\frac{1}{4}$	45 $\frac{3}{4}$	11 $\frac{1}{2}$	52 $\frac{1}{2}$	45 $\frac{1}{2}$	3 $\frac{1}{2}$
28570	28571	28572	28573	42	53 $\frac{1}{4}$	51 $\frac{3}{4}$	11 $\frac{1}{2}$	58 $\frac{1}{2}$	51 $\frac{1}{2}$	3 $\frac{1}{2}$
28574	28575	28576	28577	48	59 $\frac{1}{4}$	57 $\frac{3}{4}$	11 $\frac{1}{2}$	64 $\frac{1}{2}$	57 $\frac{1}{2}$	3 $\frac{1}{2}$



TYPE 201-SAC WATERPROOF SLAB CONSTRUCTION

Gaskets $\frac{3}{4}$ in. diameter rubber. Set screw bronze. Saddle soft steel. Bar cast steel. Lift handles bronze.

Terrazzo or concrete will not crack in a rigid cast iron cover.

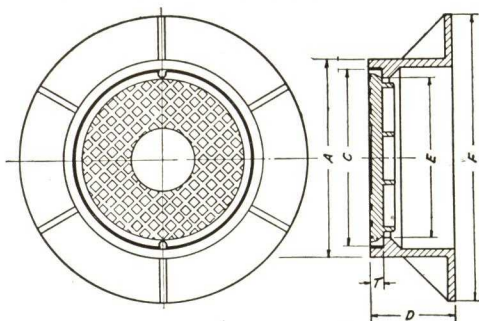
Horizontal or Horizontal and Vertical Bearing Surfaces milled when specified.

14

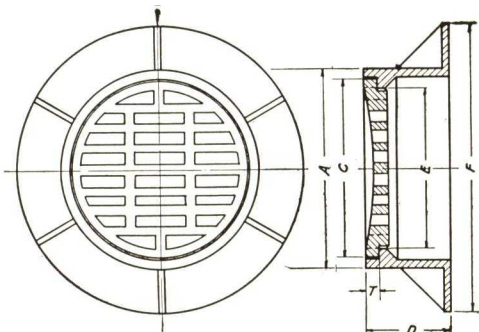
ROADWAY FRAMES FOR PIT CONSTRUCTION GRAVITY COVERS OR GRATINGS

13
44

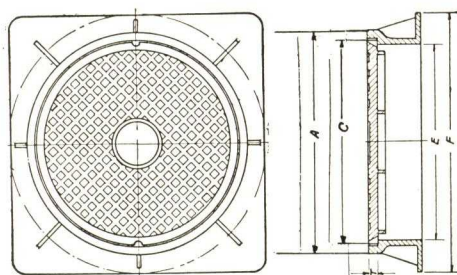
CIRCULAR



TYPE 158-D WITH COVER



TYPE 158-D WITH PLANE OR CONCAVE GRATINGS



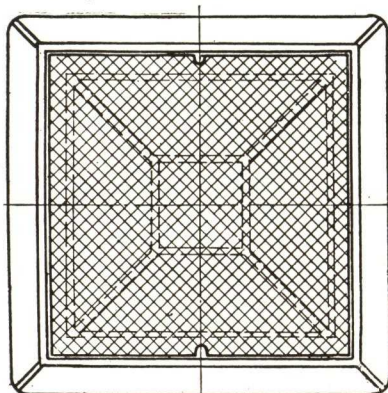
TYPE 173-C WITH COVER

TYPE AND CODE NUMBER					DIMENSIONS—INCHES					
158-D			173-C		E	A	D	F	C	T
With Cover	Concave Gratings	Plane Gratings	Square Flange	Circular Flange						
25112	27413	27410	28071	28072	10 ³ / ₄	14	8	17	12	1 ¹ / ₄
27414		31119			15	18 ³ / ₄	8	27	16 ¹ / ₂	1 ¹ / ₄
					15 ³ / ₄	19 ¹ / ₂	8	24	17 ¹ / ₂	1
25015		31120			19 ¹ / ₂	24	9 ⁵ / ₈	37	21 ¹ / ₈	1 ³ / ₈
25001	25099	27411	26110	28055	21	25 ¹ / ₂	10	40	22 ¹ / ₂	1 ¹ / ₂
25063					21 ¹ / ₄	25 ⁵ / ₈	9	36	23 ³ / ₄	1 ¹ / ₂
25700					21 ¹ / ₂	27 ¹ / ₄	6	38 ¹ / ₂	23 ³ / ₄	1 ¹ / ₂
25008					21 ¹ / ₂	25 ⁵ / ₈	7	32	23 ³ / ₄	3
25026					21 ¹ / ₂	26	8	31 ³ / ₄	24 ¹ / ₈	3
25088					21 ¹ / ₂	26	9	41 ¹ / ₂	24	2
25203					21 ¹ / ₂	26 ¹ / ₂	12	38	23 ³ / ₄	1 ³ / ₈
25226	27412				21 ³ / ₄	26 ³ / ₄	8	36	24	1 ³ / ₈
25031		25032			22	26	7	32	24 ¹ / ₂	1 ¹ / ₄
25273					22	26	8	37	23 ¹ / ₂	1
25017		25006			23 ¹ / ₂	27 ¹ / ₂	8	37	25	1 ³ / ₈
25513		31121	28089	28090	24	28 ¹ / ₂	9 ¹ / ₄	36	25 ³ / ₄	1 ¹ / ₂
			28085	28054	24	28 ¹ / ₂	6	38	26	1 ¹ / ₂
25261					24 ¹ / ₂	29 ³ / ₄	12	40 ¹ / ₂	26 ¹ / ₄	1 ¹ / ₂
27884		31122			25 ¹ / ₂	29 ³ / ₄	8	36	27 ¹ / ₂	1 ¹ / ₂
			26110	28055	26 ¹ / ₂	31	10	37	28 ¹ / ₄	1 ¹ / ₄
26225		31123			27	31	10	38	28 ³ / ₄	2 ³ / ₄
	25904	31124	26383	28056	30	34 ¹ / ₂	8	44	32	1 ¹ / ₂
			28075	28057	30	35	12	46	31 ³ / ₄	1 ¹ / ₂
25557		31125			34	38 ¹ / ₂	8	48 ¹ / ₂	36	1 ¹ / ₂
			28084	28085	34	39 ¹ / ₂	11	46 ¹ / ₂	36 ¹ / ₄	1 ¹ / ₂
25960		31126			36	40 ¹ / ₂	7	54	37 ³ / ₄	1 ¹ / ₂
			25206	28058	36	41 ¹ / ₈	8	48	37 ⁷ / ₈	1 ¹ / ₂
			28076	28059	36	42 ¹ / ₂	12	48	38 ¹ / ₄	2
			26223	28060	42	46 ³ / ₄	10	58	44 ¹ / ₂	3
			28082	28083	48	53	10	57 ¹ / ₂	49 ⁵ / ₈	1 ¹ / ₂

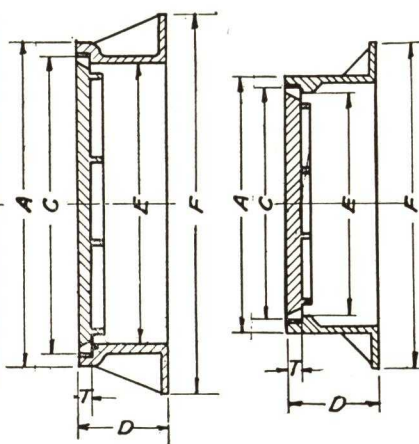
All types on this page supplied with horizontal or horizontal and vertical bearing surfaces milled when specified; also with internal or external locking device when specified.

ROADWAY FRAMES FOR PIT CONSTRUCTION GRAVITY COVERS

SQUARE



TYPE 169-C



TYPE 169-D

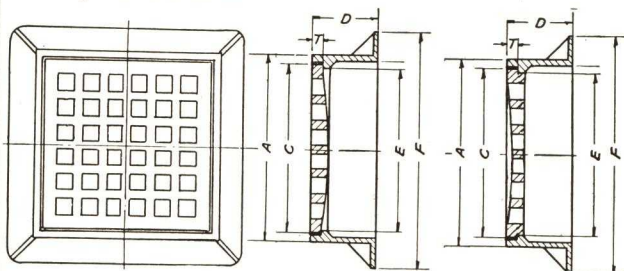
TYPE AND CODE NUMBER		DIMENSIONS—INCHES						
169-D	169-C	E	A	F	D	C	T	
25403		8 ⁵ / ₈	11 ⁷ / ₈	17	9	10 ⁵ / ₈	3	
25406		9 ¹ / ₂	12 ¹ / ₂	21 ¹ / ₂	9 ⁵ / ₈	11 ¹ / ₄	3	
25404		11 ¹ / ₂	14	20	9	13	2 ¹ / ₂	
	26320	21 ¹ / ₂	26	36	9 ³ / ₄	23 ³ / ₄	1 ¹ / ₂	
25914		22	27	40	8	24	1 ³ / ₄	
26393		24	27 ¹ / ₂	35	8	25 ³ / ₄	1 ¹ / ₂	
	28235	24	29 ¹ / ₄	40 ¹ / ₄	8	26	1 ¹ / ₂	
	28236	26	31	36 ¹ / ₂	10	27 ³ / ₄	1 ¹ / ₄	
	28237	30	35	40 ¹ / ₂	10	31 ³ / ₄	1 ¹ / ₄	
28238		32	36	44	4	34	1	
	28239	33	38	43 ¹ / ₂	10	34 ³ / ₄	1 ¹ / ₄	
	28240	36	41	46 ¹ / ₂	10	37 ³ / ₄	1 ¹ / ₄	
	28241	39	44	49 ¹ / ₂	10	40 ³ / ₄	1 ¹ / ₄	
	28242	42	47	52 ¹ / ₂	10	43 ³ / ₄	1 ¹ / ₄	
	28243	46	51	56 ¹ / ₂	10	47 ³ / ₄	1 ¹ / ₄	
	28244	48	53	58 ¹ / ₂	10	49 ³ / ₄	1 ¹ / ₄	
	28245	54	59	64 ¹ / ₂	10	55 ³ / ₄	1 ¹ / ₄	
	28246	60	65	70 ¹ / ₂	10	61 ³ / ₄	1 ¹ / ₂	

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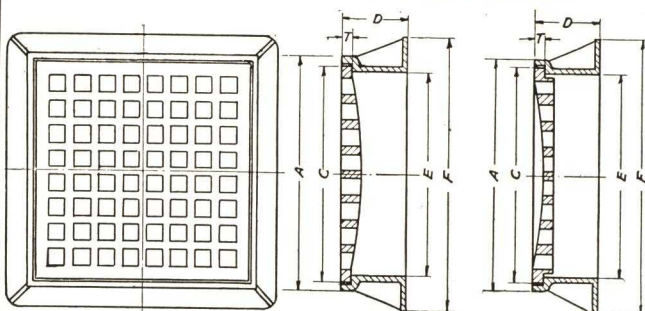
GUARANTEED GRAY CAST IRON FOR PERMANENCE

ROADWAY FRAMES FOR PIT CONSTRUCTION GRAVITY GRATINGS

SQUARE



TYPE 192-D WITH PLANE OR CONCAVE GRATING



TYPE 192-C WITH PLANE OR CONCAVE GRATING

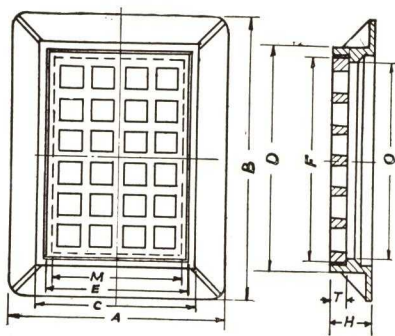
TYPE AND CODE NUMBER

DIMENSIONS—INCHES

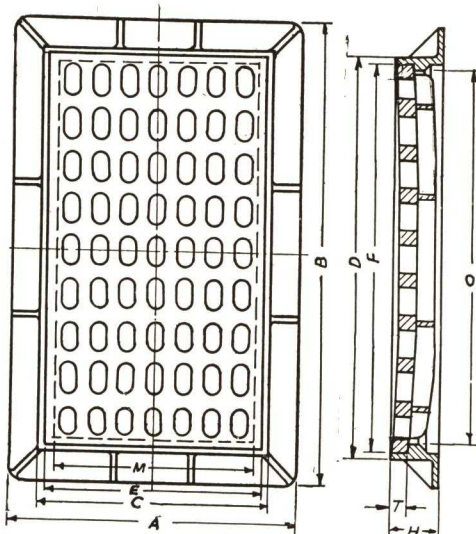
192-D				192-C						
With Plane Grating	With Concave Grating	With Plane Grating	With Concave Grating	E	A	C	D	F	T	
28210	28220			8 ⁵ / ₈	11 ⁷ / ₈	10 ⁵ / ₈	9	17	3	
28211	28221			9 ¹ / ₂	12 ¹ / ₂	11 ¹ / ₄	9 ⁵ / ₈	21 ¹ / ₂	3	
28212	28222			11 ¹ / ₂	13 ³ / ₄	13	9	20	2 ¹ / ₂	
25414	28223			22	26 ⁷ / ₈	24	8	40 ¹ / ₄	1 ³ / ₄	
		28200	28224	24	29 ¹ / ₄	26	10	40 ¹ / ₄	1 ¹ / ₂	
		28201	28225	26	31	27 ³ / ₄	10	36 ¹ / ₂	1 ¹ / ₂	
		28202	28226	30	35	31 ³ / ₄	10	40 ¹ / ₂	1 ¹ / ₂	
25471	28227			32	36	34	4	44	2 ¹ / ₂	
		28203	28228	33	38	34 ³ / ₄	10	43 ¹ / ₂	1 ¹ / ₂	
		28204	28229	36	41	37 ³ / ₄	10	46 ¹ / ₂	1 ¹ / ₂	
		28205	28230	39	44	40 ³ / ₄	10	49 ¹ / ₂	1 ¹ / ₂	
		28206	28231	42	47	43 ³ / ₄	10	52 ¹ / ₂	1 ¹ / ₂	
		28207	28232	46	51	47 ³ / ₄	10	56 ¹ / ₂	1 ¹ / ₂	
		28208	28233	48	53	49 ³ / ₄	10	58 ¹ / ₂	1 ¹ / ₂	
		28209	28234	54	59	55 ³ / ₄	10	64 ¹ / ₂	1 ¹ / ₂	

Horizontal or Horizontal and Vertical Bearing Surfaces milled when specified.

RECTANGULAR



TYPE 187-D WITH PLANE GRATING



TYPE 163-D WITH CONCAVE GRATING

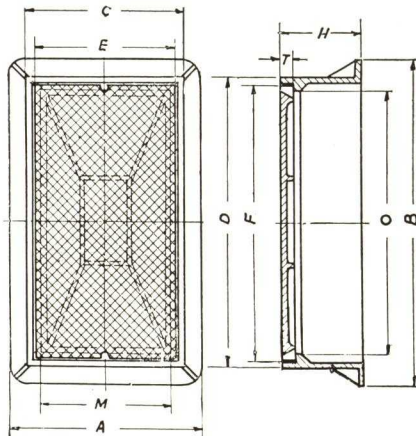
TYPE AND CODE NO.

DIMENSIONS—INCHES

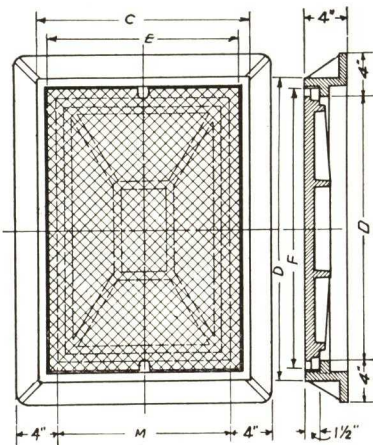
187-D		163-D		M	O	A	B	C	D	E	F	H	T
With Plane Grating	With Concave Grating	With Plane Grating	With Concave Grating										
26403				10 ¹ / ₂	16 ³ / ₈	19 ¹ / ₂	25 ¹ / ₂	15	21	12	18	5 ¹ / ₂	1 ¹ / ₂
11				46 ¹ / ₂	21	57	17	54 ¹ / ₄	13 ¹ / ₂	49	3	2	
26424				13	21	29	18	26	16	24	3 ¹ / ₂	3	
26687				14	19 ¹ / ₂	24 ¹ / ₂	29 ¹ / ₂	18 ¹ / ₄	23 ¹ / ₂	16 ¹ / ₂	21 ³ / ₄	4	2
26688				16 ³ / ₈	22 ³ / ₈	23	29	20	26	18	24	3 ³ / ₄	2
26658				17	22 ¹ / ₂	26 ¹ / ₄	32	24 ³ / ₄	26	18 ¹ / ₂	23 ³ / ₄	5	2
26040				17 ¹ / ₂	21 ¹ / ₂	24	28	20 ¹ / ₄	24 ¹ / ₄	18 ³ / ₄	22 ³ / ₄	4	2
26112				18 ³ / ₄	33 ¹ / ₂	28	43	22 ³ / ₄	37 ¹ / ₄	20 ¹ / ₄	35 ¹ / ₂	4	1 ³ / ₄
25872				19	22 ³ / ₄	26 ¹ / ₂	31	21 ³ / ₄	25 ³ / ₄	20	24	8	1 ¹ / ₂
25465				19	22 ³ / ₄	26 ¹ / ₂	31	21 ³ / ₄	25 ³ / ₄	20	24	3	1 ¹ / ₂
26692				19 ¹ / ₂	29	29 ¹ / ₂	39	23 ¹ / ₂	33 ³ / ₈	21 ³ / ₄	32 ¹ / ₈	4	1 ¹ / ₂
	25101			19 ¹ / ₂	45 ¹ / ₂	28	54	23 ¹ / ₂	49 ¹ / ₂	21 ¹ / ₂	47 ¹ / ₂	5	1 ¹ / ₄
	26118			19 ⁵ / ₈	36	30 ¹ / ₂	46 ³ / ₄	24 ¹ / ₂	40 ⁷ / ₈	21 ⁵ / ₈	38	5	2
26439		26447		20 ³ / ₄	27 ¹ / ₂	27 ¹ / ₂	34	25 ¹ / ₄	31 ³ / ₄	22 ³ / ₄	29 ¹ / ₄	3	2
26498				21 ³ / ₄	25 ³ / ₄	32 ¹ / ₄	36 ¹ / ₄	26 ¹ / ₄	30 ¹ / ₄	24	28	4 ¹ / ₂	1 ⁵ / ₈
25216				22	26	31 ³ / ₄	40	26 ¹ / ₄	30 ¹ / ₄	24	28	4	1 ⁵ / ₈
26499				22	26	32	40	27 ¹ / ₄	31	24	28	8 ³ / ₄	1 ⁵ / ₈
26368				22	32 ¹ / ₄	32	42	25 ³ / ₄	35 ¹ / ₂	24	33 ³ / ₄	3 ¹ / ₄	2
25472				22 ¹ / ₂	32 ¹ / ₄	32	42 ¹ / ₄	25 ³ / ₄	35 ³ / ₄	24	33 ³ / ₄	4	2
25413				22 ¹ / ₂	34	32 ³ / ₄	41	30	38 ¹ / ₄	26	36	4	3
		26219		24	34	37	46 ³ / ₄	28 ¹ / ₂	38 ¹ / ₄	26	35 ¹ / ₂	8	3
26471				24 ¹ / ₂	34	32	42 ¹ / ₂	28 ³ / ₄	38 ¹ / ₄	26 ¹ / ₄	36	4 ¹ / ₂	3
				24 ³ / ₄	35 ¹ / ₄	35	45	29	39 ¹ / ₂	26	36 ⁵ / ₈	3 ¹ / ₂	2
26364				26	38	36	48	29 ³ / ₄	41 ³ / ₄	28	40	5	2
	25115			27 ¹ / ₂	47 ¹ / ₂	36	55 ¹ / ₂	32	51 ¹ / ₂	29 ¹ / ₂	49 ¹ / ₂	5	1
	26117			33	40	43	49 ³ / ₄	37	35 ³ / ₄	35	42	5	1 ¹ / ₄
26473				34 ¹ / ₂	40 ³ / ₄	42	48	39	45	36	42 ¹ / ₄	4	2
35002				35 ¹ / ₄	48	48	61	38 ¹ / ₄	51 ¹ / ₄	36 ¹ / ₂	49 ¹ / ₂	4	1 ¹ / ₂
	26119			41 ¹ / ₂	45 ³ / ₄	49 ³ / ₄	54	45 ³ / ₄	49 ¹ / ₂	43 ¹ / ₂	47 ³ / ₄	5	1 ¹ / ₄

Horizontal or Horizontal and Vertical Bearing Surfaces milled when specified.

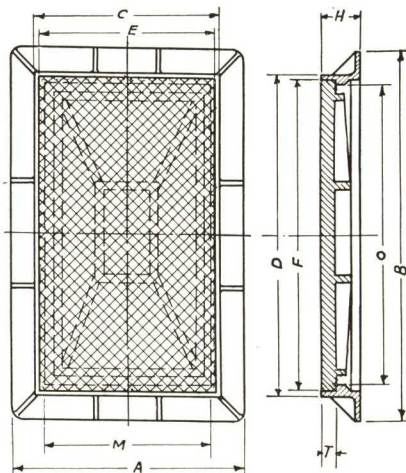
RECTANGULAR



TYPE 169-D



TYPE 204-E



TYPE 163-D

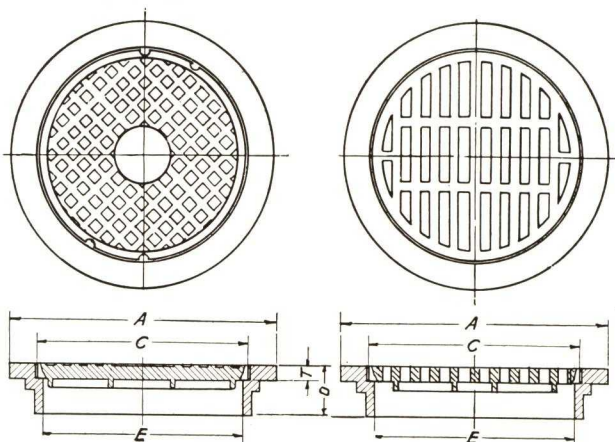
Horizontal or Horizontal and Vertical Bearing Surfaces milled when specified.

TYPE AND CODE NUMBER			DIMENSIONS — INCHES													
169-D	204-E	163-D	M	O	A	B	C	D	E	F	H	T				
27724	28901		10	15	20	26	13½	18½	11½	16½	8	2				
	28921		10	20			13½	23½	10½	21½						
	28902		12	18			14¾	20¾	13	19						
	28922		12	18			15½	21½	13½	19½						
	28903		12	24			15½	27½	13½	25½						
26441	28903		14	21	20	33	17½	24½	15½	22½	8½	1¼				
	28923		14	27			16½	29½	15¼	28¼						
	28904		14	28			17½	31½	15½	29½						
26105	28904		16	24			19½	27½	17½	25½						
	28924		16	32			19½	35½	17½	33½						
	28905		16¾	21½			31¾	35	21	24¾			19	22¾	8½	1½
	28925		18	27			21½	30½	19½	28½			5	1¼		
	25642		18	36			21½	39½	19½	37½					5	2
25641	19½	45½	28	54	23½	49½	21½	47½	5	1¼						
26443	28906		20	26¼	34	40	24	30	21¾	28¼	10¾	1¼				
	28926		20	30			23½	33½	21½	31½						
	28907		20	40			23½	43½	21½	41½						
	26607		20¾	27½			27½	34	25¼	31¾			22¾	29¼	3	2
	26606		21½	41½			32	59	25½	45½			23⅞	43⅞	9¾	1
26367	28907		22	33	39	59	25½	36½	23½	34½	10¼	1½				
	28927		22	42			26	46	24¾	44¾						
	26454		22	44			25½	47½	23½	45½						
	28908		24	28			38	42	28	32			25⅝	29⅝	9¾	1¼
	28928		24	29			35¼	40¼	27½	32¼			25¾	30¾	8	1½
27789	28909		24	36			27½	39½	25½	37½						
	28929		24	48			27½	51½	25½	49½						
	26375		24½	34			32	42½	28¾	38¾			26¼	36	4¼	3
	27788		26	30			38	42	30	34			28	32	8¾	1½
	28910		26	39					29½	42½			27½	40½	5	1
28930	26	52			29½	55½	27½	53½	9½	1½						
25111	28911		27½	47½	36	55½	32	51½	29½	49½	12	1½				
	28912		28	42			31½	45½	29½	43½						
	28913		28	50			44	66	31½	53½			29⅝	51⅝	9½	1½
	28933		28	56					31½	59½			29½	57½		
	27723		29½	48			48	66	36	54			34⅞	52⅞		
27723	28911		30	45	32	60	33½	48½	31½	46½	5	2				
	28931		30	46			34	50	32	48						
	28912		30	60			33½	63½	31½	61½						
	28932		32	48			35½	51½	33½	49½						
	28933		32	64			35½	67½	33½	65½						
27723	28913		33	40	43	49¾	37	44	35	42	5	1¼				
	28933		34	46			38	51	36	49						
	28914		34	51			37½	54½	35½	52½						
	28934		34	68			37½	71½	35½	69½						
	28935		36	54					39½	57½			37½	55½	5	1¼
28936	36	72			39½	75½	37½	73½	58½							
	28915		38	57			41½	60½	39½	58½						
	28916		38	76			41½	79½	39½	77½						
	28917		40	60			43½	63½	41½	61½						
	28918		40	80			43½	83½	41½	81½						
	28919		41½	45¾			49¾	54	45¾	49½			43½	47¾		
	28920		42	63			45½	66½	43½	64½						
	28921		42	80			45½	83½	43½	80½						
	28922		44	66			47½	69½	45½	67½						
	28923		44	80			47½	83½	45½	81½						
	28924		46	69			49½	72½	47½	70½						
	28925		46	80			49½	83½	47½	81½						
	28926		48	72			51½	75½	49½	73½						
	28927		48	80			51½	83½	49½	81½						

ROADWAY FRAMES FOR SLAB CONSTRUCTION GRAVITY COVERS OR GRATINGS—

13
44

CIRCULAR

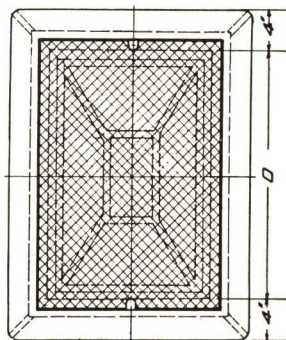


TYPE 159-H

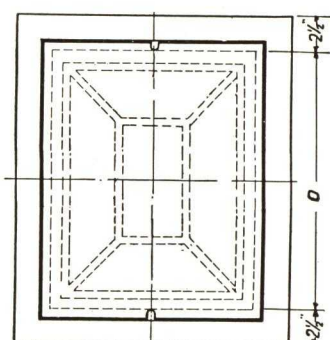
TYPE AND CODE NUMBER				DIMENSIONS INCHES			
159-H				E	A	C	T
Frames and Covers			*Grating Without Frame				
D=8 In.	D=6 In.	D=4½ In.					
27831	27843	27817	27919-G	6	12	8	1
27832	27844	27818	27925-G	9	15	11	1
27833	27883	27819	27926-G	12	19	14	1
27834	27845	27823	27826-G	16	22	18	1¼
27835	27846	26629	27930-G	18	24	19	1⅝
27836	27847	25056	27827-G	20	28½	23	1¾
27837	27848	26274	27828-G	24	32½	26	1½
27838	27849	26273	27829-G	30	36½	32	1½
27839	27813	26675	27931-G	36	42½	38	1½
27840	27814	26676	27932-G	42	50	44	1½
27841	27815	27824	27933-G	48	56	50	1½
27842	27816	27825	27934-G	54	62	56	1½

*In ordering this type with grating instead of cover specify proper depth and code number of associated frame.
Flanges may be increased to any desired square, rectangular or circular up to 56 in.
Horizontal or Horizontal and Vertical Bearing Surfaces milled when specified.

RECTANGULAR



TYPE 204-P

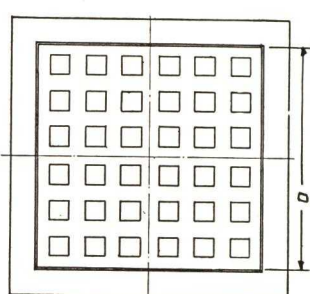
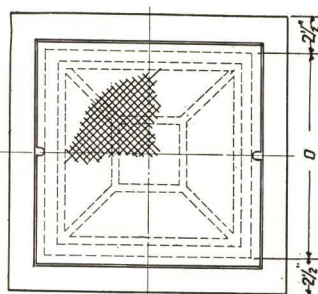


TYPE 135-H

Cover dimensions are 2" larger than dimensions M and O.

TYPE AND CODE NO.			DIMENSIONS INCHES		
135-H		204-P	M	O	T
With Covers	With Gratings	With Covers			
		28941	10	15	1½
		28961	10	20	1½
27572	27584	28942	12	18	1
27573	27583	28962	12	24	1
		28943	14	21	1½
		28963	14	28	1½
27574	27586	28944	16	24	1
27575	27587	28964	16	32	1
		28945	18	27	1½
		28965	18	36	1½
27576	27588	28946	20	30	1¼
27577	27589	28966	20	40	1¼
		28947	22	33	1½
		28967	22	44	1½
27578	27590	28948	24	36	1¼
27579	27591	28968	24	48	1¼
		28949	26	39	1½
		28969	26	52	1½
		28950	28	42	1½
		28970	28	56	1½
27580	29497	28951	30	45	1½
27581	29498	28971	30	60	1½
		28952	32	48	1½
		28972	32	64	1½
		28953	34	51	1½
		28973	34	68	1½
27582	29499	28954	36	54	1½
27583	29464	28974	36	72	1½
		28955	38	57	1½
		28975	38	76	1½
		28956	40	60	1½
		28976	40	80	1½
		28957	42	63	1½
		28977	42	80	1½
		28958	44	66	1½
		28978	44	80	1½
		28959	46	69	1½
		28979	46	80	1½
		28960	48	72	1½
		28980	48	80	1½

SQUARE



TYPE 135-H

TYPE AND CODE NUMBER		DIMENSIONS INCHES	
135		M	T
With Covers	With Gratings		
27558	27565	12	1
27559	27566	16	1
27560	27567	26	1
27561	27568	24	1¼
27562	27569	30	1¼
27563	27570	36	1½
27564	27571	42	1½

Horizontal or Horizontal and Vertical Bearing Surfaces milled when specified.

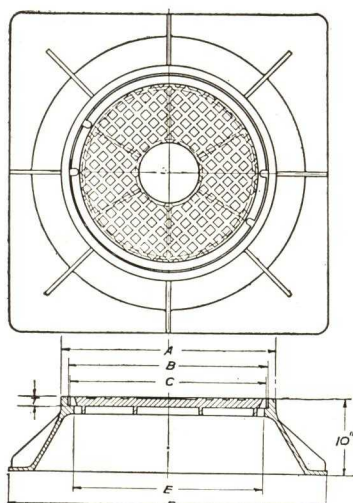
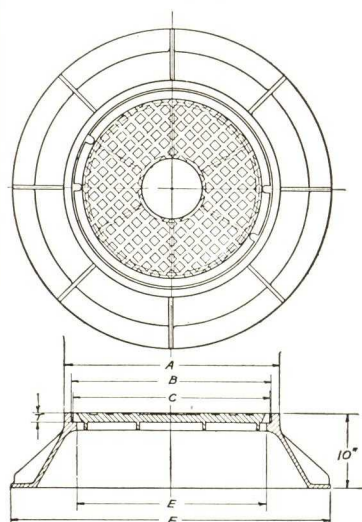
Cover dimensions are 2" larger than dimension M.

ROADWAY AND WALKWAY

FLARED FRAMES FOR PIT CONSTRUCTION GRAVITY COVERS

13
44

CIRCULAR



CIRCULAR FLANGE—TYPE 168-B—SQUARE FLANGE

Horizontal or Horizontal and Vertical Bearing Surfaces milled when specified.

ROADWAY

TYPE AND CODE NUMBER		DIMENSIONS INCHES					
168-B		E	A	B	F	C	T
With Circular Flange	With Square Flange						
26560	28213	24	28	26	43	25 $\frac{3}{4}$	1 $\frac{3}{8}$
26562	28214	27	31	29	46	28 $\frac{3}{4}$	1 $\frac{3}{8}$
26564	28215	30	34	32	49	31 $\frac{3}{4}$	1 $\frac{3}{8}$

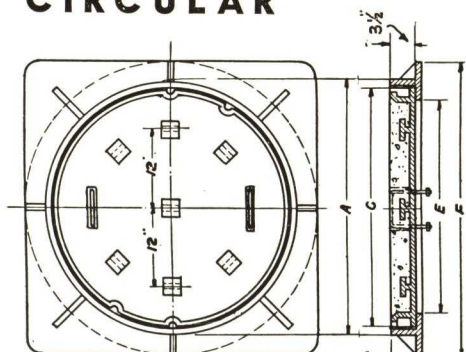
WALKWAYS

TYPE AND CODE NUMBER		DIMENSIONS INCHES					
168-B		E	A	B	F	C	T
With Circular Flange	With Square Flange						
26566	28216	24	28	26	43	25 $\frac{3}{4}$	$\frac{3}{4}$
26568	28217	27	31	29	46	28 $\frac{3}{4}$	$\frac{3}{4}$
26570	28218	30	34	32	49	31 $\frac{3}{4}$	$\frac{3}{4}$

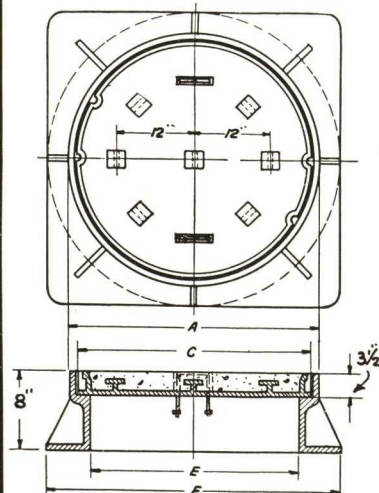
WALKWAY

FRAMES FOR PIT OR SLAB CONSTRUCTION GRAVITY COVERS FOR CONCRETE OR TERRAZZO FILL

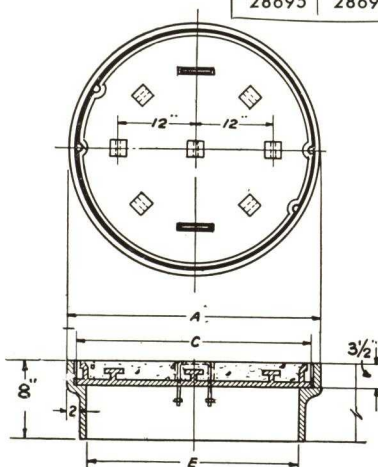
CIRCULAR



TYPE 202-MC
WITH CIRCULAR OR SQUARE FLANGE
FOR PIT CONSTRUCTION



TYPE 202-CC
WITH CIRCULAR OR SQUARE
FLANGE FOR PIT CONSTRUCTION



TYPE 202-HC
FOR SLAB CONSTRUCTION

TYPE AND CODE NUMBER

202-MC		202-CC		202-HC	DIMENSIONS INCHES			
With Circular Flange	With Square Flange	With Circular Flange	With Square Flange	For Slab Construction	E	A	F	C
28578	28579	28580	28581	28582	10	15 $\frac{1}{4}$	26	13 $\frac{1}{2}$
28583	28584	28585	28586	28587	14	19 $\frac{1}{4}$	30	17 $\frac{1}{2}$
28660	28661	28662	28663	28664	16	21 $\frac{1}{4}$	32	19 $\frac{1}{2}$
28665	28666	28667	28668	28669	20	25 $\frac{1}{4}$	36	23 $\frac{1}{2}$
28670	28671	28672	28673	28674	24	29 $\frac{1}{4}$	40	27 $\frac{1}{2}$
28675	28676	28677	28678	28679	30	35 $\frac{1}{4}$	46	33 $\frac{1}{2}$
28680	28681	28682	28683	28684	36	41 $\frac{1}{4}$	52	39 $\frac{1}{2}$
28685	28686	28687	28688	28689	42	47 $\frac{1}{4}$	58	45 $\frac{1}{2}$
28690	28691	28692	28693	28694	48	53 $\frac{1}{4}$	64	51 $\frac{1}{2}$
28695	28696	28697	28698	28699	54	59 $\frac{1}{4}$	70	57 $\frac{1}{2}$

Handles bronze.

Terrazzo or concrete will not crack in a rigid cast iron cover.

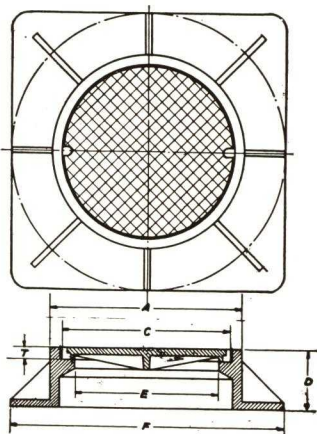
Horizontal or Horizontal and Vertical Bearing Surfaces milled when specified.

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GUARANTEED GRAY CAST IRON FOR PERMANENCE

WALKWAY FRAMES FOR PIT CONSTRUCTION GRAVITY COVERS OR GRATINGS

CIRCULAR



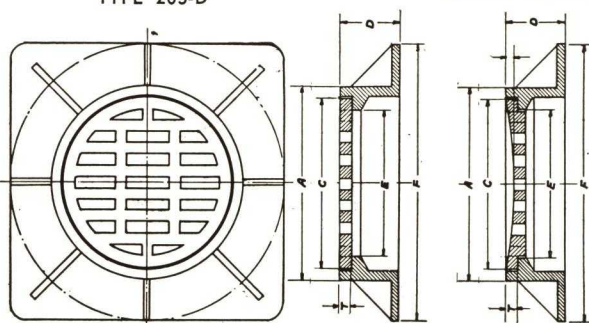
TYPE 205-D

TYPE AND CODE NUMBER

205-D					
With Concave Gratings		With Plane Gratings		With Covers	
Circular Flange	Square Flange	Circular Flange	Square Flange	Circular Flange	Square Flange
27512	27956	27504	27967	25598	27978
27513	27957	27505	27968	27503	27979
27953	27958	27950	27969	26690	27980
27514	27959	27506	27970	25204	27981
				25003	27982
				25076	27983
27954	27960	27951	27971	25007	27984
27515	27961	27507	27972	26183	27985
27516	27962	27508	27973	26380	27986
27517	27963	27509	27974	26590	27987
27518	27964	27510	27975	26591	27988
27519	27965	27511	27976	26592	27989
27955	27966	27952	27977		

DIMENSIONS—INCHES

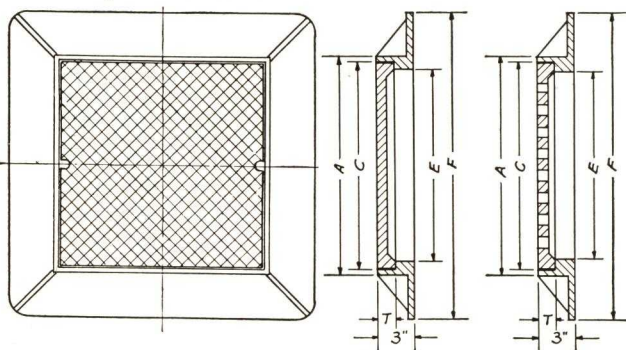
E	A	D	F	C	T
8	11½	8	16½	9¾	1
12	16	6	23	14	1
18¾	22½	5	29	20½	1
22	26	6	36	24	1½
22	26	6	44	24	1½
24	28	6	34	26	1
28	31½	4½	39¼	30	¾
30	34	6	43	32	1¼
34	37	5¼	46	35¾	1½
36	39½	4¾	48	37¾	1¼
42	45½	6	54	43¾	1¼
48	51½	6	58	49¾	1¼



TYPE 205-D—WITH PLANE OR CONCAVE GRATINGS

All types on this page supplied with horizontal or horizontal and vertical bearing surfaces milled when specified; also with internal or external locking device when specified.

SQUARE



TYPE 183-E

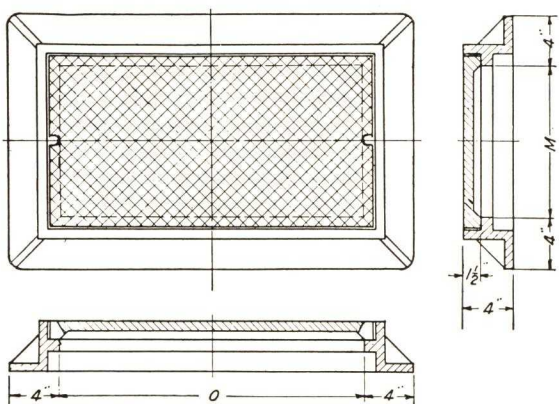
TYPE AND CODE NO.

183-E	
With Gratings	With Covers
27540	27500
27541	26515
27542	26120
27543	26121
27544	26122
27545	26123
27546	26124
27547	26125
27548	26126
27549	26127
27550	26128
27551	26129
27552	26130
27553	26131
27554	26132
27555	26133
27556	26134
27557	26135

DIMENSIONS—INCHES

E	A	F	C	T
6	8½	12	7¼	1¼
8	10½	14	9¼	1¼
10	12½	16	11¼	1½
12	14½	18	13¼	1½
14	16½	20	15¼	1½
16	18½	22	17¼	1½
18	20½	24	19¼	1½
20	22½	26	21¼	1½
22	24½	28	23¼	1½
24	26½	30	25¼	1½
26	29	32	27¼	1½
28	31	34	29¼	1½
30	33	36	31¼	1½
32	35	38	33¼	1½
34	37	40	35¼	1½
36	39	42	37¼	1½
42	45	48	43¼	1½
48	51	54	49¼	1½

RECTANGULAR



TYPE 195-E

TYPE AND CODE NO.

195-E	M	O
25420	10	15
25421	12	18
25422	14	21
25423	16	24
25424	18	27
25425	20	30
25426	22	33
25427	24	36
25428	26	39
25429	28	42
25430	30	45
25431	32	48
25432	34	51
25433	36	54
25434	38	57
25435	40	60
25436	42	63
25437	44	66
25438	46	69
25439	48	72

DIMENSIONS—INCHES

TYPE AND CODE NO.

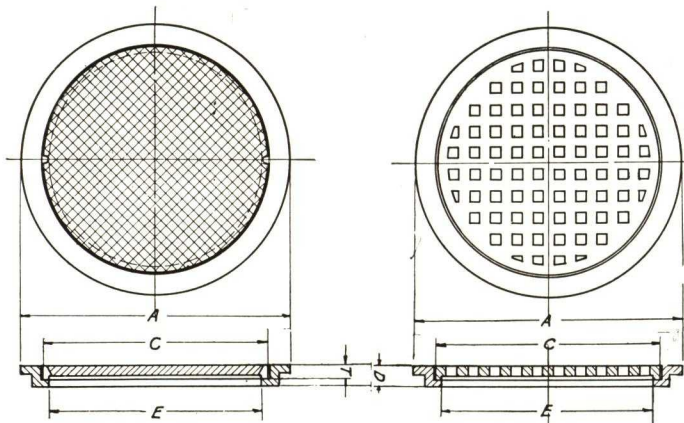
195-E	M	O
25440	10	20
25441	12	24
25442	14	28
25443	16	32
25444	18	36
25445	20	40
25446	22	44
25447	24	48
25448	26	52
25449	28	56
25450	30	60
25451	32	64
25452	34	68
25453	36	72
25454	38	76
25455	40	80
25456	42	80
25457	44	80
25458	46	80
25459	48	80

GUARANTEED GRAY CAST IRON FOR PERMANENCE

WALKWAY FRAMES FOR SLAB CONSTRUCTION GRAVITY COVERS OR GRATINGS—

13
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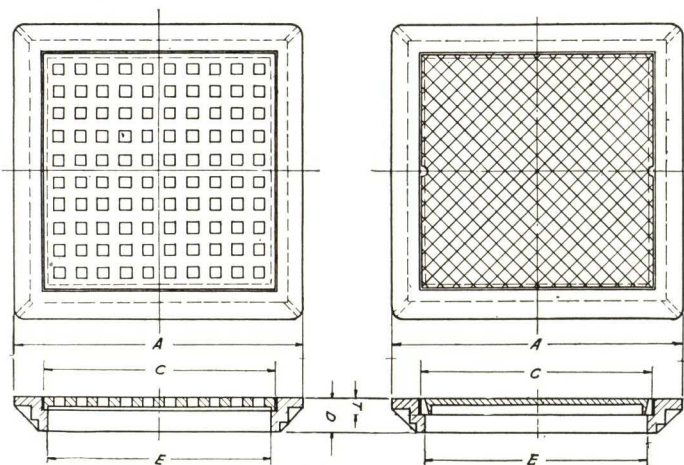
CIRCULAR



TYPE 156-P

TYPE AND CODE NUMBER			DIMENSIONS—INCHES				
156-P			E	A	C	D	T
With Covers	With Concave Gratings	With Plane Gratings					
28474	31916	31918	6	10	7	1 7/8	3/4
28475	31917	31919	9	13	10	1 7/8	3/4
28476	28460	28467	12	16	13	1 7/8	3/4
25050	28461	28468	16	20 1/4	17	1 7/8	3/4
25051	28462	28469	18	22 1/4	19	1 7/8	3/4
25052	28463	28470	20	24	21	1 7/8	1 1/4
25054	28464	28471	24	28	25	1 7/8	1 1/4
26373	28465	28472	30	34 1/2	31	1 7/8	1
25324	28466	28473	36	41	37 3/4	2	1 1/4
25325	31920	31923	42	47	43 3/4	2	1 1/4
28477	31921	31924	48	53	49 3/4	2	1 1/4
27722	31922	31925	54	59	55 3/4	2	1 1/4

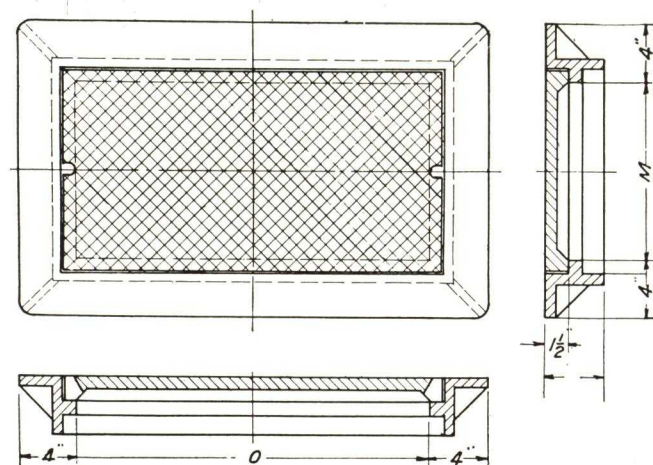
SQUARE



TYPE 142-P

TYPE AND CODE NO.		DIMENSIONS—INCHES				
142-P		E	A	D	C	T
With Plane Gratings	With Covers					
27453	27435	6	12	3	7 1/4	1 1/4
27454	27436	8	14	3	9 1/4	1 1/4
27455	27437	10	16	3	11 1/4	1 1/2
27456	27438	12	18	3	13 1/4	1 1/2
27457	27439	14	20	3	15 1/4	1 1/2
27458	27440	16	22	3	17 1/4	1 1/2
27459	27441	18	24	3	19 1/4	1 1/2
27460	27442	20	26	3	21 1/4	1 1/2
27461	27443	22	28	3	23 1/4	1 1/2
27462	27444	24	30	3	25 1/4	1 1/2
27463	27445	26	32	3	27 1/4	1 1/2
27464	27446	28	34	3	29 1/4	1 1/2
27465	27447	30	36	3	31 1/4	1 1/2
27466	27448	32	38	3	33 1/4	1 1/2
27467	27449	34	40	3	35 1/4	1 1/2
27468	27450	36	42	3	37 1/4	1 1/2
27469	27451	42	48	3	43 1/4	1 1/2
27470	27452	48	54	3	49 1/4	1 1/2

RECTANGULAR



TYPE 195-P

TYPE AND CODE NO.	DIMENSIONS INCHES		TYPE AND CODE NO.	DIMENSIONS INCHES	
195-P	M	O	195-P	M	O
28510	10	15	28530	10	20
28511	12	18	28531	12	24
28512	14	21	28532	14	28
28513	16	24	28533	16	32
28514	18	27	28534	18	36
28515	20	30	28535	20	40
28516	22	33	28536	22	44
28517	24	36	28537	24	48
28518	26	39	28538	26	52
28519	28	42	28539	28	56
28520	30	45	28540	30	60
28521	32	48	28541	32	64
28522	34	51	28542	34	68
28523	36	54	28543	36	72
28524	38	57	28544	38	76
28525	40	60	28545	40	80
28526	42	63	28546	42	80
28527	44	66	28547	44	80
28528	46	69	28548	46	80
28529	48	72	28549	48	80

All types on this page supplied with horizontal or horizontal and vertical bearing surfaces milled when specified.

21

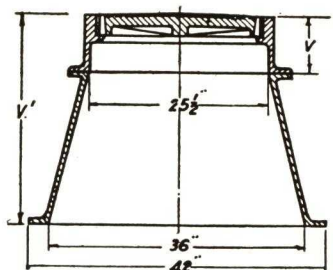
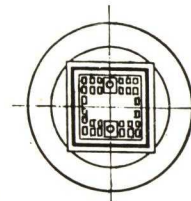
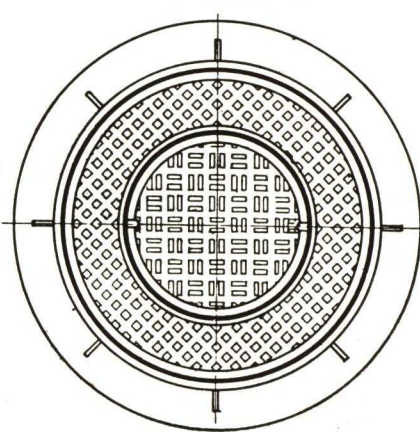
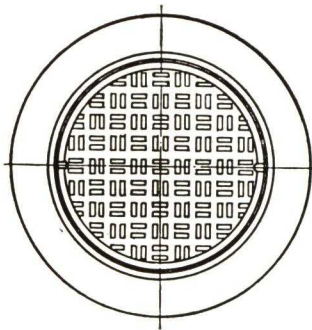
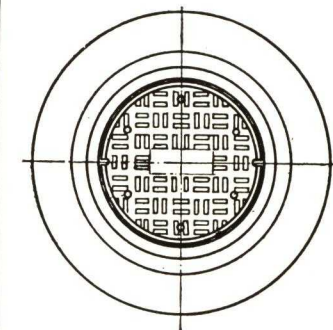
ROADWAY VALVE AND HYDRANT BOXES

13
44

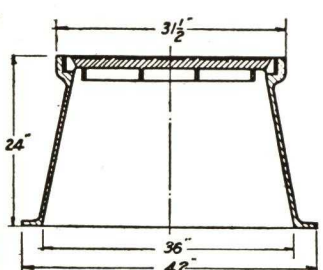
Horizontal or Horizontal and Vertical Bearing Surfaces milled when specified.

Note. Type IV is adjustable in total height from 40 to 60 inches.

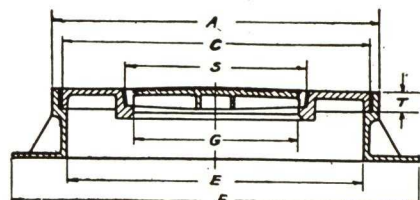
TYPE & CODE NO.	DIMENSIONS INCHES		TYPE & CODE NO.	TYPE & CODE NO.	DIMENSIONS—INCHES								TYPE & CODE NO.
					E	A	G	D	F	C	T	S	
166-I	V	VI	166-II	166-III									166-IV
28601	6	30	28610	27876	36	41 1/2	21 3/8	8	48 1/2	37 3/4	1 3/8	23 3/4	25284
28602	8	32		26223	42	46 3/4	24	10	58	44 1/2	3	26	
28603	9 1/2	33 1/2											
28604	12	36											



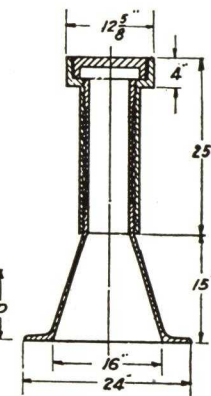
TYPE 166-I



TYPE 166-II

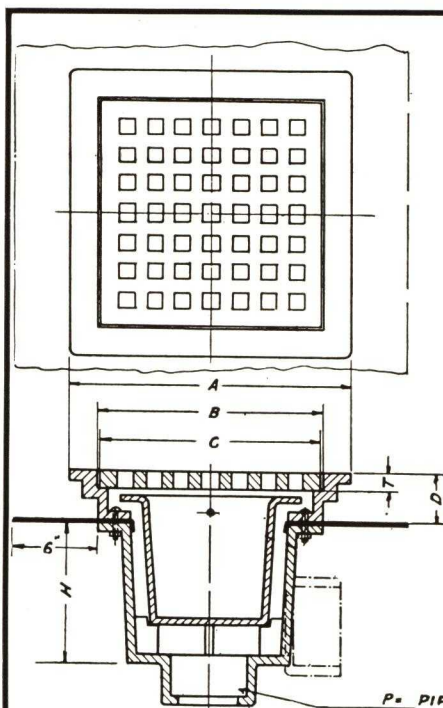


TYPE 166-III

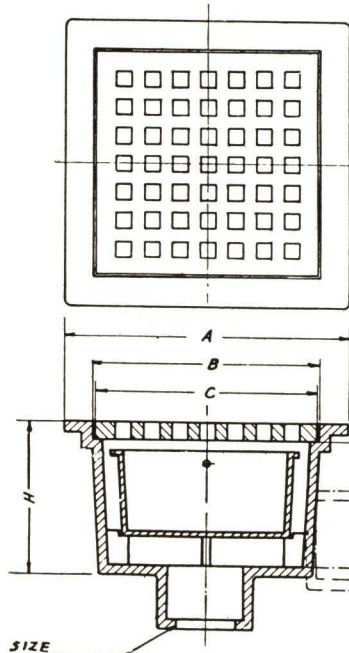


TYPE 166-IV

ROADWAY WATER-TIGHT FLOOR DRAINS



FLASHED TYPE 199-I



UNFLASHED TYPE 199-II

FLASHED TYPE								
TYPE & CODE NO.		DIMENSIONS—INCHES						
199-I		A	B	D	H	P	C	T
BOTTOM OUTLET	SIDE OUTLET							
29000	29004	12	8 1/4	3 1/2	10	3	8	1 1/4
29001	29005	16	12 1/4	3 1/2	10	3	12	1 1/4
29002	29006	20	16 1/4	3 1/2	10	4	16	1 1/4
29003	29007	24	20 1/4	3 1/2	10	4	20	1 1/2
UNFLASHED TYPE								
TYPE & CODE NO.		DIMENSIONS—INCHES						
199-II		A	B	H	P	C	T	
BOTTOM OUTLET	SIDE OUTLET							
29008	29012	12	8 1/2	10	3	8	1 1/4	
29009	29013	16	12 1/2	10	3	12	1 1/4	
29010	29014	20	16 1/2	10	4	16	1 1/4	
29011	29015	24	20 1/2	10	4	20	1 1/2	

Horizontal or Horizontal and Vertical Bearing Surfaces milled when specified.

Drilled outlet supplied when specified.

22

CURB INLETS AND CATCH BASIN TRAPS

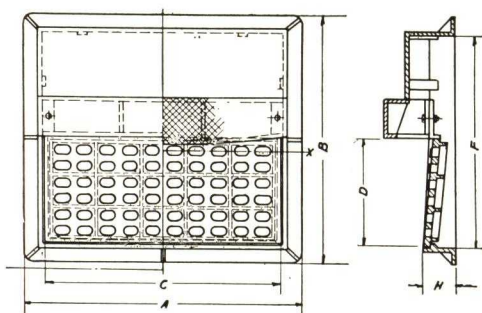
13
44

TYPE AND CODE NUMBER		DIMENSIONS — INCHES								
181		E	F	A	B	D	C	D	T	V
With Concave Grating	With Plane Grating									
25335	25338	25½	27½	37	39½	6½	24	18¾	2½	See Note
25350	25352	36	34¾	43	43	6½	35	21	1¼	
25385	25341	48	29	54	37	6½	47¾	21¾	1¼	
25366	25342	48	42	54	48	6½	47¾	21¾	1¼	
25343	25344	49	36	55½	42¾	5	49½	29½	1	
25347	25329	48	50	54	56	5	47¾	43½	1¼	

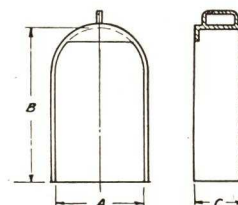
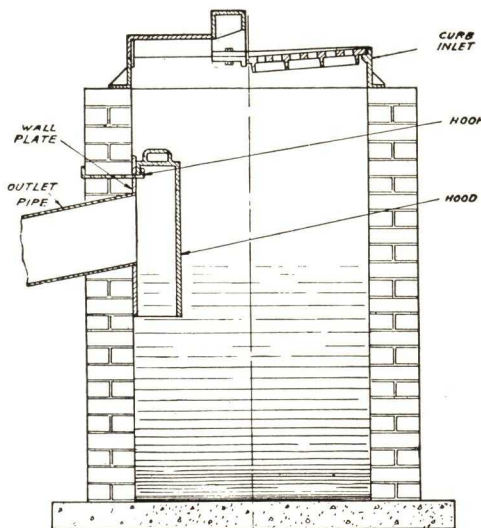
TYPE AND CODE NUMBER				DIMENSIONS INCHES		
193-I		193-II		A	B	C
With Wall Plate	Without Wall Plate	With Wall Plate	Without Wall Plate			
26705	26250	26713	26720	9½	16	4¾
26706	26251	26714	26721	11½	20½	5½
26707	26252	26715	26722	13¼	23½	6½
26708	26711	26716	26723	15¾	26	7½
25134	26712	26717	26724	18	27	9
26709	25221	26718	26725	20	27	11
26710	25186	26719	26726	25¼	29¼	14¾

Note—Unless otherwise specified, V—8 in., Normal practice calls for V to be 2 in. greater than adjacent curb depth.

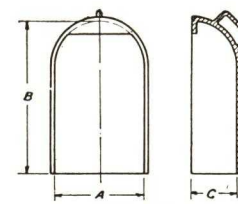
For Curb inlets with circular base, write for information.



TYPE 181 RECTANGULAR CURB INLET

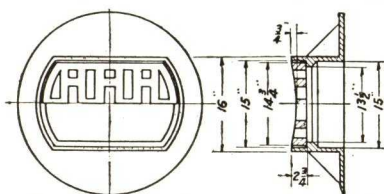


TYPE 193-II

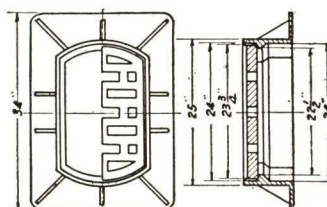


TYPE 193-I

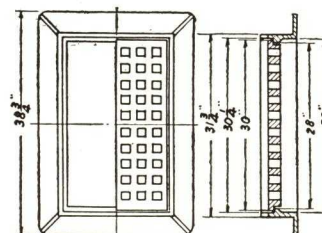
GUTTER FRAMES AND GRATINGS



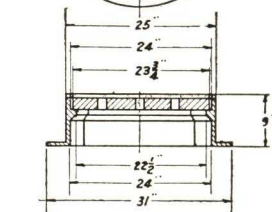
CODE 29461



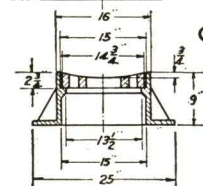
CODE 29462



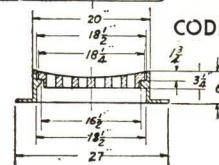
CODE 29463



CODE 29465



CODE 29466



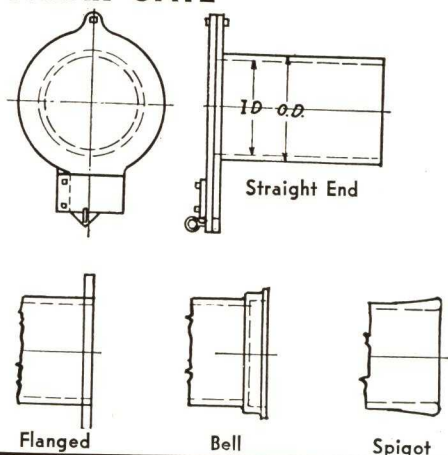
CODE 29467

GUARANTEED GRAY CAST IRON FOR PERMANENCE

VALVES

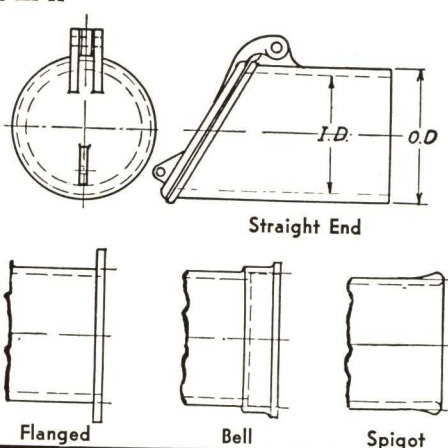
13
44

SHEAR GATE



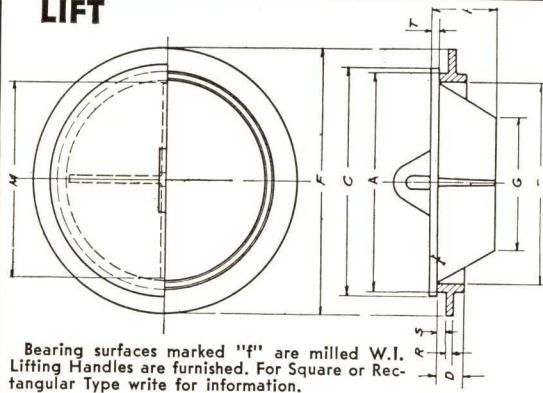
TYPE AND CODE NUMBER								DIMENS. INCHES	
189								I. D.	O. D.
MACHINED				MACHINED AND BRONZE LINER					
Straight	Flanged	Bell	Spigot	Straight	Flanged	Bell	Spigot		
26732	26733	26734	26735	26794	26795	26796	26797	7	7 ³ / ₄
26736	26737	26738	26739	28300	26701	26702	26703	8	8 ³ / ₄
26740	26741	26742	26743	26704	26705	26706	26707	10	10 ³ / ₄
26744	26745	26746	26747	26708	26709	26710	26711	12	13
26748	26749	26750	26751	26712	26713	26714	26715	14	15
26752	26753	26754	26755	26716	26717	26718	26719	16	17
26756	26757	26758	26759	26720	26721	26722	26723	18	19 ¹ / ₄
26760	26761	26762	26763	26724	26725	26726	26727	20	21 ¹ / ₄
26764	26765	26766	26767	26728	26729	26730	26731	24	25 ¹ / ₂
26768	26769	26770	26771	26732	26733	26734	26735	30	31 ¹ / ₂
26772	26773	26774	26775	26736	26737	26738	26739	36	37 ³ / ₄
26776	26777	26778	26779	26740	26741	26742	26743	42	44
26790	26791	26792	26793	26744	26745	26746	26747	48	50

FLAP



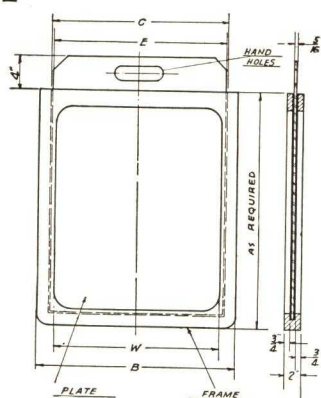
TYPE AND CODE NUMBER								DIMENS. INCHES	
191									
MACHINED				MACHINED AND BRONZE LINER				I. D.	O. D.
Straight	Flanged	Bell	Spigot	Straight	Flanged	Bell	Spigot		
26800	26801	26802	26803	26852	26853	26854	26855	7	7 ⁷ / ₈
26804	26805	26806	26807	26856	26857	26858	26859	8	9
26808	26809	26810	26811	26860	26861	26862	26863	10	11
26812	26813	26814	26815	26864	26865	26866	26867	12	13
26816	26817	26818	26819	26868	26869	26870	26871	14	15 ¹ / ₄
26820	26821	26822	26823	26872	26873	26874	26875	16	17 ¹ / ₄
26824	26825	26826	26827	26876	26877	26878	26879	18	19 ¹ / ₄
26828	26829	26830	26831	26880	26881	26882	26883	20	21 ¹ / ₂
26832	26833	26834	26835	26884	26885	26886	26887	24	25 ¹ / ₂
26836	26837	26838	26839	26888	26889	26890	26891	30	31 ¹ / ₂
26840	26841	26842	26843	26892	26893	26894	26895	36	37 ³ / ₄
26844	26845	26846	26847	26896	26897	26898	26899	42	43 ³ / ₄
26848	26849	26850	26851	26920	26921	26922	26923	48	49 ³ / ₄

LIFT



TYPE AND CODE NO.	DIMENSIONS — INCHES										
185	E	F	R	S	D	A	C	G	H	M	T
26929	4	9	1 ¹ / ₂	1 ¹ / ₂	2	5	6	3	4 ¹ / ₂	4	5 ⁸ / ₈
26952	6	11	3 ³ / ₄	3 ³ / ₄	2	7	8	4	5	6	5 ⁸ / ₈
26928	8	13 ¹ / ₂	3 ³ / ₄	3 ³ / ₄	2 ³ / ₈	9	10 ¹ / ₂	5	5	8	5 ⁸ / ₈
26950	10	15	3 ³ / ₄	3 ³ / ₄	2 ³ / ₈	11	12 ¹ / ₂	6	5	10	5 ⁸ / ₈
26951	12	17	3 ³ / ₄	3 ³ / ₄	2 ³ / ₈	13	14 ¹ / ₂	6	6	11 ³ / ₄	5 ⁸ / ₈
26954	14	19	3 ³ / ₄	3 ³ / ₄	2 ³ / ₈	15 ¹ / ₄	16 ¹ / ₂	8	6	14	5 ⁸ / ₈
26953	16	21 ¹ / ₂	3 ³ / ₄	3 ³ / ₄	2 ¹ / ₂	17 ¹ / ₂	18 ¹ / ₂	10	6	16	3 ³ / ₄
26955	18	24	3 ³ / ₄	3 ³ / ₄	2 ¹ / ₂	19 ¹ / ₂	20 ¹ / ₂	12	6	18	3 ³ / ₄
26956	20	26	3 ³ / ₄	3 ³ / ₄	2 ¹ / ₂	21 ¹ / ₂	22 ¹ / ₂	14	6	20	3 ³ / ₄
26957	22	30	3 ³ / ₄	3 ³ / ₄	2 ¹ / ₂	23 ¹ / ₂	24 ¹ / ₂	16	6	22	3 ³ / ₄
26959	24	32	1	1	3	26	26 ¹ / ₂	18	6	24	3 ³ / ₄

SLIDE



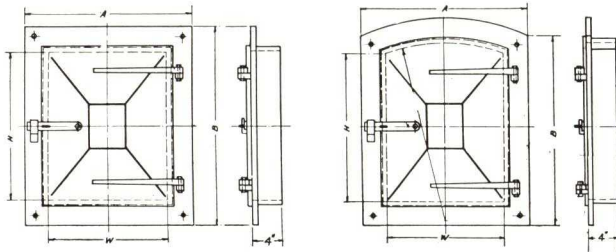
TYPE AND CODE NO.	DIMENSIONS — INCHES			
184	W	B	C	E
26960	6	10	7 ¹ / ₂	7 ¹ / ₄
26961	8	12	9 ¹ / ₂	9 ¹ / ₄
26962	10	14	11 ¹ / ₂	11 ¹ / ₄
26963	12	16	13 ¹ / ₂	13 ¹ / ₄
26964	14	18	15 ¹ / ₂	15 ¹ / ₄
26965	16	19	16 ¹ / ₂	16 ¹ / ₄
26966	16	20	17 ¹ / ₂	17 ¹ / ₄
26967	18	22	19 ¹ / ₂	19 ¹ / ₄
26968	20	24	21 ¹ / ₂	21 ¹ / ₄
26969	24	28	25 ¹ / ₂	25 ¹ / ₄
26970	30	34	31 ¹ / ₂	31 ¹ / ₄
26971	36	40	37 ¹ / ₂	37 ¹ / ₄
26972	42	46	43 ¹ / ₂	43 ¹ / ₄
26973	48	44	49 ¹ / ₂	49 ¹ / ₄

Frame cast iron, slide boiler plate or cast iron. Specify length.

When E exceeds 18 in., two hand holes are provided.

CLEAN-OUT FRAMES AND DOORS

13
44

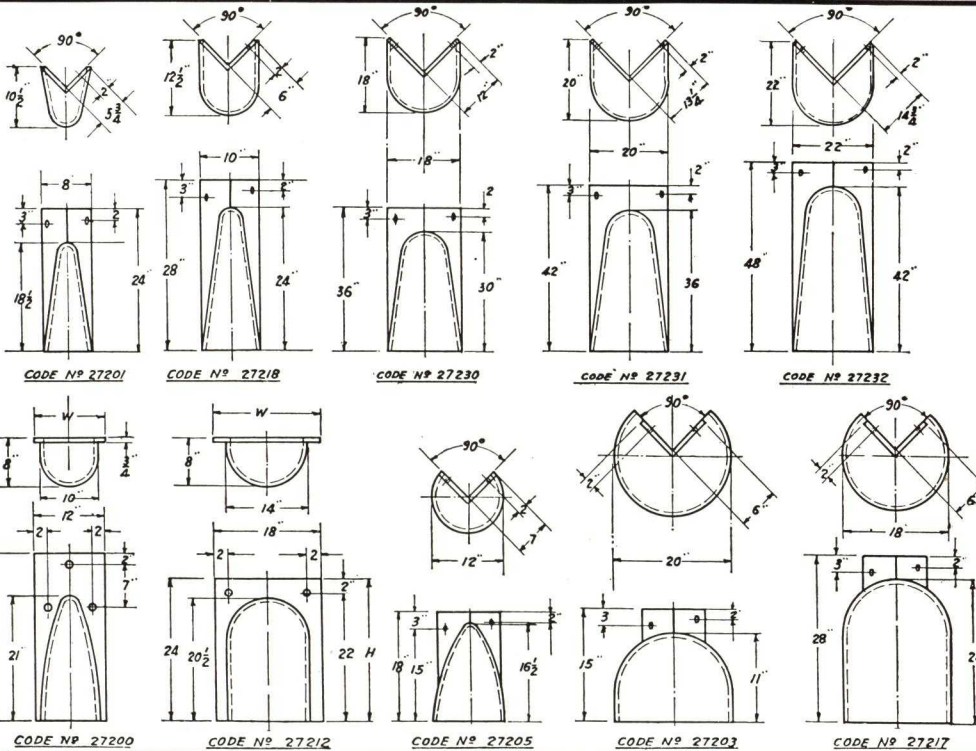


To insure absolute tightness, the bearing surfaces of frame and door may be milled.

If doors are subject to heavy impact cast steel may be furnished.

TYPE AND CODE NO.	DIMENSIONS INCHES				TYPE AND CODE NO.	DIMENSIONS INCHES			
	W	H	A	B		W	H	A	B
179					179				
27010	4	6	10 $\frac{3}{4}$	12 $\frac{3}{4}$	27027	20	16	26 $\frac{3}{4}$	22 $\frac{3}{4}$
27011	6	8	12 $\frac{3}{4}$	14 $\frac{3}{4}$	27028	20	20	26 $\frac{3}{4}$	26 $\frac{3}{4}$
27012	8	10	14 $\frac{3}{4}$	16 $\frac{3}{4}$	27029	20	30	26 $\frac{3}{4}$	36 $\frac{3}{4}$
27013	10	10	16 $\frac{3}{4}$	16 $\frac{3}{4}$	27030	24	18	30 $\frac{3}{4}$	24 $\frac{3}{4}$
27014	10	12	16 $\frac{3}{4}$	18 $\frac{3}{4}$	27031	24	24	31	31
27015	12	8	18 $\frac{3}{4}$	14 $\frac{3}{4}$	27032	24	30	31	37
27016	12	10	18 $\frac{3}{4}$	16 $\frac{3}{4}$	27033	24	36	31	43
27017	12	12	18 $\frac{3}{4}$	18 $\frac{3}{4}$	27034	24	42	31	49
27018	12	16	18 $\frac{3}{4}$	22 $\frac{3}{4}$	27035	24	48	31	55
27043	12	18	18 $\frac{3}{4}$	24 $\frac{3}{4}$	27036	30	24	37	31
27019	15	9	21 $\frac{3}{4}$	15 $\frac{3}{4}$	27037	30	30	37	37
27020	16	16	22 $\frac{3}{4}$	22 $\frac{3}{4}$	27038	30	36	37	43
27021	16	10	22 $\frac{3}{4}$	16 $\frac{3}{4}$	27042	30	48	37	55
27022	16	20	22 $\frac{3}{4}$	26 $\frac{3}{4}$	27039	36	36	43	43
27023	16	24	22 $\frac{3}{4}$	30 $\frac{3}{4}$	27041	36	48	43	55
27024	18	18	24 $\frac{3}{4}$	24 $\frac{3}{4}$	27040	35	72	43	79
27025	18	24	24 $\frac{3}{4}$	30 $\frac{3}{4}$	27044	42	48	49	55
27026	18	30	24 $\frac{3}{4}$	36 $\frac{3}{4}$					

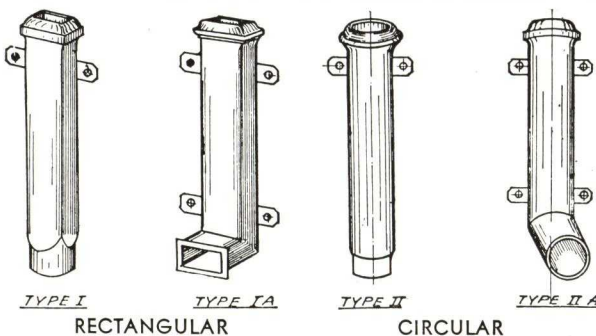
BOLTED WHEEL GUARDS



Thickness 1 in.
Bolt holes $\frac{7}{8}$ in.
Grout holes on specification.

Dimensions H and W on Types 27200 and 27212 may be varied as desired.

LEADER SHOES



RECTANGULAR TYPE 196-I * Without Offset				L E N G T H	CIRCULAR TYPE 196-II * Without Offset				L E N G T H
Size 2" x 3"	Size 3" x 4"	Size 4" x 5"			Size 3" Dia.	Size 4" Dia.	Size 5" Dia.	Size 6" Dia.	
3" Outlet	4" Outlet	4" Outlet			3" Outlet	4" Outlet	5" Outlet	6" Outlet	
28700	28708	28716	12		28724	28732	28740	28748	12
28701	28709	28717	18		28725	28733	28741	28749	18
28702	28710	28718	24		28726	28734	28742	28750	24
28703	28711	28719	30		28727	28735	28743	28751	30
28704	28712	28720	36		28728	28736	28744	28752	36
28705	28713	28721	48		28729	28737	28745	28753	48
28706	28714	28722	60		28730	28738	28746	28754	60
28707	28715	28723	72		28731	28739	28747	28755	72

* For Offset Type Add "A" to Code Number.

GUARANTEED GRAY CAST IRON FOR PERMANENCE

PRODUCTS NOT LISTED IN THIS CATALOG

NOVEMBER, 1938

Tanks
Plinths
Louvres
Washers
Scuppers
Air Bricks
Post Bases
Path Boxes
Blast Plates
Wall Sleeves
Traffic Bases
Manhole Steps
Junction Boxes
Sewer Markers
Marine Castings
Vapor Proof Traps
Manhole Dust Pans
Stop-Plank Grooves
Railway Ballast Drains
Air Vents for Water Lines
Pipe Hangers and Brackets
Saddles, Sills and Thresholds
Watertight Doors and Frames
Curb Inlets with Adjustable Curb Pieces
Light Rectangular Frames and Plane Gratings
Light Square Frames & Covers, Bolted & Gasketed
Square Sidewalk Frames & Covers, Concrete Filled
Light Circular Frames & Covers, Bolted & Gasketed
Heavy Square Frames & Covers, Bolted & Gasketed
Light Rectangular Frames & Covers, Bolted & Gasketed
Rectangular Sidewalk Frames & Covers, Concrete Filled
Heavy Rectangular Frames & Covers, Bolted & Gasketed

CATALOG NO. 110



Exit from Holland Tunnel — New York City

THE CONSTRUCTION CASTINGS CORPORATION
THE ARMORED CONCRETE CORPORATION
FLOCKHART FOUNDRY COMPANY
NEWARK, N. J.

WINDSHIELD SCUPPER DIVISION

SARGENT BUILDING SPECIALTIES CO.

Windshield Scuppers, Concrete Inserts and Ventilating Blocks

TELEPHONE
BArclay 7-5875

16 Warren Street, NEW YORK

REPRESENTATIVES IN PRINCIPAL CITIES

WINDSHIELD SCUPPERS

To provide a quick escape for excess water on floors in case of fire, accidental discharge of sprinklers, bursting pipes, etc., reducing water damage. They are also used in film vaults and for overflows at roof parapets.

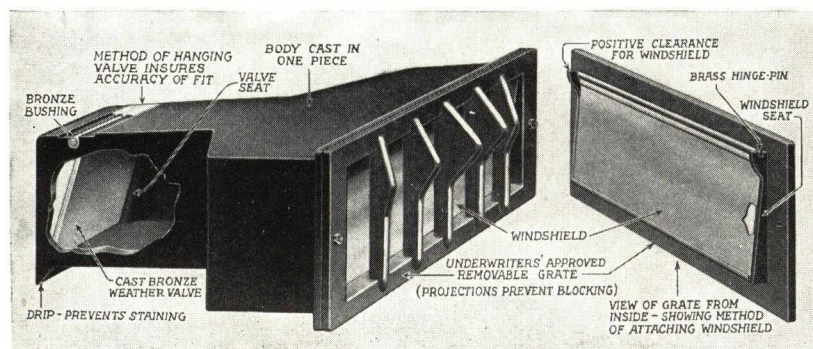
All Windshield Scuppers are cast in one piece, insuring proper setting in the same condition as when they leave the factory. Each is provided with a drip under the outlet to prevent staining face of building. Both the brass windshield and bronze exterior weather valve are provided with seats to permit a draftproof fit without binding; hinge pins and bushings are of bronze or brass.

One scupper should be provided for each 500 sq. ft. of floor area if building is sprinklered, otherwise one for each 1000 sq. ft.

Extra Heavy Type "SG"

One-piece $\frac{3}{8}$ -in. cast iron body, bronze exterior weather valve, brass windshield at entrance, 4 x 4-in. clear outlet, 4 x 12-in. clear inlet, removable grating.

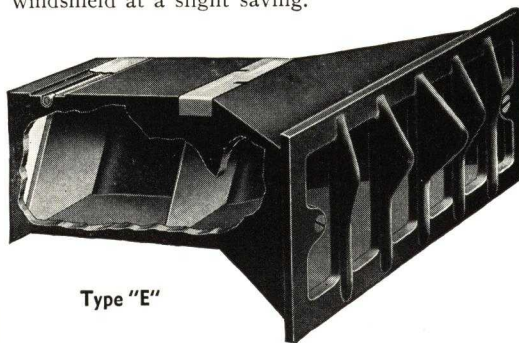
Where interior finish is to be considered, this type can be furnished with polished and lacquered brass windshield or without vertical bars at inlet.



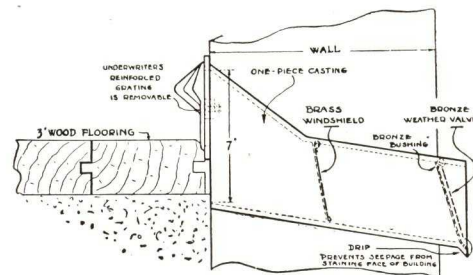
Extra Heavy Type "SG" Showing How Windshield Can Be Removed

Type "E"

One-piece $\frac{1}{4}$ -in. cast iron body, bronze exterior weather valve, brass windshield in throat, 4 x 4-in. clear outlet, 4 x 12-in. clear inlet removable grating. This type may be had without windshield at a slight saving.



Type "E"



Type "W" for Wood Floor on Concrete

Specifications for Windshield Scuppers

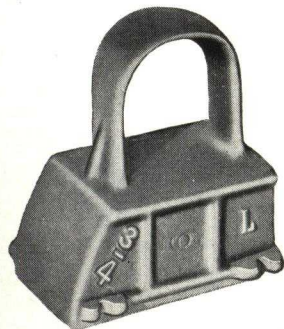
Windshield Scuppers as made by the WINDSHIELD SCUPPER DIVISION of SARGENT BUILDING SPECIALTIES CO., 16 Warren Street, New York, N. Y., shall be installed wherever scuppers are indicated on drawings. The type of scupper shall be (*specify type with stipulation regarding any optional features above described under "Types"*).

Scuppers shall be of proper depth to suit wall thickness in all cases. They shall be thoroughly bedded in mortar on all surfaces in the wall. Where plastered walls occur the cast iron box shall be set flush with the plaster so that only grating will project beyond plaster line.

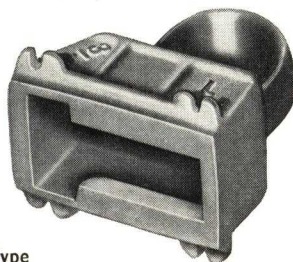
"SARGENT" CONCRETE INSERTS

For attaching machinery, shafting, pipes, sprinklers, fixtures, elevator guides, etc., obviating expensive drilling into hardened concrete. Made of malleable iron, combining strength and durability. Tested to withstand, with factor of safety, the safe load of bolt of size for which designed.

Space 4 ft. o.c. throughout concrete ceilings to provide for undetermined future attachment problems.



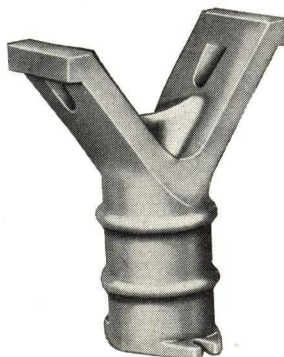
Loop Type



Socket Type

This type permits lateral adjustment; either head or nut will fit insert. Made for the following bolt sizes: $\frac{1}{2}$, $\frac{3}{8}$, $\frac{3}{4}$ in. Height: 2 7/16-2 13/16 and 3/16 in. respectively.

104J



VENTILATING BLOCK

Heavy cast iron ventilating block, which is made in two sizes that will fit conveniently into brickwork.

Optional equipment — bronze screen to keep out insects.



Sizes: 17 x 5 $\frac{1}{2}$ x 4 in.

8 x 5 $\frac{1}{2}$ x 4 $\frac{3}{4}$ in.

MEMORANDA

DOORS

- SECTION -

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Section Number $\frac{1}{5}$ Catalog Number

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See Doors—Vertical Sliding—Folding or Telescoping; Doors—Overhead Type

Vertical Sliding—Folding or Telescoping

(See also Doors—Overhead Type)

Barber-Colman Co.	14/39
Barcol OVERdoor	14/39
Barrier Rol-TOP	14/33
Bayley, William, Co.	15/4
Better Bilt Door Co.	14/38
Bi-Parting	22/6
Cornell Iron Works, Inc.	14/31
Detroit Steel Products Co.	15/9
Evanston	10/41
Fenestra	15/9
Float-Over	14/31
Four Fold	14/25
Fyrgard	14/26
Hamlin, Irving	10/41
Huck-Gerhardt Co., Inc.	14/45
Kiesling, John W., & Sons, Inc.	22/6
Kinnear Mfg. Co.	14/33; 16/16
Majestic Co.	26/139
McKee Door Co.	14/40
Naisco	14/36
North American Iron & Steel Co.	14/36
Over-Fold	15/29
Overdoors	15/23
Overhead Door Corp.	14/41
Peelle Co.	14/25
Pier	15/9
Richmond Fireproof Door Co.	14/26
Ro-Way	14/43
RoL-TOP	14/33; 16/16
Roll-N-Fold	26/139
Roll-up	14/44
Rowe Mfg. Co.	14/43
St. Louis Fire Door Co.	14/18
Sec-Tel	14/28
Sectionfold	14/37
Security Fire Door Co.	14/28
Slid-up-Dors	14/18
Stanley Works	14/44
Steeldor	14/40
Telco	14/25
Truscon Steel Co.	15/23
Turn-Over	14/31
Ver-Tel	14/28
Wel-Bilt	14/45
Wilson, J. G., Corp.	14/37
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Wood—Hollow Core

American Plywood Corp.	14/50
Farley & Loetscher Mfg. Co.	14/54
Laminex	14/60
New Londoner	14/50
Paine Lumber Co., Ltd.	14/57
Streamliner	14/60
Wheeler-Osgood Sales Corp.	14/60

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(See also Frames)

Mecco	14/14
Moeschl-Edwards Corrugating Co., Inc.	14/14
R-W	14/42
Richards-Wilcox Mfg. Co., Inc.	14/42
Super-Way	14/42
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Wood—Sliding, Folding or Telescoping

See Doors—Horizontal Sliding—Folding, Telescoping or Trolley, Doors—Vertical Sliding—Folding or Telescoping

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Wood—Solid Core or Stock

American Plywood Corp.	14/50
Compound and Pyrono Door Co.	14/51
Crooks, W. D., & Sons	14/52
Curtis Companies Service Bureau	14/53
Farley & Loetscher Mfg. Co.	14/54
Hardwood Products Corp.	14/55
Lithowood	15/29
McMillen, R., Co.	14/58
National Door Mfrs. Assn., Inc.	15/32
Paine Lumber Co., Ltd.	14/57
Qualitybilt	15/29
Roddis Lumber and Veneer Co.	14/59
United States Plywood Co.	8/21
WPA	8/17
Western Pine Assn.	8/17
Wheeler-Osgood Sales Corp.	14/60
WOCO	14/60
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See Doors—X-Ray Protective.. 10

DRIVES

Motor—For Operating Doors, Bridges, Curtains, etc.

Babcock-Davis Corp.	14/29
Kinnear Mfg. Co.	14/33
Mono-Tandem	14/29
Mono-Wheel	14/29

DUMBWAITER

Doors—Counterbalanced

Bi-Parting	22/6
Dusing & Hunt, Inc.	14/5
Fyrgard	14/26
Kiesling, John W., & Sons, Inc.	22/6
Peelle Co.	14/25
Richmond Fireproof Door Co.	14/26
St. Louis Fire Door Co.	14/18
Seco	14/28
Security Fire Door Co.	14/28
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Art Metal Construction Co.	14/2
Fyrgard	14/26
Kiesling, John W., & Sons, Inc.	22/6
Peelle Co.	14/25
Richmond Fireproof Door Co.	14/26
St. Louis Fire Door Co.	14/18
Seco	14/28
Security Fire Door Co.	14/28
Specifications	14/25; 14/26

Doors—Metal Covered—Aluminum, Copper, Bronze, Steel, Stainless Steel, etc.

Bi-Parting	22/6
Fyrgard	14/26
Howie Co.	14/8
Kiesling, John W., & Sons, Inc.	22/6
Richmond Fireproof Door Co.	14/26
St. Louis Fire Door Co.	14/18
Seco	14/28
Security Fire Door Co.	14/28
See also	14/16
Specifications	14/26; 14/28

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Energy Elevator Co.	22/4
Fyrgard	14/26
Richmond Fireproof Door Co.	14/26
St. Louis Fire Door Co.	14/18
Seco	14/28
Security Fire Door Co.	14/28
Specifications	14/26; 14/28

Enclosures

See Enclosures—Elevator

ELEVATOR

Doors

See Doors—Elevator; Enclosures—Elevator; Doors—Hollow Metal; Doors—Metal Covered; Doors—Veneered

ELEVATOR—Cont.

Entrances

See Enclosures—Elevator

Fronts

See Enclosures—Elevator

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Aetna Steel Products Corp. 14/1
 Art Metal Construction Co. 14/2
 Dahlstrom Metallic Door Co. 14/3; 14/4
 Kawneer Co. 22/14
 Kiesling, John W., & Sons, Inc. 22/6
 Jamestown Metal Corp. 14/10
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 Metal Clad Doors, Inc. 14/13
 Metcla 14/13
 Otis Elevator Co. 22/8
 Philipp Mfg. Co. 14/16
 Richmond Fireproof Door Co. 14/26
 Tyler, W. S., Co. 14/20; 22/15
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 Warner Elevator Mfg. Co. 22/13
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Escalator—Metal—Manual or Automatic

Cornell Iron Works, Inc. 14/31

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Bronze, Iron or Aluminum

See Doors—Entrance

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Doors

See Specific Type of Doors as: Hollow Metal; Metal Covered; Rolling Steel; Corrugated Steel; Veneered—Fireproof (Asbestos and Wood Combination), etc.

Resisting Wood Doors

See Doors—Veneered—Fire Resisting Asbestos and/or Wood

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Door—Angle Iron or Channel

Armored Concrete Corp. 13/44
 Garcy 16/41
 Garden City Plating & Mfg. Co. 16/41
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Aetna Steel Products Corp. 14/1
 Art Metal Construction Co. 14/2
 Dahlstrom Metallic Door Co. 14/3
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 Friedrich, E. H., Co. 14/7
 Goldsmith Metal Lath Co. 9/5
 Hauserman, E. F., Co. 20/7
 Kiromac Mfg. Co. 14/11
 Metal Clad Doors, Inc. 14/13
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 Peterson and Neville, Inc. 14/15
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 Specifications 14/1; 14/15; 14/22; 14/26; 20/7

Door—Formed Steel

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Door—Hollow Metal

(See also Doors—Hollow Metal; Trim—Hollow Metal)

Aetna Steel Products Corp. 14/1
 Art Metal Construction Co. 14/2
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 Jamestown Metal Corp. 14/10
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 Moeschl-Edwards Corrugating Co., Inc. 14/14
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 Steelweld 14/15
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(See also Doors—Wood—Metal Frame)

Aetna Steel Products Corp. 14/1
 Dusing & Hunt, Inc. 14/5
 Friedrich, E. H., Co. 14/7
 Fyrgard 14/26
 Howie Co. 14/8
 Kiromac Mfg. Co. 14/11
 Mahon, R. C., Co. 14/12
 Metal Clad Doors, Inc. 14/13
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Curtis Companies Service Bureau 15/28
 National Door Mfrs. Assn., Inc. 15/32
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 Page & Hill Co. 8/13
 Pine Craft. 15/33
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 Cornell Iron Works, Inc. 14/31
 Peelle Co. 14/25
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 Richards-Wilcox Mfg. Co., Inc. 14/42
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See Grilles and Guards—Rolling or Coiling

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Door and Window—Rolling or Coiling

See Grilles and Guards—Rolling or Coiling

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Rolling, Coiling or Sliding

Cornell Iron Works, Inc. 14/31
 Kinnear Mfg. Co. 14/33
 Mahon, R. C., Co. 14/34
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Door and Window—Rolling or Coiling

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Door Control

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 Stanley Works. 14/30

Revolving Door

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See Doors—Metal Covered

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Operated Curtains—Ceiling, Roof, Stages, etc.

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 ES 22/16
 Gem 22/17
 Grant Elevator Equipment Corp. 22/17
 Norton Door Closer Co., Div. of the Yale & Towne Mfg. Co. 16/27
 R-W 20/17
 Richards-Wilcox Mfg. Co., Inc. 20/27
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Richmond Fireproof Door Co.... 14/26
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Aetna Steel Products Corp..... 14/1

Art Metal Construction Co..... 14/2

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Dahlstrom Metallic Door

Co. 14/3; 14/4

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Jamestown Metal Corp...... 14/10

Kawneer Co. 19/6

Knapp Bros. Mfg. Co...... 9/6

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bold Safe & Lock Co...... 14/22

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Aetna Steel Products Corp..... 14/1

Friedrich, E. H., Co...... 14/7

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Co., Inc...... 14/14

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Shutters

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WINDOWS

French

See Doors—Casement

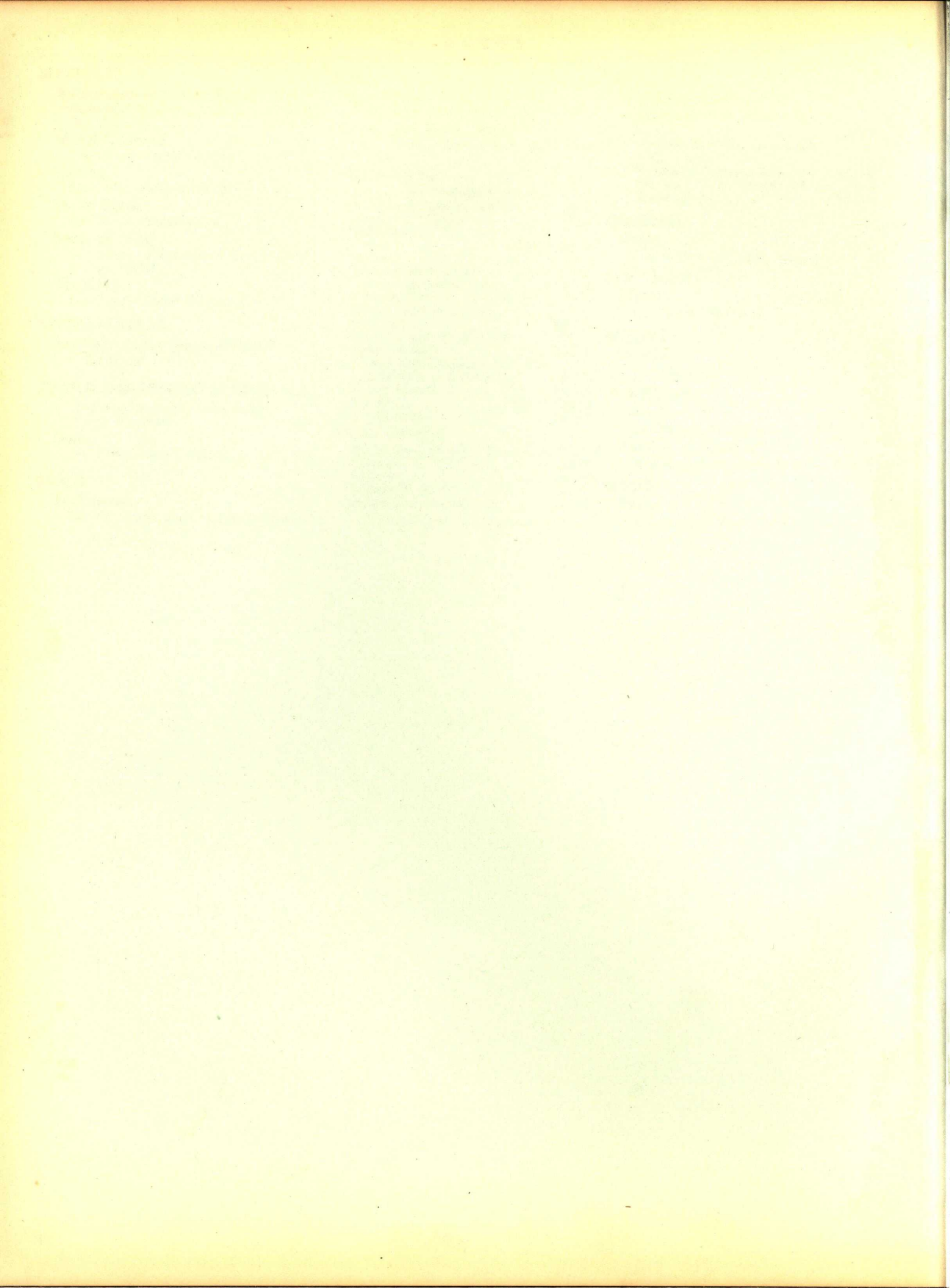
Pantry—Revolving

Van Kannel Revolving Door Co. 14/49

WOOD

Doors

See Doors—Wood; Doors—Veneered



SECTION 14

AETNA STEEL PRODUCTS CORPORATION

Manufacturers of Hollow Metal Doors and Trim, Elevator Enclosures,
Metal Covered and Kalamein Doors

MAIN OFFICE AND PLANT

87-109 Richardson Street

BROOKLYN, N. Y.

TELEPHONE
EVergreen 8-6310

REPRESENTATIVES IN ALL PRINCIPAL CITIES

AETNA PRODUCTS, EXPERIENCE AND FACILITIES

Products

Hollow Metal Doors, Jambs and Trim
Steel Door Frames
Elevator, Stair and Dumbwaiter Enclosures
Kalamein Doors, Frames and Trim
Tin Clad Fire Doors and Hardware
Cold Rolled Shapes

Service and Experience

Aetna products have been manufactured for nearly 40 years and our unusual manufacturing facilities, long experience, and organization trained in production and service, insure a high standard of quality and prompt deliveries.

Our thoroughly competent and experienced Engineering Department is at the service of those who meet with unusual and difficult problems, and our standard can be varied to meet this need at a slightly additional cost.

Aetna is housed in absolutely modern plants of brick and steel construction, consisting of more than 60,000 sq. ft. of manufacturing space. Recent additions of the newest and most modern equipment have been added to insure an excel-

lence of product to satisfy the needs of the most discriminating architect, contractor and engineer.

Aetna Standard Finishes

All materials are thoroughly cleaned of all oil, grease, dust, rust, and other impurities and then given at least one shop coat of best metallic primer.

Realizing the importance of furnishing hollow metal products where baked-on enamel finishes are specified, this company recently built a complete new addition 50x100 ft., housing two spray booths and four Gehrich gas heated baking ovens.

Our finishing department is adequately staffed by men who know their jobs. Hollow metal doors in particular are usually specified to receive baked-on enamel finish to consist of at least six coats, each baked at the proper temperature and sanded, and the last coat being carefully rubbed to an egg-shell gloss finish.

Aetna Label Service

Combination integral steel door frames, hollow metal doors and metal covered doors can be furnished to meet the requirements of the National Board of Fire Underwriters and bear their approved label.

Avoid Delay—Use Aetna Standards

Capacity (weekly)—3500 Frames; 500 Doors

AETNA HOLLOW METAL DOORS

This company has standardized the shape of the panel mouldings for Hollow Metal Doors to gain the benefit of the saving produced in fabricating large quantity of standard shapes. All our mouldings and shapes are rolled in our own shops, thereby insuring a rigid standard of excellence.

Note the construction features of our standard door shown below.

Our door department operates as a distinct unit and yet in constant co-operation with the steel door frame department, to insure accuracy in fit where doors occur in metal door frames.

Aetna Hollow Metal Doors have been found especially adapted for installation in slum clearance projects, apartment houses, hospitals, schools, hotels, theatres, stores, loft and office buildings. They are made in a variety of styles, and sizes as determined by the architects and builders, embracing solid panel, glass panel, raised panel and louvre panel.

Semi-flush and Flush Doors—We recommend the semi-flush door and flush door for hospital installations particularly. We wish to point out that the semi-flush door carries all the characteristics and features of the flush door, but eliminates the usual flat monotonous appearance.

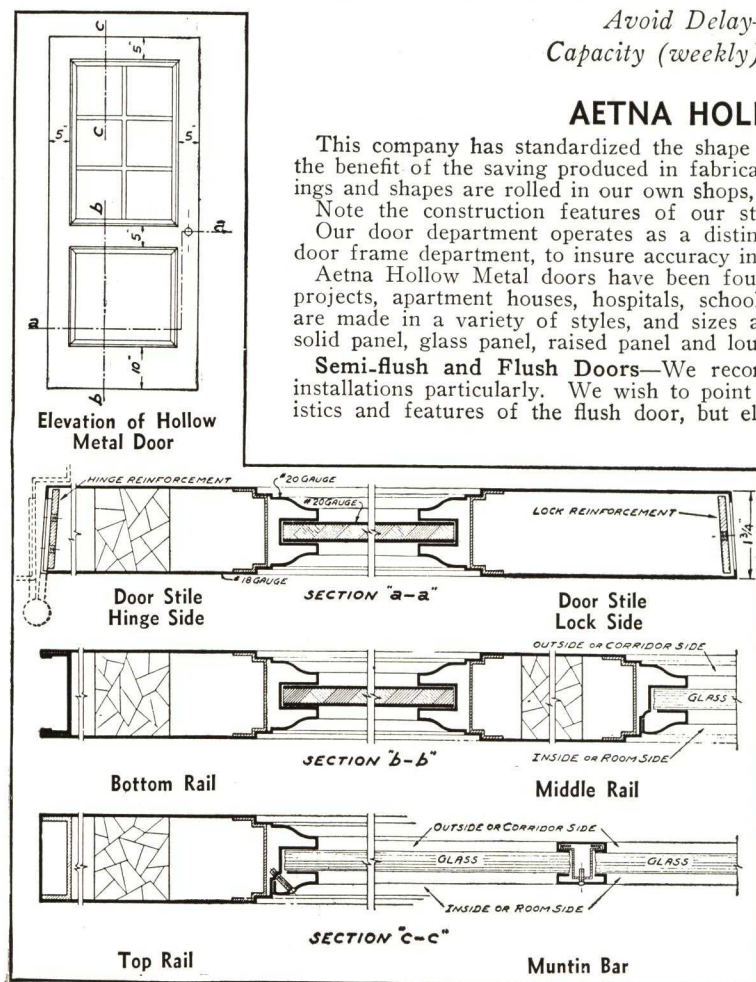
Elevator Doors—The flush type construction for the hatch side of our elevator doors, is in accordance with the best standard practices.

Construction Specification

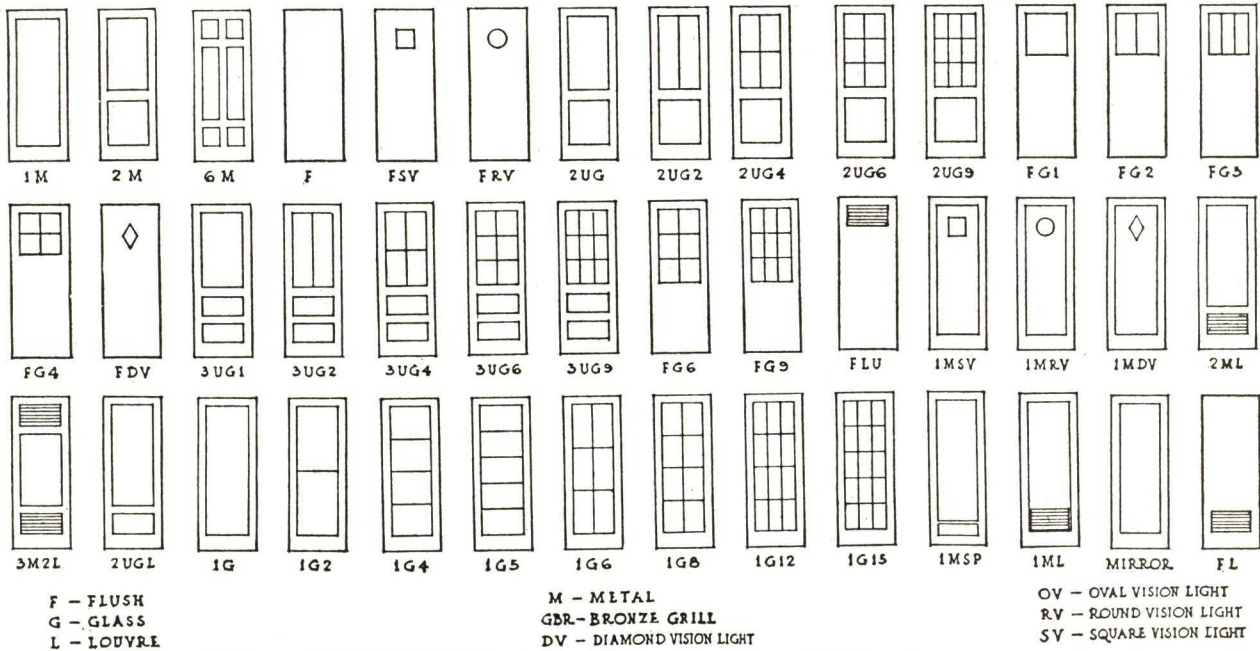
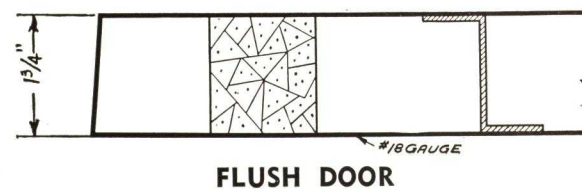
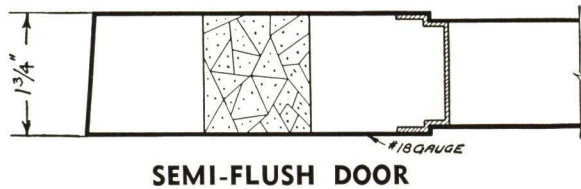
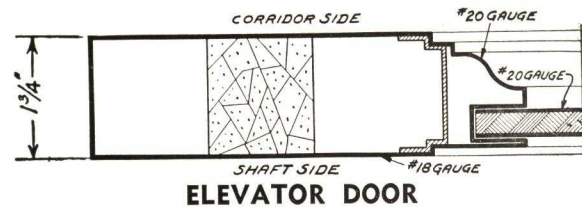
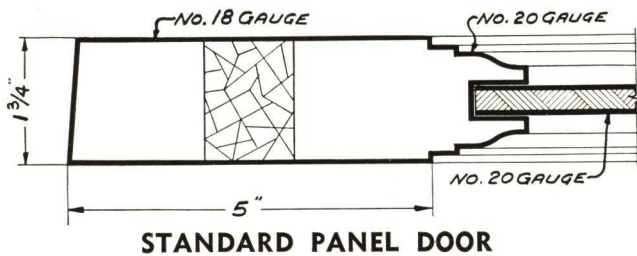
Aetna Doors are constructed of the best quality open hearth, full cold rolled, full pickled, patent leveled sheet steel. Stiles and rails are formed of 18 U.S. standard gauge and 20-gauge for the panels and mouldings. Panel filler consists of a $\frac{3}{8}$ -in. approved filler, and stiles and rails are filled solid with asbestos air-cell or cork, to deaden the metallic sound. All joints between stiles and rails, and the mitres of all panel mouldings are welded and made perfectly smooth and invisible. The necessary hardware cutouts and reinforcements are provided for all types of hardware.

Elevator Enclosures

Aetna Elevator Entrances are furnished and erected complete, including hollow metal door with vision panel, where required; combination buck, saddle, fascia, closer support as required, and all necessary hardware. All electrical equipment by others.



HOLLOW METAL DOOR SECTIONS



• STANDARD DOOR DESIGNS •

PARTIAL LIST OF INSTALLATIONS

BUILDING	LOCATION	CONTRACTOR	ARCHITECT
Northwestern Univ., Dorm.	Evanston, Ill.	R. C. Wieboldt	James Gamble Rogers
Calvin Coolidge School	Washington, D. C.	Jeffress Dyer Inc.	Nathan C. Wyeth
Moody Bible Institute	Chicago, Ill.	Lundoff-Bicknell Co.	Thielbar & Bicknell
National Health Building	Bethesda, Md.	George A. Fuller Co.	Treasury Department
American Hospital	Istanbul, Turkey	W. Stewart Thompson	W. Stewart Thompson
Scranton State Hospital	Scranton, Pa.	Karno-Smith Co.	J. J. Howley
Charity Hospital	New Orleans, La.	Burkes Brothers	Weiss, Drefous & Seiferth
Ypsilanti State Hospital	Ypsilanti, Mich.	U. S. Fireproofing Co.	Albert Kahn Inc.
Franklin County Hospital	Columbus, Ohio	Frank L. Matthaes	W. H. Tremaine
Purdue University, Dorm.	Lafayette, Ind.	A. E. Kemmer	W. Scholer
Wahjamega State Hospital	Wahjamega, Mich.	A. W. Kutsche & Co.	Chester Sorensen Co.
American Telephone Bldg.	World's Fair, N. Y.	Vermilya-Brown (Marc Eidlitz)	Voorhees, Gmelin & Walker
Officers Quarters	Quantico, Va.	Doyle & Russell	Navy Department
U. S. Veterans Hospital	Camp Custer, Mich.	James I. Barnes Constr. Co.	Veterans Administration
Virginia State College, Dorm.	Petersburg, Va.	J. A. Jones Constr. Co.	J. Binford Walford
Petroleum Industry Bldg.	World's Fair, N. Y.	James Stewart & Co.	Voorhees, Gmelin & Walker
U. S. Women's Institution	Dallas, Texas	Dolph-Bateson Constr. Co.	Treasury Department
Manual Training School	Brooklyn, N. Y.	Federal Constr. Co.	Board of Education

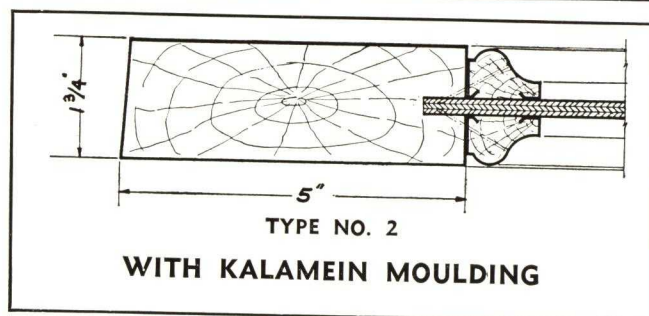
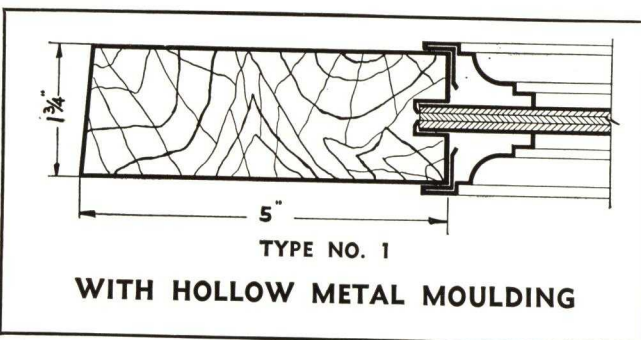
AETNA KALAMEIN DOORS

Type No. 1 (With Hollow Metal Moulding)

Aetna Type No. 1 Kalamein doors are $1\frac{3}{4}$ in. thick and constructed of thoroughly dried solid wood pine cores, covered with 24-gauge patent leveled furniture steel sheets. Cores for stiles and rails are joined and mortised and tenoned in an approved manner. Metal is drawn around and clinched into wood cores to insure perfectly flat surfaces. Hollow Metal panel moulding is attached to the doors with concealed clips and greatly improves the appearance of this door, as no nails or screws appear on the surface.

Type No. 2 (With Kalamein Moulding)

Aetna Type No. 2 Kalamein doors provide for a diversity in shape of Kalamein mouldings. Our completeness in stock of moulding insure our satisfying the needs of the most discriminating architect. All mouldings are fastened with screws or nails, and this door is especially desirable where a door of sturdy construction is required and where cost is paramount.



AETNA COMBINATION STEEL DOOR FRAMES

Aetna Combination Integral Frames are pressed or rolled of 12, 14 or 16 US gauge sheet steel. Cutting of jamb or trim is entirely eliminated as the frames are sized exactly with all cutouts, drilling and rein-

forcing for hardware provided. Frames are finished with one dipped coat of best metallic primer and any final finished coat may be applied over this.

Aetna frames will neither warp nor crack, and permanence and low initial cost warrant their use in place of wood jams and trim.

Aetna Construction features

The general construction features illustrate our standard procedure, but type of wall anchor, size of reinforcing plate, and design of trim can be varied to suit individual requirements.

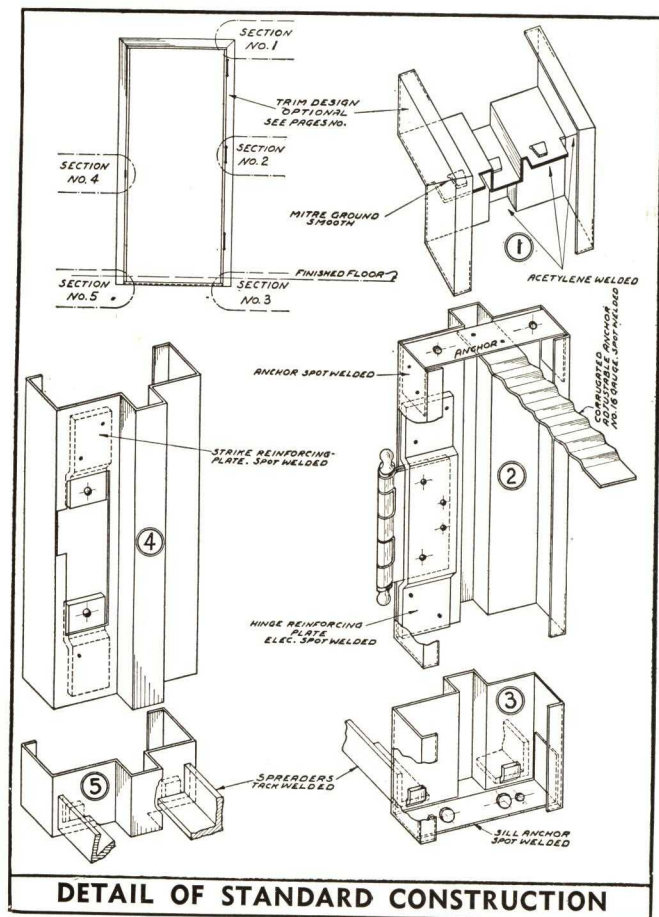
Figure 1—The entire inside through the jamb and mitre is continuously acetylene-welded. This insures that there will be no chance of breaking of head from jamb. Additional rigidity is obtained by the three tongues which prevent the head member breaking away from the jamb.

Figure 2—The hinge plate is rigidly spot-welded to the inside surface of the jamb with holes drilled and tapped to receive the hinge and is offset so that the hinge will finish flush with the outer surface of the jamb. The corrugated anchor solidly bonds the frame of the wall.

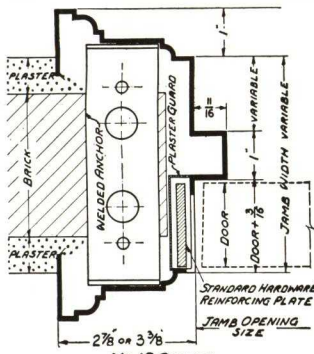
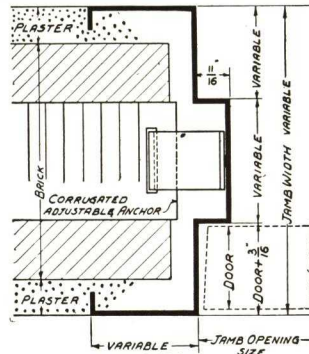
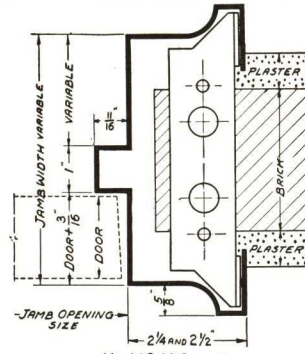
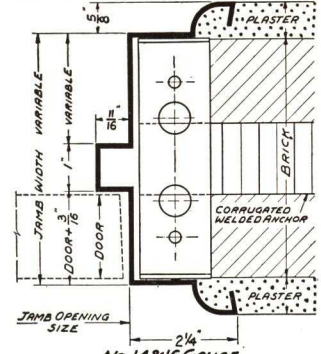
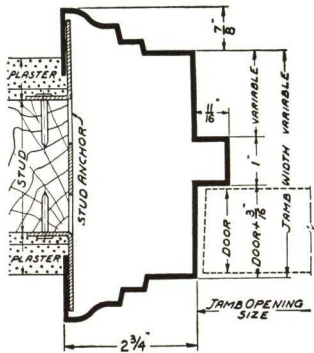
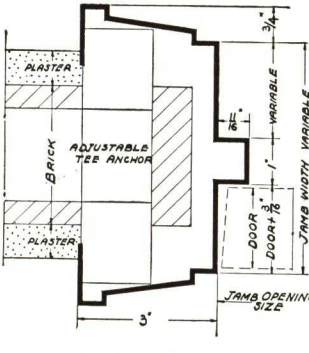
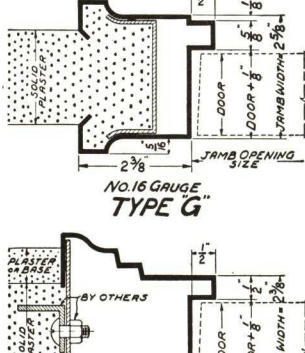
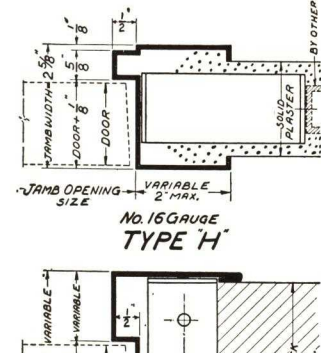
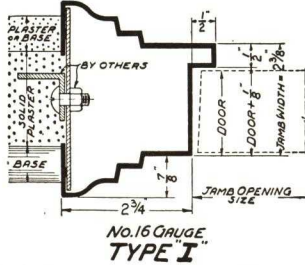
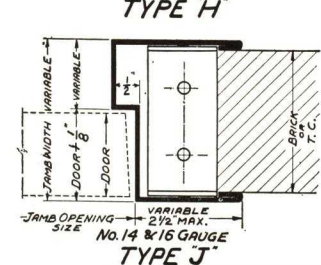
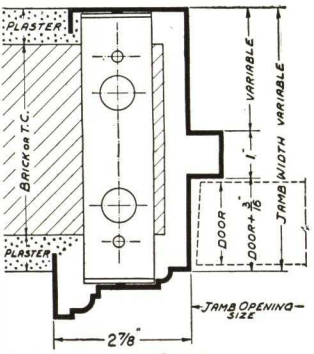
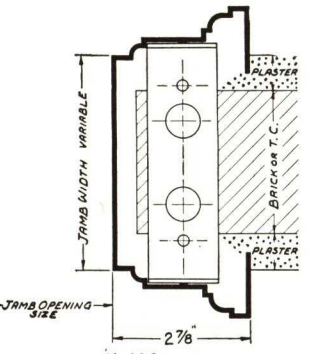
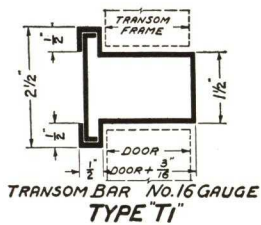
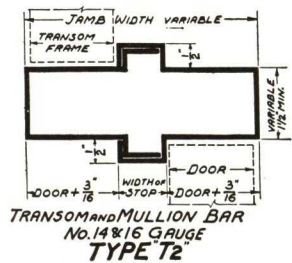
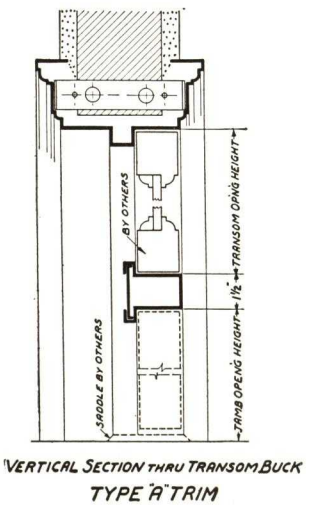
Various other type anchors can be made, at no additional charge, to suit varying wall conditions.

Figure 3—Two angle spreaders are furnished with tongues and are tack-welded (*Figure 5*) to insure parallel alignment. These spreaders may or may not be left in the opening when the finished floor is laid.

Figure 4—Cutout provided for all strikes and offset reinforcement plate to insure that the strike will lie flat and finish flush with the outer surface of the jamb. The location of this strike receives our utmost consideration, so that in all cases, a proper fit may be procured when the actual lock is installed in the center of the door. Strike plates located haphazardly result in objectionable rattle of the door.



STANDARD DETAILS OF COMBINATION STEEL DOOR FRAMES

No. 16 GAUGE
TYPE ANo. 14 & 16 GAUGE
TYPE ENo. 14 & 16 GAUGE
TYPE FNo. 14 & 16 GAUGE
TYPE DNo. 14 & 16 GAUGE
TYPE CNo. 14 & 16 GAUGE
TYPE MNo. 16 GAUGE
TYPE GNo. 16 GAUGE
TYPE HNo. 16 GAUGE
TYPE INo. 14 & 16 GAUGE
TYPE JNo. 16 GAUGE
TYPE A2No. 16 GAUGE
TYPE A1TRANSOM BAR No. 16 GAUGE
TYPE T1TRANSOM AND MULLION BAR
No. 14 & 16 GAUGE
TYPE T2VERTICAL SECTION THRU TRANSOM BUCK
TYPE A TRIM

ARCHITECTS SPECIFICATIONS

The contractor shall furnish and install combination steel door frames as manufactured by the AETNA STEEL PRODUCTS CORPORATION of Brooklyn, N. Y., in all interior door openings, except as otherwise noted on drawings or herein specified.

Frames shall be formed or rolled of No. (here state the gauge) buck steel. Head and jambs are to be continuously welded and ground off smooth.

Steel reinforcements $\frac{1}{8} \times 1\frac{1}{2} \times 9$ in. are to be provided for all hardware cutouts to insure rigid construction, same to be spot-welded to the inside surface of the jambs over which 26-gauge galvanized plaster guards are to be welded to prevent mortar and plaster from contact with the reinforcing plates. Steel angle spreaders are to be welded to the bottom to insure parallel alignment and anchors of 16-gauge steel are to be provided to bond frames solidly to the wall.

At completion, all steel door frames are to be given at least one shop coat, inside and outside, of best metallic primer.

AETNA HOLLOW METAL DOORS AND FRAMES FOR HOUSING PROJECTS

We are specially qualified to manufacture steel door frames for use on large scale Housing Projects. We have designed a steel door frame which has proved very practical and economical for use in wire lath partitions. Wire lath partition construction is generally used throughout Housing Projects, and

it has been found that the use of steel door frames is the most practical method of framing door openings. The photographs below illustrate very clearly how these frames are erected and also shows the method of fastening the wire lath to the frames. (See detail drawing, page 6.)

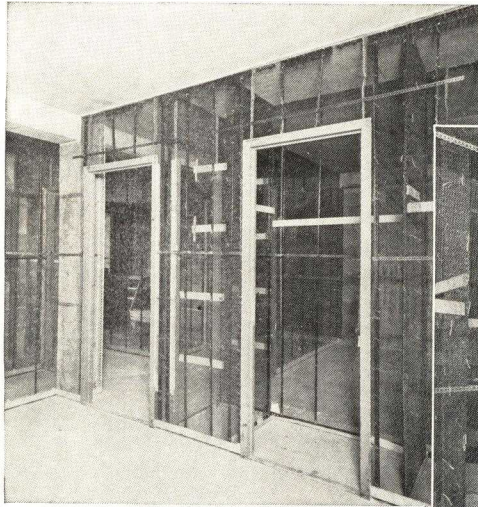


Fig. No. 1

Showing the metal frames erected in place. Wire lath channels (by others) are wired to brackets in the frames provided for this purpose. This picture also shows the upright strut which is welded to the frame and extends to the ceiling with an adjustable angle for fastening. This type of anchorage insures rigidity and eliminates any stress or strain on the partition.



Fig. No. 2

Also illustrates fastening of the metal lath to the door frame, and shows application of the rough coat of plaster to the lath.

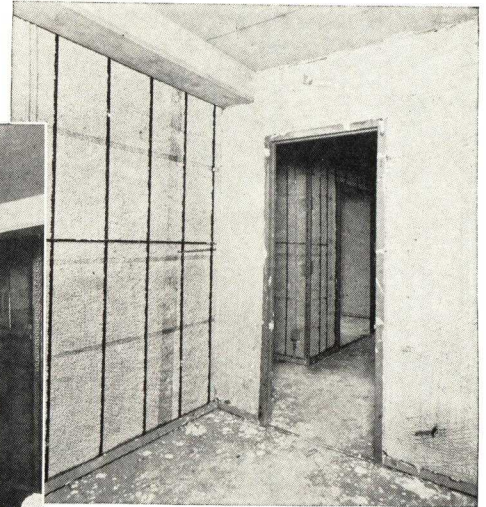
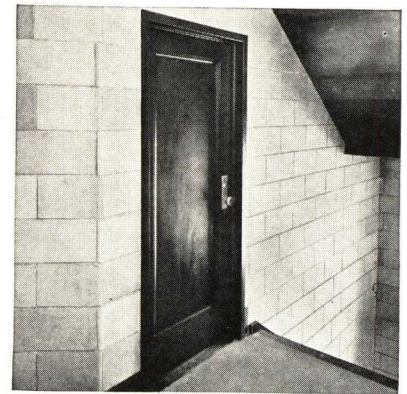


Fig. No. 3

The partition completely plastered adjacent to the door frame.



Hollow Metal Door in a Steel Door Frame

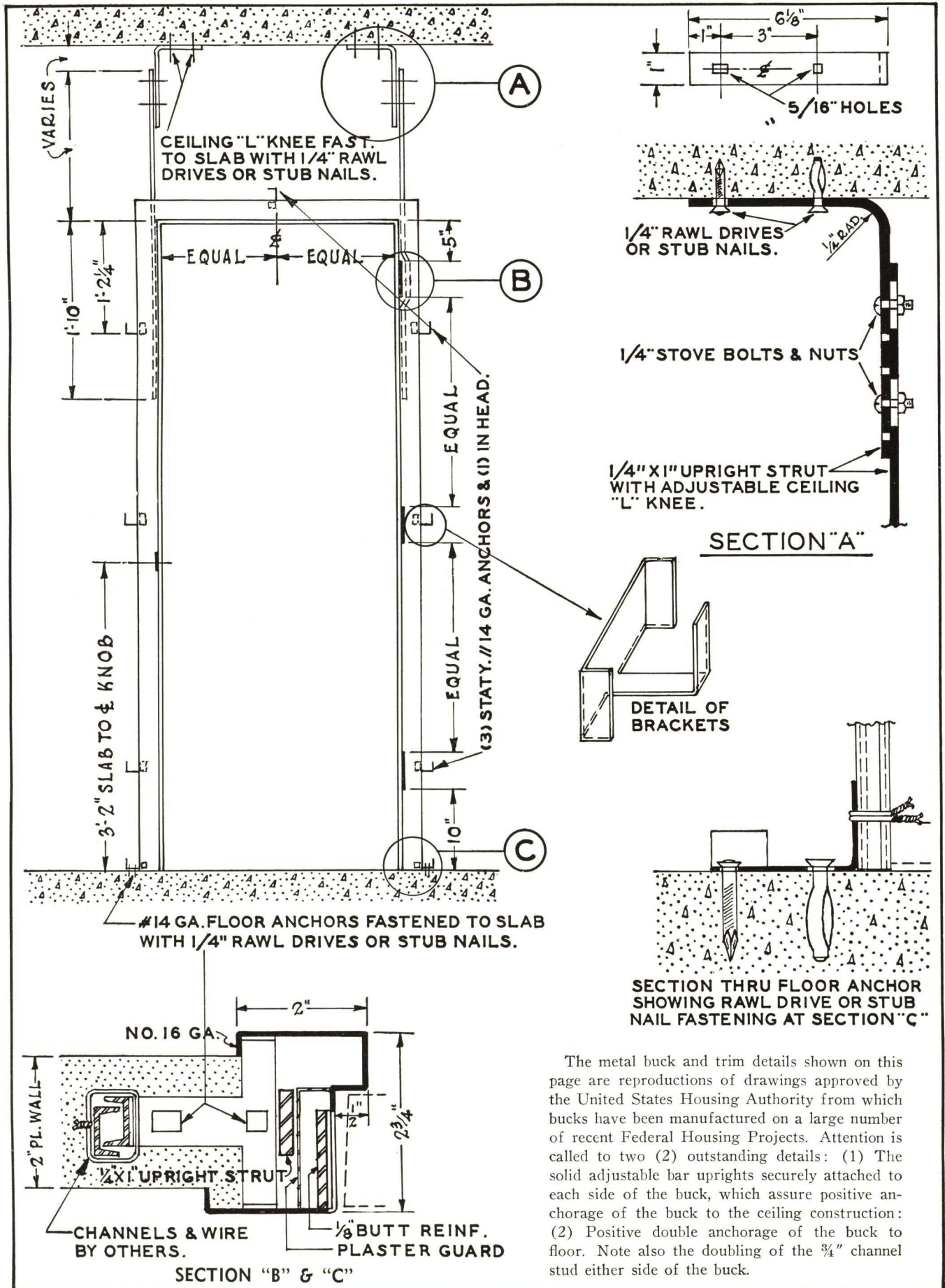
Usually used in stair-halls and corridors where it is necessary to have complete fire protection.

Our experience in manufacturing and erecting this type of steel door frame has been very extensive. We have furnished this type of material for many Government Housing Projects under the supervision of the United States Housing Authority and list below the names of these Government Housing Projects where our materials have been furnished, all of which have been very highly recommended by the architects.

In fire-proof construction where fire-proof doors are specified, we use a Hollow Metal door of either the panel type or semi-flush type as illustrated and in accordance with specifications as given on the preceding pages. Our Hollow Metal doors have also been used on the Housing Projects listed below.

HOUSING PROJECTS WHERE AETNA STEEL DOOR FRAMES AND HOLLOW METAL DOORS WERE USED

NAME	LOCATION	CONTRACTOR	ARCHITECT
University Terrace Housing Project	Columbia, S. C.	T. A. Loving & Company	J. B. Urquhart
Old Harbor Village Housing Project	Boston, Mass.	Matthew Cummings Co.	Jos. D. Leland
Cheatham Place Housing Project	Nashville, Tenn.		Nashville Allied Architects
Trumbull Park Housing Project	Chicago, Ill.	Geo. A. Fuller Co.	John A. Holabird, Chief Architect
Lauderdale Court Housing Project	Memphis, Tenn.	Builders Spec. Co.	J. Frazier Smith, Chief Architect
Julia C. Lathrop Housing Project (north sector)	Chicago, Ill.	Henry Ericsson Co.	Robert De Golyer, Chief Architect
Julia C. Lathrop Housing Project (south sector)	Chicago, Ill.	U. S. Fireproofing Co.	Robert De Golyer, Chief Architect
Hillcreek Housing Project	Philadelphia, Pa.	Turner Constr. Co.	Walter H. Thomas
Fairfield Court Housing Project	Stamford, Conn.	Foundation Associates, Inc.	N. J. Provost
Brand-Whitlock Housing Project	Toledo, Ohio	Ring Construction Co.	Harold Munger, Chief Architect
Langston Terrace Housing Project	Washington D. C.	Coath & Goss, Inc.	Robinson, Porter & Williams
Laurel Homes Housing Project	Cincinnati, Ohio	David Gordon Bldg. Co.	Fred. W. Garber, Chief Architect
Brewster Housing Project	Detroit, Mich.	Maurice L. Bein, Inc.	P.W.A. Housing Division
Schonowee Village Housing Project	Schenectady, N. Y.	A. E. Stephens Co.	R. L. Bowen, J. W. Montross
Jane Addams Housing Addition	Chicago, Ill.	Patrick Warren Const. Co.	John A. Holabird, Chief Architect
Parkside Housing Project	Detroit, Mich.	John Griffiths & Son	Geo. D. Mason, Chief Architect



The metal buck and trim details shown on this page are reproductions of drawings approved by the United States Housing Authority from which bucks have been manufactured on a large number of recent Federal Housing Projects. Attention is called to two (2) outstanding details: (1) The solid adjustable bar uprights securely attached to each side of the buck, which assure positive anchorage of the buck to the ceiling construction: (2) Positive double anchorage of the buck to floor. Note also the doubling of the 3/4" channel stud either side of the buck.

ART METAL CONSTRUCTION COMPANY

Hollow Metal Division

JAMESTOWN, N. Y.

For Branch Offices, see Bank Equipment Section

For Steel Partitions, Kitchen Cabinets, Bank, Office, Library and Hospital Equipment, and Museum Cases, see File Index

ART METAL DOORS AND TRIM IN STEEL AND BRONZE

Products

HOLLOW METAL DOORS AND BUILDING TRIM, ELEVATOR, STAIR and DUMB WAITER ENCLOSURES, CORRIDOR and OFFICE PARTITIONS and CABINET WORK in STEEL and BRONZE.

Types of Doors

The types illustrated in this catalog cover Art Metal standard construction, with profiles carefully designed and selected to conform to the best in architectural detail.

Art Metal facilities make possible the fabrication of doors in any special type and profile where conditions warrant.

Casings and Mouldings

All mouldings are made of specially selected bronze or steel stock and carefully rolled through accurate dies giving a sharp profile. ART METAL CONSTRUCTION COMPANY has unusual facilities for producing special moulding to architect's designs where standard shapes will not meet requirements.

Service

Competent sales engineers are maintained at the Home Office and at all Branch Offices. Their services are offered to architects, contractors and builders without obligation.

Notes Regarding Details

Combination Buck and Jamb—For gauges see cuts. Can be made as heavy as 10-gauge except Type HH1. Wall thickness and reveal variable. Regular 3x10-in. x 18-gauge corrugated adjustable anchors shown on Types B2 and HH1 for brick and tile walls. Perforated strap anchors for concrete walls shown on Type C2. Anchors required for frames taking Underwriters' Labels shown on Type E1. All types shown meet requirements for Underwriters' labeling.

Note: Frames which are to go in fire walls must have stops $\frac{3}{4}$ in. high, all others $\frac{5}{8}$ in. high. Temporary wood spreaders regular with 2x2x $\frac{1}{8}$ -in. angle at bottom for bolting to floor construction.

Permanent steel channel spreaders 2x $\frac{3}{4}$ in. x .0625 gauge furnished where required.

Combination Buck and Jamb with Integral Trim—These frames available in following gauges. Type F2 and G2 in 14 or 16 gauge. Type



TRADE-MARK

RF2 in 16 gauge only, wall thickness $4\frac{1}{2}$ and $5\frac{1}{2}$ in. Type H2 in any gauge with spotwelded moulding. Moulding profile variable (see moulding catalog) for other suitable mouldings. Dimensions where shown are fixed, others are variable. Regular adjustable anchors shown; other anchors as shown above may be used. Corners are mitted and welded. Spreaders as noted above. These types all permit labeling by Underwriters.

Rough Buck—Cabinet Jamb—Trim—Rough bucks 16 to 10 gauge. Cabinet jams 18 or 16 gauge. Optional clipped on casing and scribe. See moulding catalog for complete section with or without metal plinths. All dimensions variable. Rough buck to be either knock down or welded in frame. Steel or wood spreaders.

Swing Doors—Fire Underwriters' Requirements

Class "A"—Units in division walls between separate buildings or sections of building.

Limitations—swinging type—single doors for openings not to exceed 4x8 ft. and doors in pairs not to exceed 5x8 ft., all-steel with approved hardware.

Class A doors are to be provided with listed and labeled three-point locks for doors mounted singly. Doors designed to be mounted in pairs to have a listed and labeled three-point locking mechanism in the active door of the pair and a listed and labeled two-point lock in the inactive door of the pair for attachment to sill and head jamb.

Class "B"—Units in enclosure to vertical communications through building.

Limitations—swinging type—single doors for openings not to exceed 4x10 ft. and doors in pairs not to exceed 8x10 ft., all-steel with approved hardware.

Doors exceeding 8 ft. in height to be provided with three-point locking mechanism same as described for Class "A." Glass area not to exceed 100 sq. in.

Class "C"—Units in corridor and room partitions.

Limitations—swinging type—single door for openings not to exceed 4x10 ft. and doors in pairs not to exceed 8x10 ft., steel or $\frac{1}{4}$ -in. wired glass panels with approved hardware.

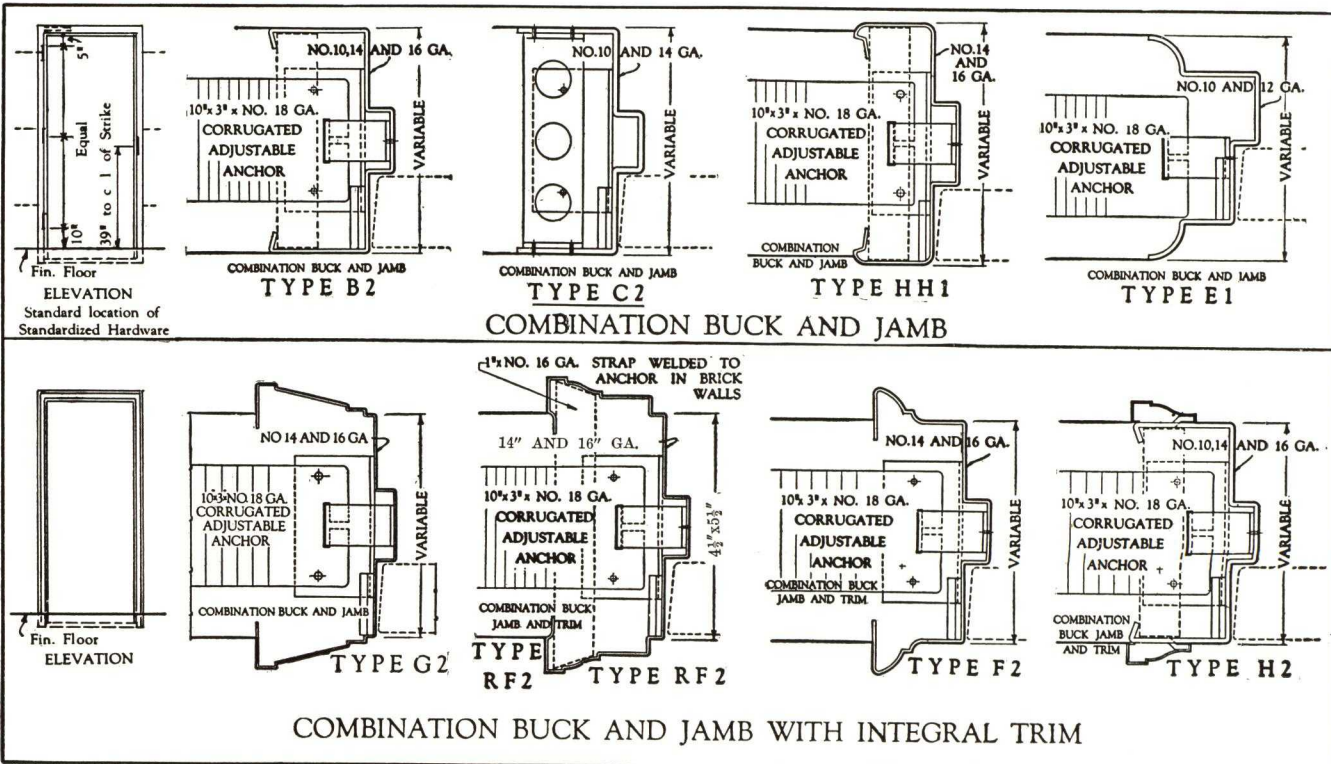
Doors exceeding 8 ft. in height to be provided with three-point locking mechanism as described for Class "A." Glass area not to exceed 1296 sq. in.

Class "D" and "E"—Openings in exterior walls and to fire escapes.

Limitations—swinging type—single doors not to exceed 4x10 ft., pairs of doors not to exceed 8x10 ft., except for fire escape which cannot exceed 6x10 ft.

Doors exceeding 8 ft. in height to be provided with three-point locking mechanism as described for Class "A." Glass area not to exceed 720 sq. in.

Locks for fire escape doors to be such that doors can be opened out from inside by single operation and cannot be locked against a person wishing to leave the building.

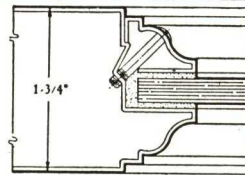
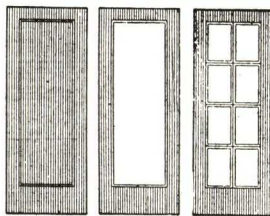
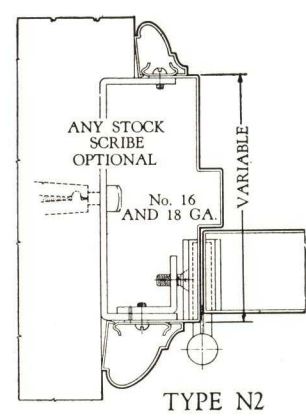
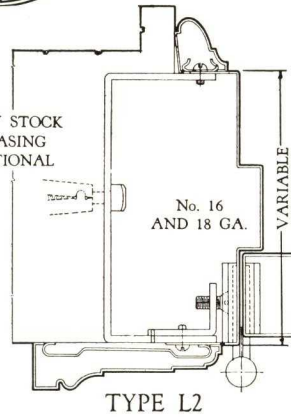
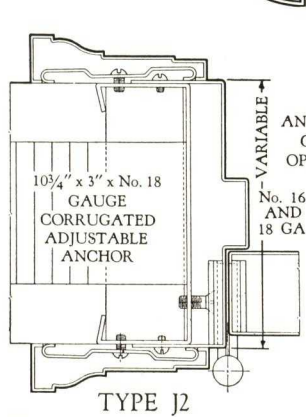
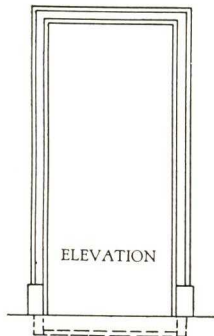


• DOORS •

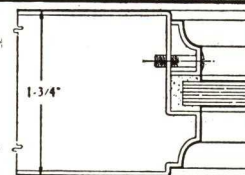
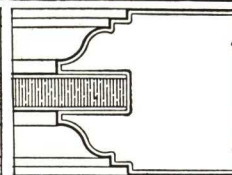


FRAMES

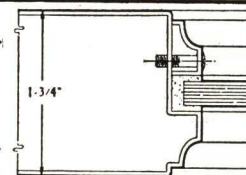
CABINET
TYPES



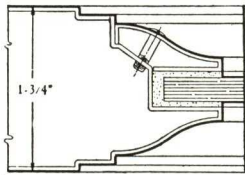
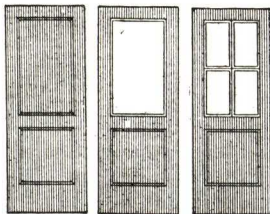
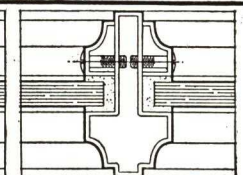
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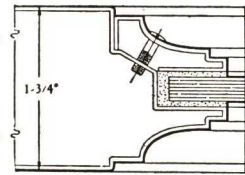
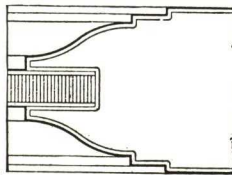
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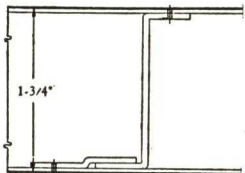
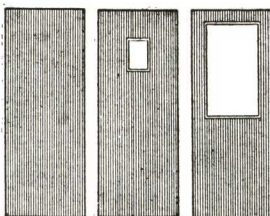
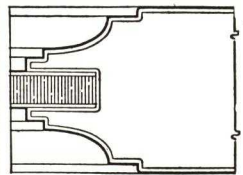
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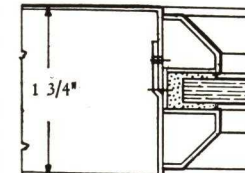
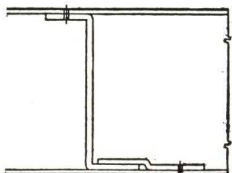
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WITH STEEL PANELS



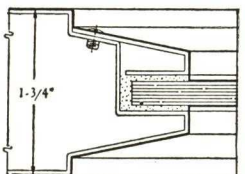
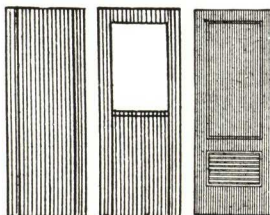
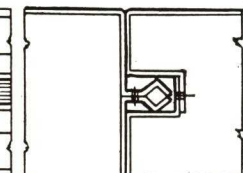
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WITH GLASS PANELS



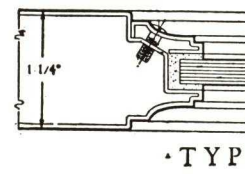
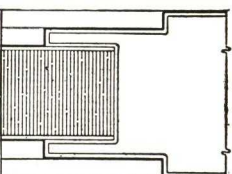
• TYPE • 94 •



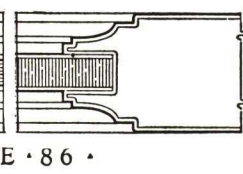
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• TYPE • 87 •

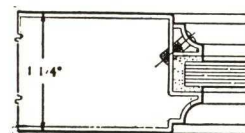


• TYPE • 86 •

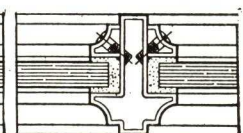


STYLES OF
DOORS

TYPES OF
DOORS



• TYPE • 59 •

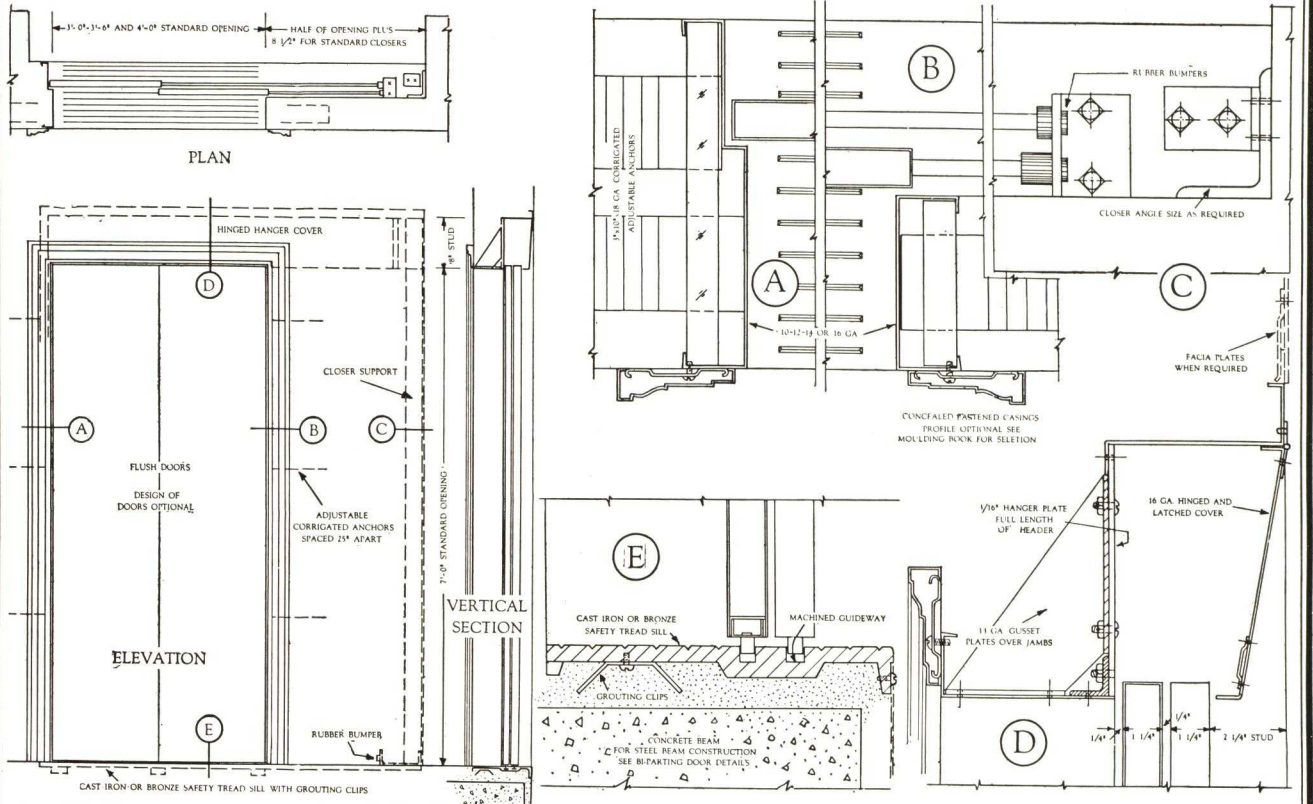


ELEVATOR

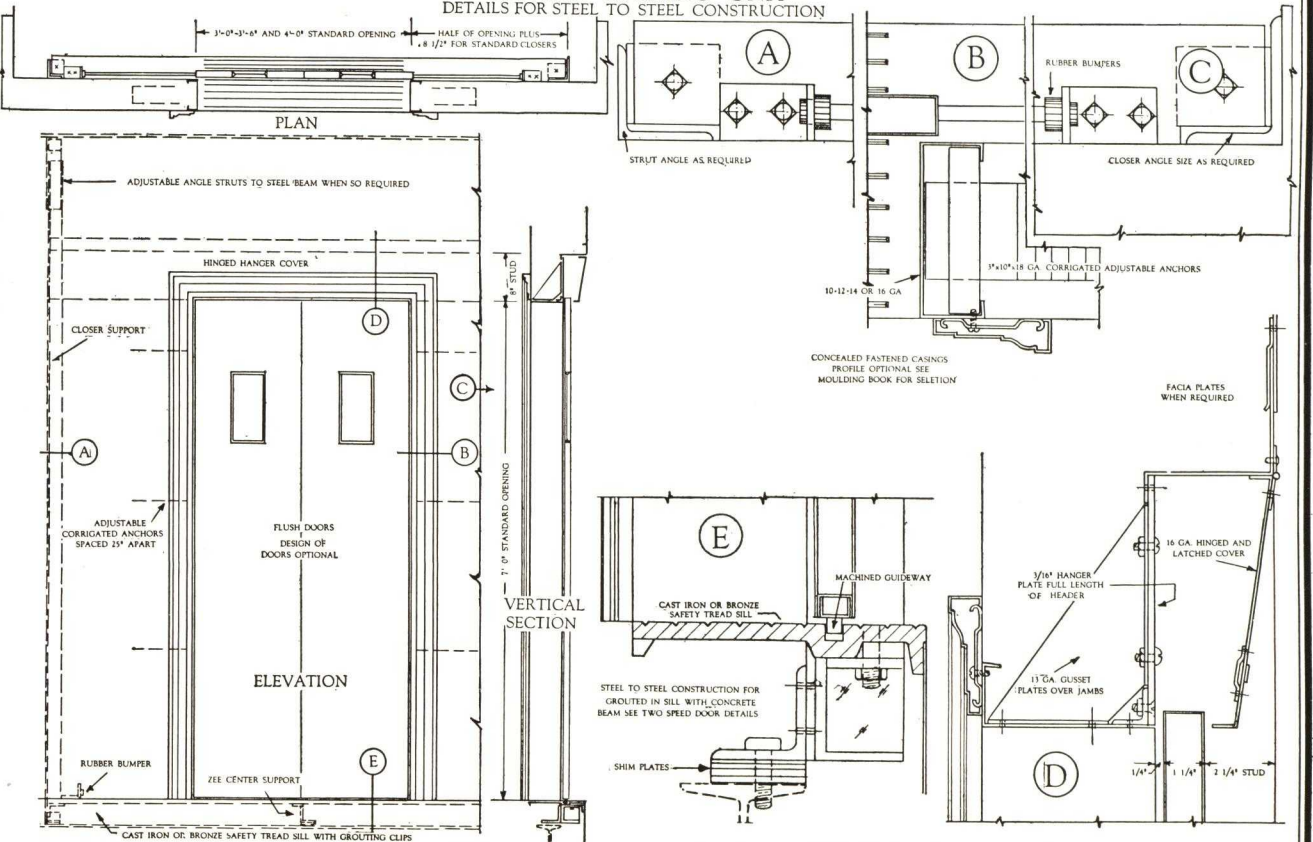


ENCLOSURES

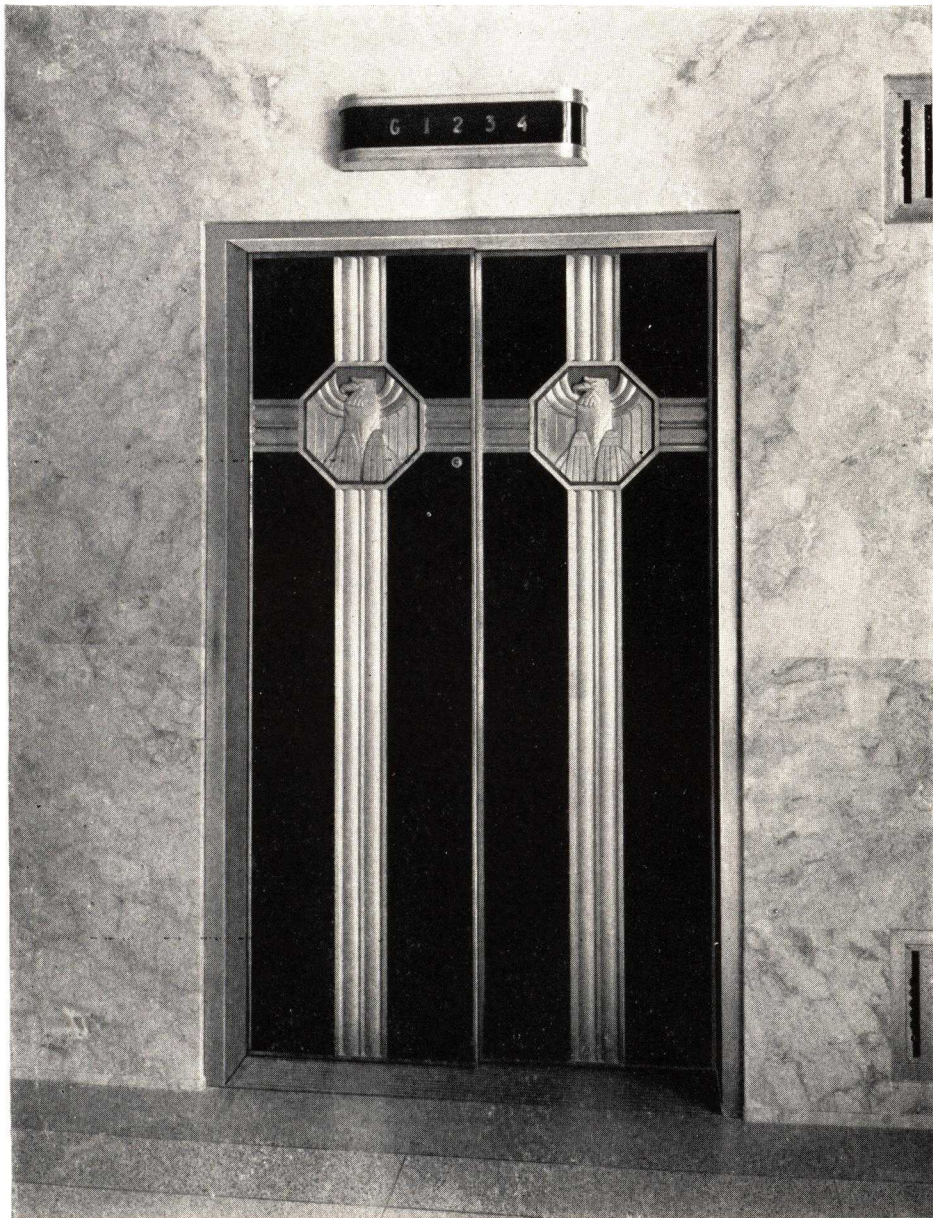
TWO SPEED UNIT
DETAILS FOR CONCRETE BEAM CONSTRUCTION



CENTER OPENING UNIT
DETAILS FOR STEEL TO STEEL CONSTRUCTION



VERSATILITY IN
Design • •



with **DAHLSTROM**
ELEVATOR ENTRANCES

• D A H L S T R O M

Distinctive ELEVATOR ENTRANCES

This catalog is presented in the spirit of assistance—to suggest to Architects the freedom and facilities for design and execution of elevator entrances offered by Dahlstrom. It embodies the results of nearly forty years of designing and fabricating hollow metal elevator entrances by the pioneer producer of metal doors, metal trim and mouldings.

• In the designing of elevator entrances from

the various sections shown, all parts can be considered sufficiently flexible to accommodate any arrangement and any type of design treatment desired.

• The Dahlstrom Metallic Door Company has adequate plant facilities and a personnel of trained craftsmen, each skilled in doing his part to produce the quality and beauty that you have the right to expect of all Dahlstrom elevator entrances.

Modernizing FOR PROFIT

Successful modernization of old elevator entrances to maintain profitable tenant occupancy means high grade, trouble free elevator entrances. Distinctive, new Dahlstrom inclosures can greatly aid in assuring tenants the satisfaction of location in a building whose public space and equipment reflect prestige and good taste.

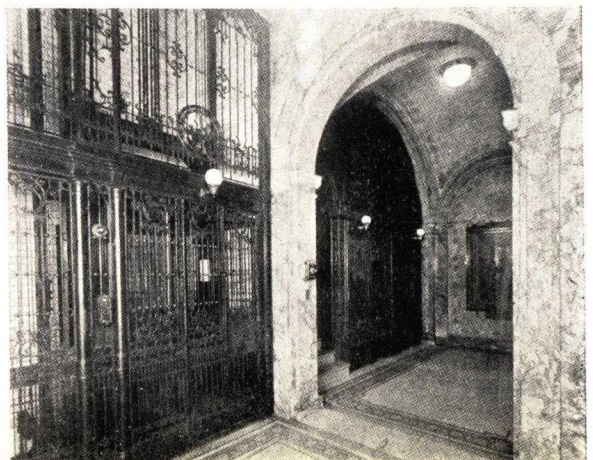
The safety and efficiency of all Dahlstrom elevator entrances help to guarantee maximum traffic service. Dahlstrom installations in many of the country's largest buildings are convincing proof of this fact. Beauty of appearance is an integral part of Dahlstrom entrances because Dahlstrom designers and craftsmen co-operate in producing faithful interpretations of the architects' creations.

ILLUSTRATED ON THE FRONT COVER ARE
• THE DAHLSTROM ELEVATOR ENTRANCES IN
THE UNITED STATES COURT HOUSE, AUSTIN
TEXAS — C. H. PAGE, ARCHITECT.



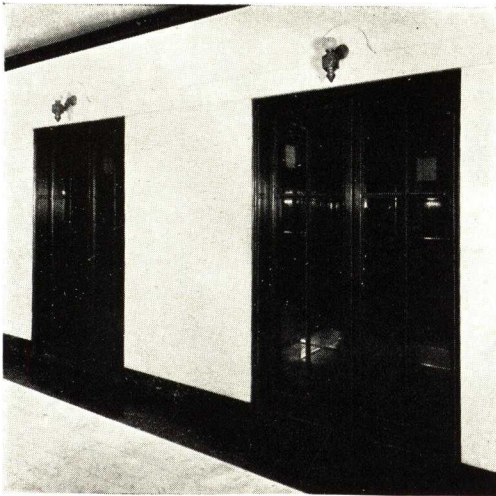
AFTER • ROSEWOOD DOORS WITH CAST NICKEL SILVER INLAYS.
BINDING STRIPS AND FRAME NICKEL SILVER. REIBOLD
BLDG., DAYTON, O., PRETZINGER & PRETZINGER, ARCHTS.

BEFORE



• A CO-OPERATIVE SERVICE

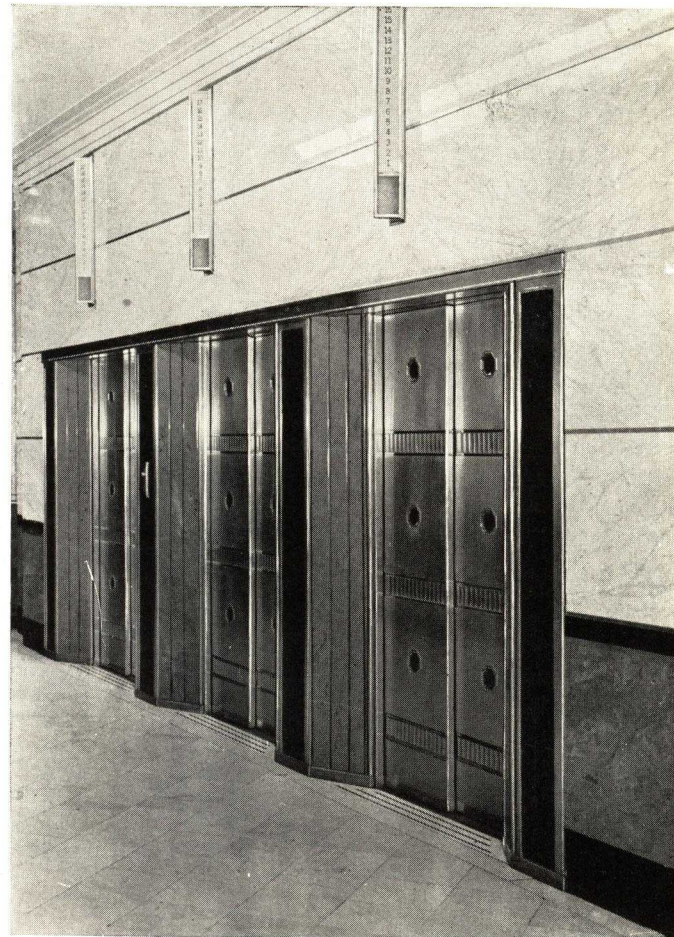
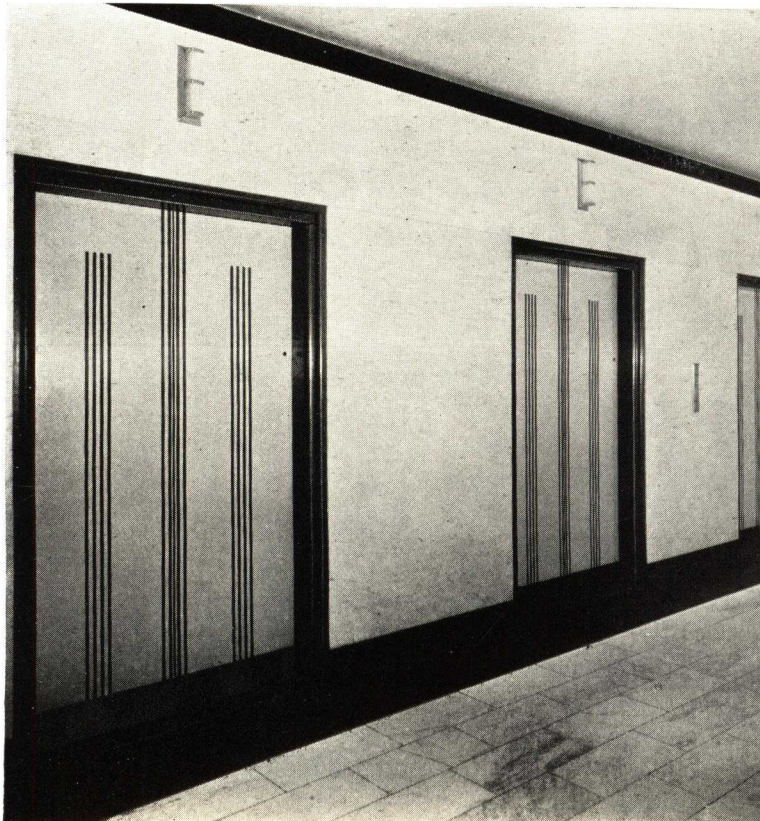
The extensive participation in alteration work by Dahlstrom have given its engineers and designers unusually broad experience in meeting the many varied problems peculiar to modernization. This experience is fully at your service in consultation and planning of new elevator entrances. Suggestions for door designs and perspective renderings in color are also available from our Art Department, to help visualize the transformation to new Dahlstrom elevator entrances.



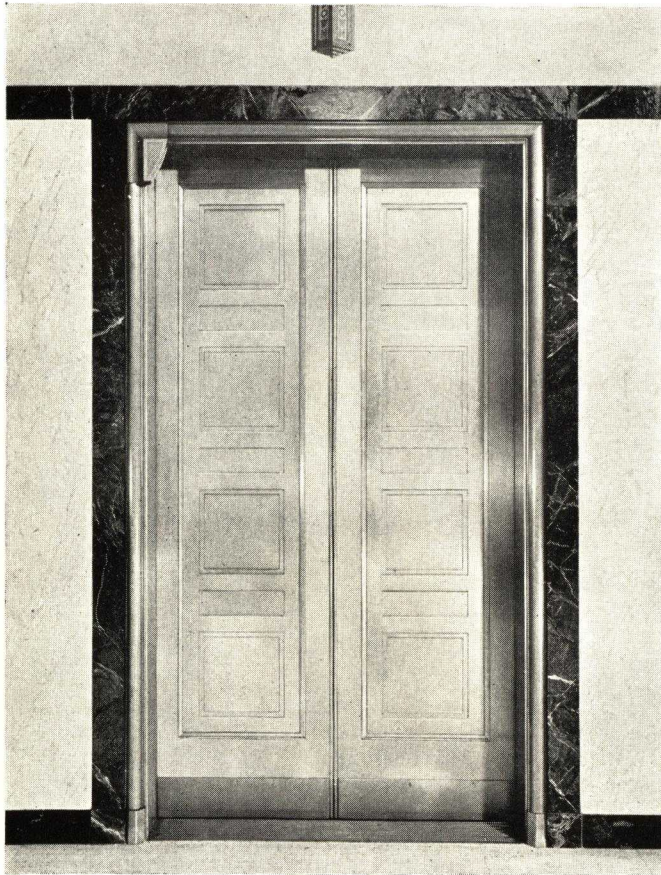
BEFORE

TYPICAL FLOOR ALTERATION •
WRIGLEY BLDG.
CHICAGO, ILL.,
GRAHAM, ANDERSON,
PROBST & WHITE, ARCHTS.,
LIGHT TAN DOORS, DARK
BROWN STRIPING AND TRIM.
BRONZE KICK PLATES.

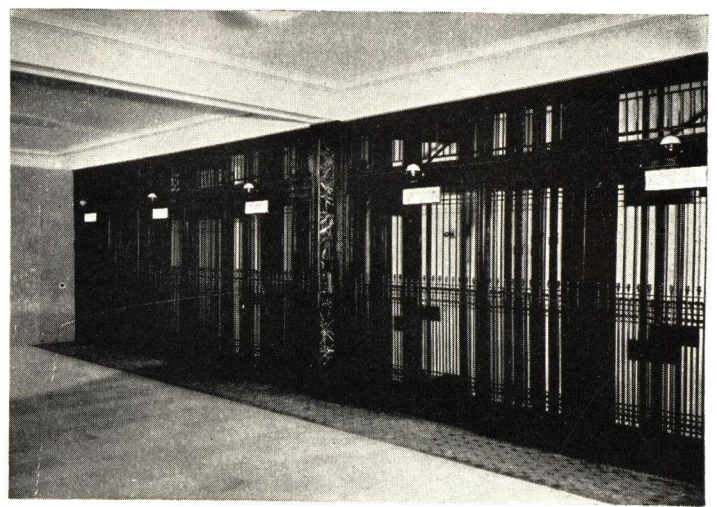
AFTER



BEFORE • ABOVE, AFTER—FIRST FLOOR NICHOLAS BLDG., TOLEDO, O. WALKER & WEEKS, ARCHTS. DOORS, FLUTED INSERTS AND NO. 267 TRIM IN NICKEL SILVER. PANEL FRAMES AND INSERT STRIPS YELLOW BRONZE. BLUE GLASS MIRRORS.



1
AFTER



BEFORE

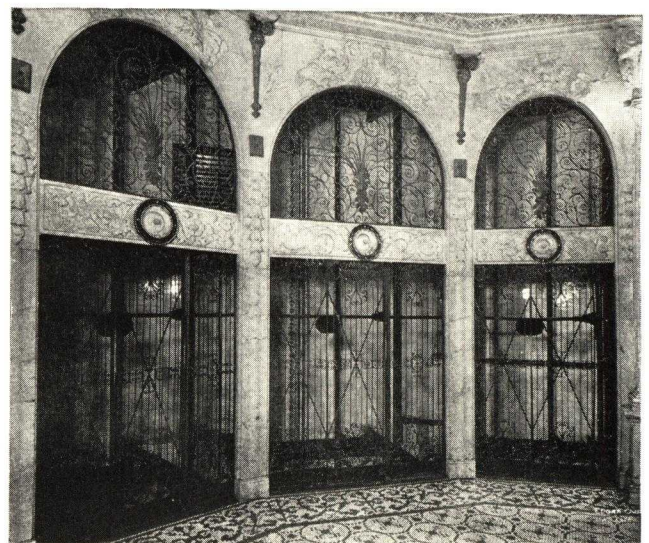
Economical MODERNIZATION

Where economical alteration is desired the new Dahlstrom Standard elevator entrances can effect substantial savings. They embody the same Dahlstrom quality construction as the custom built units, but simplified design and standardized production assure quicker delivery and lower cost. For complete data on the standard entrances ask for the Dahlstrom folders D-51 (Two-Speed), D-52 (Center Opening), D-53 (Single Slide) and D-56 (Single Swing).

- 1 NEW BRONZE DOORS WITH OFFSET PANELS, AND DAHLSTROM NO. 2277 TRIM, OLIVER BUILDING, PITTSBURGH, PA. JAMES J. PIPER, ARCHT.
- 2 FLUSH BRONZE DOORS WITH ETCHED BORDER, CANDLER BLDG., ATLANTA, GA. IVEY & CROOKS, ARCHTS.

2

BEFORE

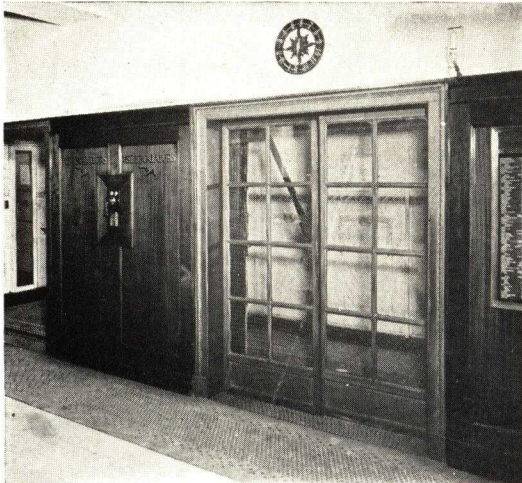


New Beauty in Design • New Life to

OLD ELEVATOR ENTRANCES • •

For rich, decorative effects at a reasonable cost, Dahlstrom craftsmen offer a combination of two modern mediums of design — etching and graining. This treatment offers etched designs with backgrounds of fine grained wood reproductions on metal, flush with the design. It is similar to inlay patterns in wood, but with the advantages of an all metal construction. This design medium offers much more freedom in inlay patterns than is possible with wood backgrounds.

Dahlstrom also offers etched metal inlays in any desired wood for designs where actual wood backgrounds are wanted.



BELOW • NEW ELEVATOR
ENTRANCES • FLUSH ETCHED
ALUMINUM DOORS. JAMBS AND
NO. 2140 TRIM IN ALUMINUM.
GIMBELS, PITTSBURGH, PA.
JAMES J. PIPER, ARCHITECT.



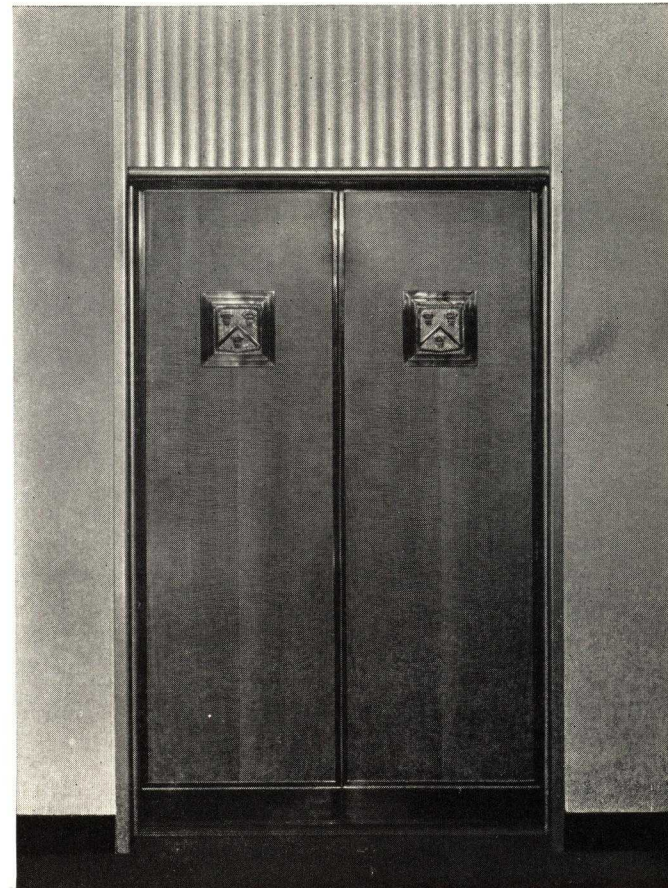
BEFORE •

MARSHALL FIELD BUILDING, CHICAGO, ILL.,
TYPICAL FLOORS, GRAHAM, ANDERSON,
PROBST & WHITE, ARCHTS. HAREWOOD PANELS,
CAST BRONZE PLACQUES, BRONZE TRIM.

AFTER

BEFORE

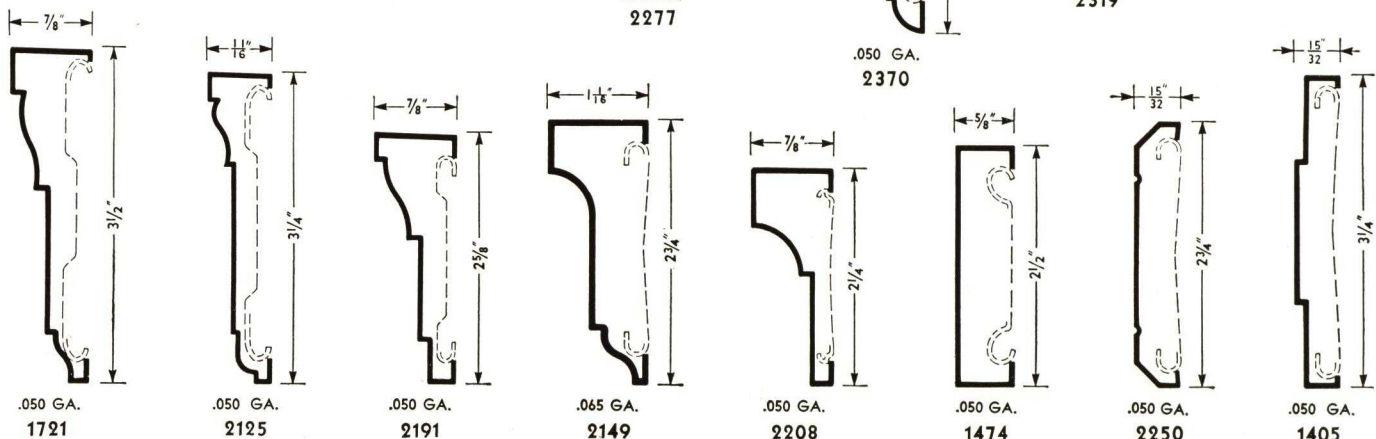
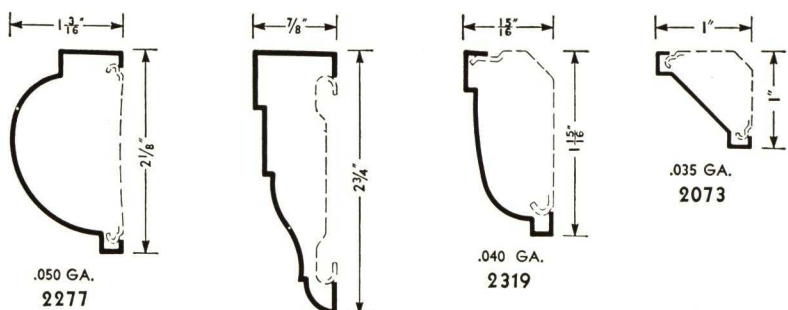
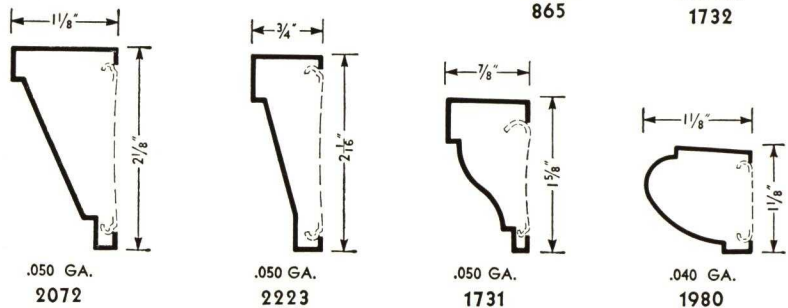
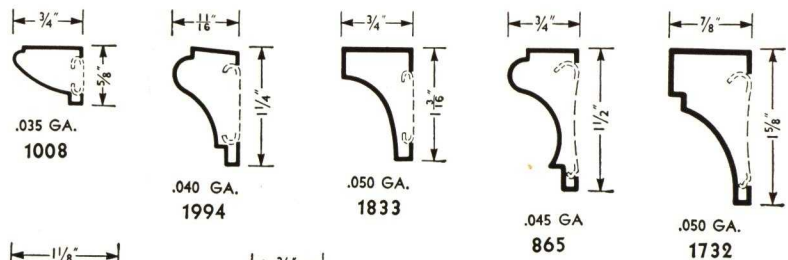
AFTER



DAHLSTROM *Architectural Trim . . .*

Smooth, accurately formed profiles are characteristic of the beauty of Dahlstrom mouldings. These shapes are cold rolled in steel, bronze or any of the popular white metals. The mouldings shown are only a very few of the architectural shapes contained in the catalog of "Dahlstrom Metal Mouldings and Shapes" (with over 2,500 shapes illustrated at full size) which is yours on request.

- THE MOULDINGS SHOWN BELOW ARE ONE-HALF ACTUAL SIZE.
ALL CAN BE FURNISHED WITH CONCEALED FASTENINGS.



CIRCLE • DAHLSTROM INTEGRAL TRIM NO. 7253 IN LIGHT IVORY-GRAY ENAMEL.

BELOW • DAHLSTROM NO. 2277 APPLIED TRIM IN NATURAL BRONZE.

Standard FRAME TYPES •

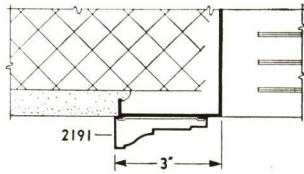
PRESSED INTEGRAL TRIM

This page illustrates Standard Frame Types which embody the requirements for virtually any type of wall construction. Several types of integral frames are available including the new type "F" (SplayJamb) and the various pressed frames with integral trim shown at the right. The pressed trim shapes permit a certain amount of freedom in designing as indicated by the variable dimensions. Nos. 01221, 7821, 5934 and the standard type "D" are especially adapted to hospitals.

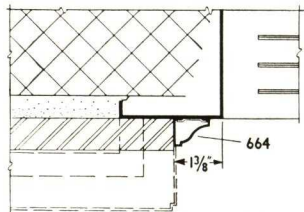
If applied trim is desired, the mouldings shown on the opposite page, when used with the standard frames, offer many pleasing trim combinations.

Selecting integral frames or applied trim from the available dies shown has the definite advantages of considerable saving in new die charges and much quicker fabrication. Order by letter and number as indicated.

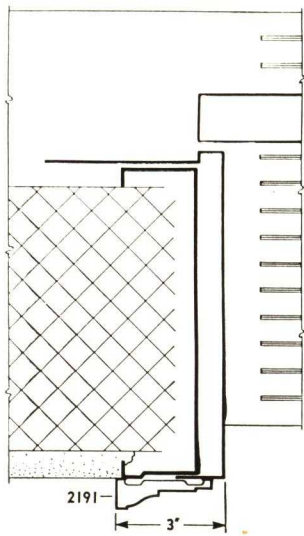
Additional trim shapes are shown in the Dahlstrom catalog "Metal Mouldings and Shapes," which is yours on request.



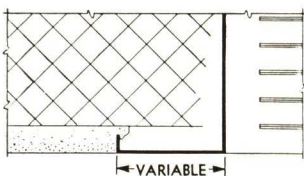
TYPE "A" FRAME



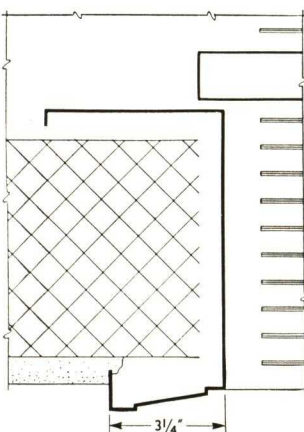
TYPE "B" FRAME



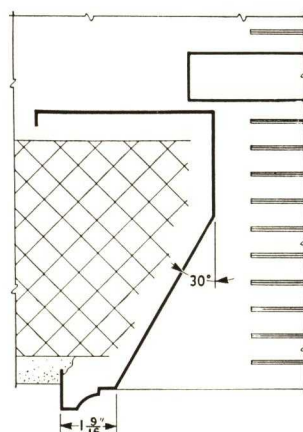
TYPE "C" FRAME



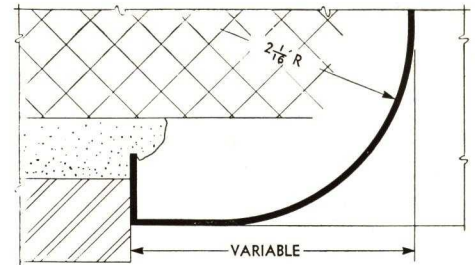
TYPE "D" FRAME



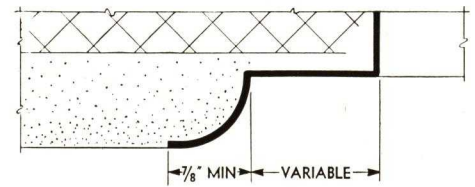
TYPE "E" FRAME



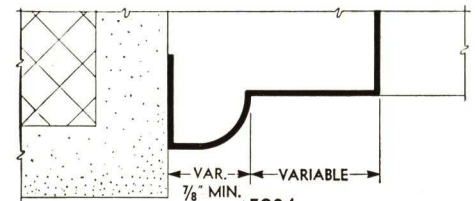
TYPE "F" FRAME



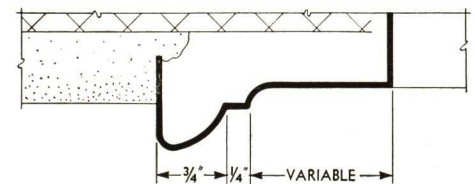
01221



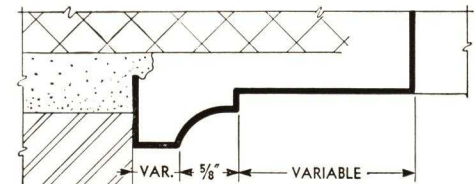
7821



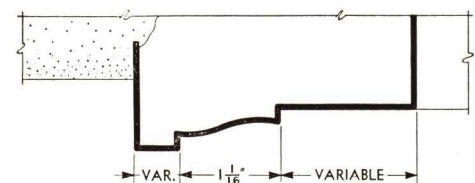
5934



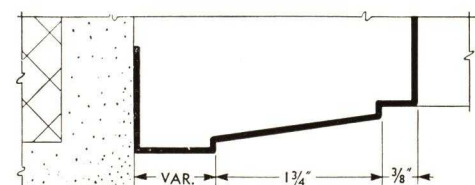
8480-8481



8486



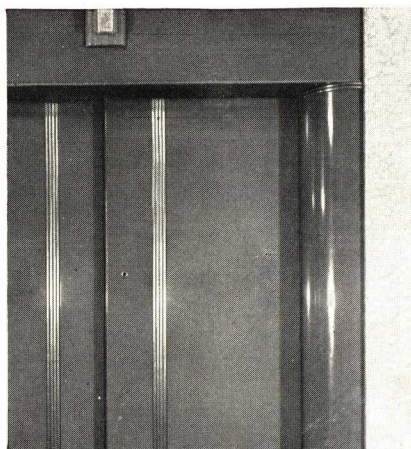
7253



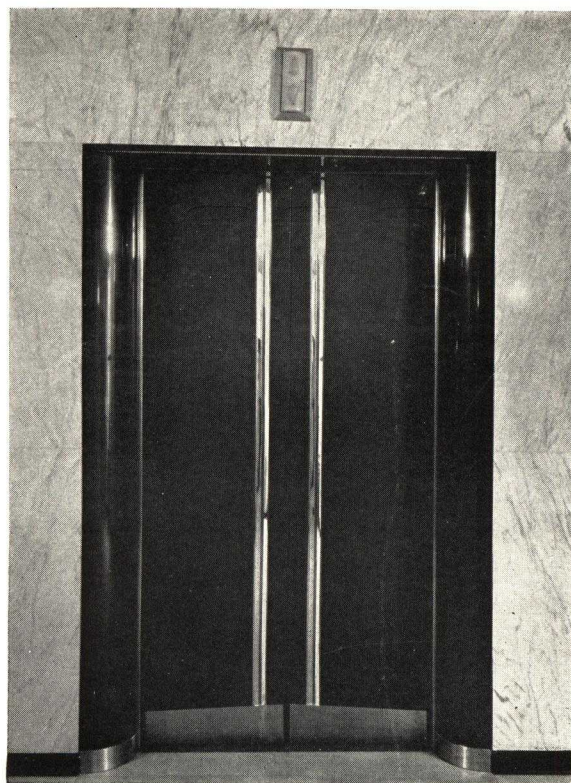
7965



DECORATIVE, FLAT ALUMILITE
INSERTS IN WOOD PANEL.



No. 2239 DOOR INSERTS AND
No. 2240 CURVED JAMB IN-
SERTS, CHROME NICKEL STEEL



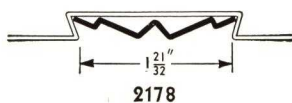
No. 2179 DOOR INSERTS, POLISHED CHROME NICKEL
STEEL, DARK GREEN DOORS AND TRIM. NEMOURS
OFFICE BUILDING, WILMINGTON, DEL., E. I. DU
PONT DE NEMOURS & CO., ARCHTS.

Decorative Inserts

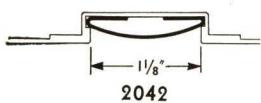
Dahlstrom decorative inserts offer many interesting design possibilities. Colored enamel or natural metal inserts in various surface finishes make this a useful and practical door treatment.

DOOR INSERTS.

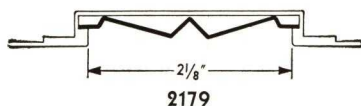
Flat insert strips are also furnished in whatever widths specified. On flush doors no insert can project beyond the face of the door or binding edge.



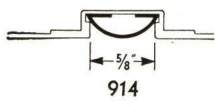
2178



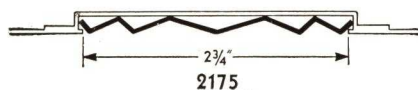
2042



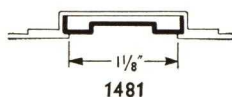
2179



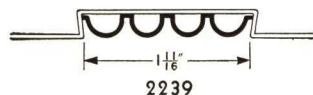
914



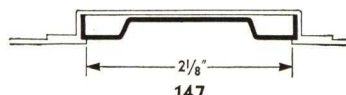
2175



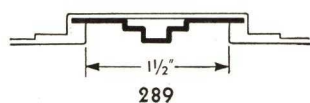
1481



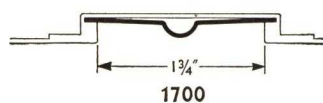
2239



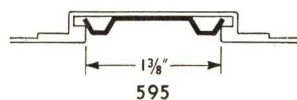
147



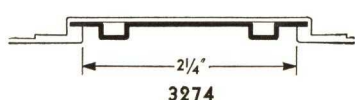
289



1700



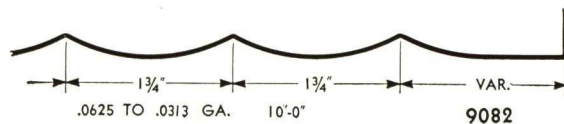
595



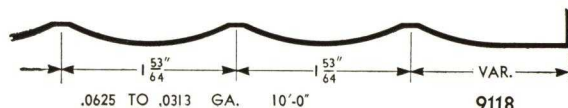
3274

PILASTER TRIM.

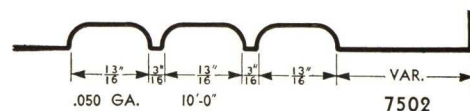
Pressed shapes for fluted pilaster trim are available in all non-ferrous and ferrous metals which permit pressure forming. The number of flutings are variable. Maximum length is 10 feet. Other profiles are also available. Cornice profiles are likewise produced in pressed shapes. Consult the Dahlstrom catalog "Metal Mouldings and Shapes."



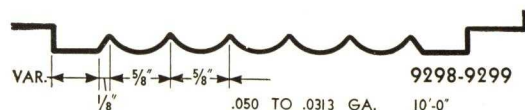
9082



9118



7502



9298-9299

Cast Ornament FOR RICH EFFECTS

Dahlstrom cast ornamental doors reflect the true beauty of the modeller's art. The architect is assured of faithful interpretation of his designs in whatever type of cast ornament desired, whether in bold relief or delicate modelling. Dahlstrom cast doors can be either built-up paneled doors with cast panels inserted or applied, or overall full cast fronts.

Etching FOR MODERN DECORATION

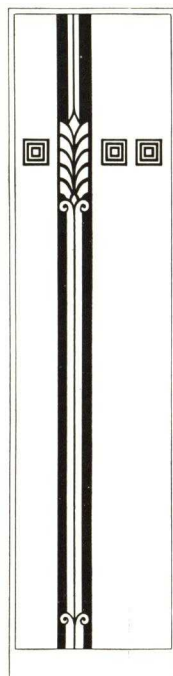
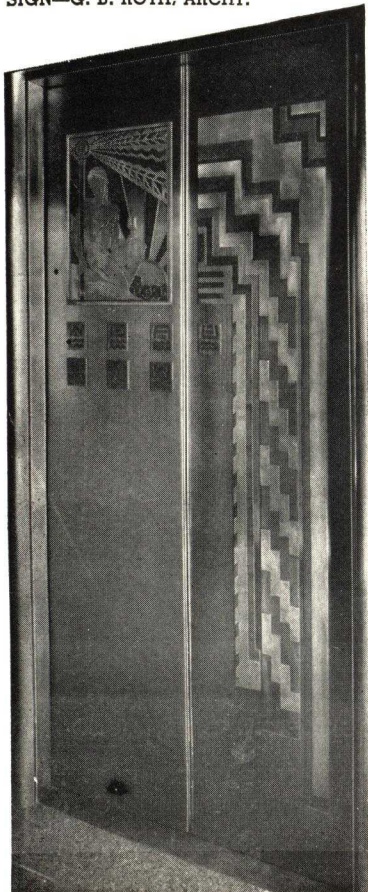
Many beautifully effective Dahlstrom doors have been executed in the age old medium of etching. Dahlstrom facilities for this design treatment include all types of etching with flush grained or enameled backgrounds, the various natural metal surface finishes and deep, relief etching. Dahlstrom representatives have new photographic portfolios illustrating outstanding design treatments in etching and other mediums. They will be glad to show them.

W.C.A.U. STUDIO BUILDING
PHILADELPHIA, PA., CHROME
NICKEL STEEL DOORS, AP-
PLIED ETCHED BRONZE DE-
SIGN—G. B. ROTH, ARCHT.



CAST BRONZE DOORS FOR THE ALFRED I. DU
PONT BLDG., MIAMI, FLA. MARSH & SAXELBYE,
ARCHITECTS. MASSENA & DU PONT CON.
ARCHTS.

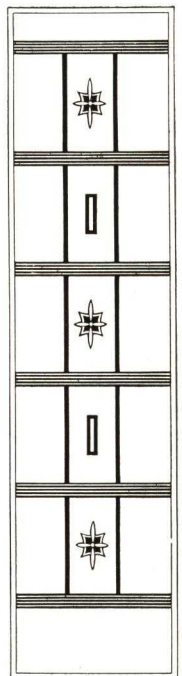
Below are shown three suggestions for etched
door designs. Cooperation with Architects on
other designs is available when desired.



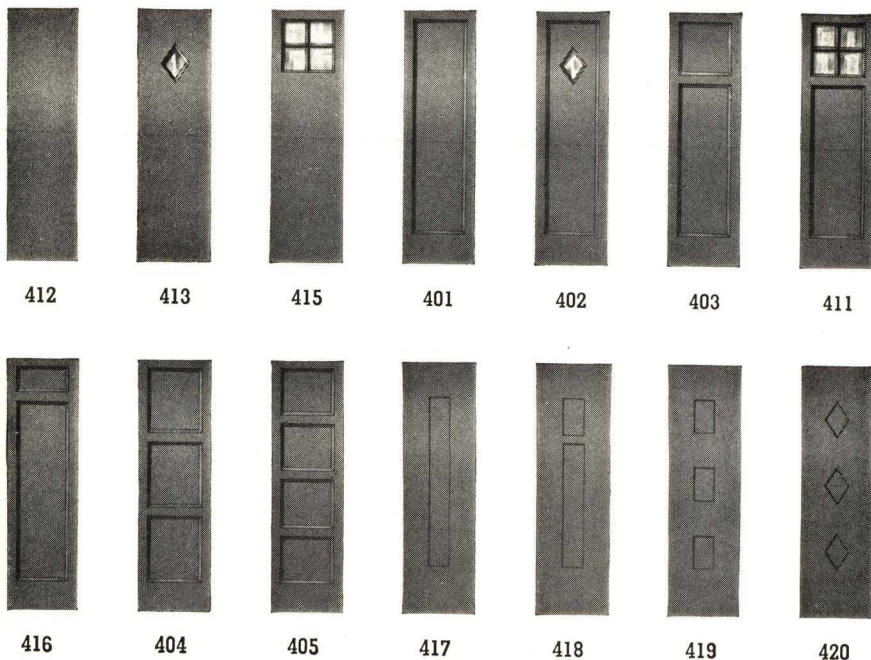
E-51



E-53

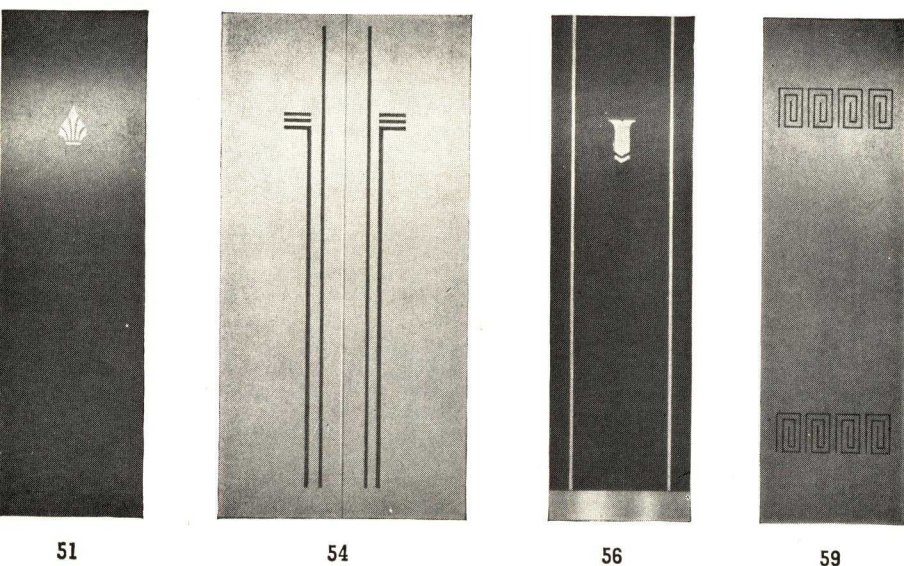


E-56



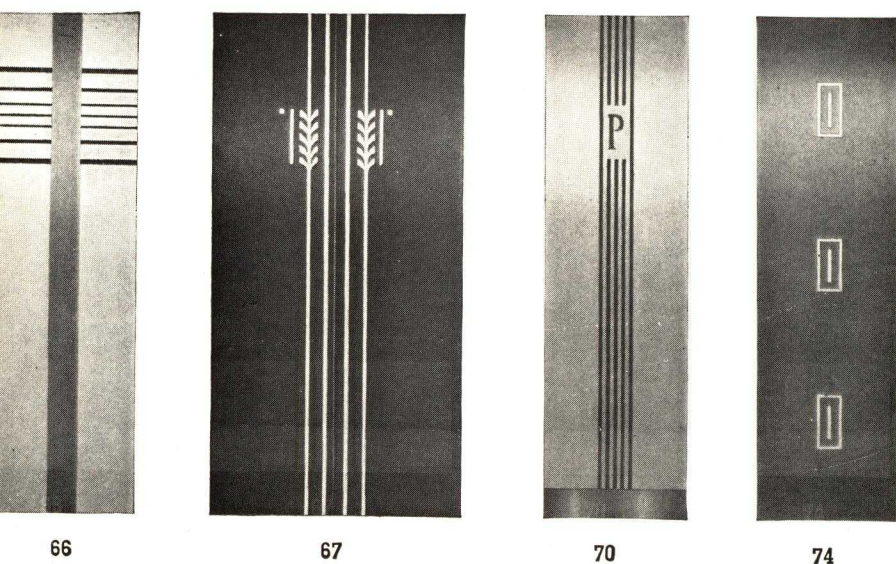
Standard DOOR DESIGNS

Dahlstrom standard elevator door designs offer almost unlimited panel arrangements in either metal or glass panels. The most popular styles are illustrated here. Nos. 417, 418, 419 and 420 have a flush type effect with shallow offset panels. Panel moulding profiles and a complete folder of standard door designs will gladly be sent you upon request.



Economical Design with Striping

The eight flush striping designs shown here are from the design folders D-54 and D-55. Designs 51, 56 and 59 are suitable for vision panels. All, excepting Nos. 67 and 74 are adaptable to monograms. Standard kick plates are 5" high, painted. They can also be furnished in Bronze or in Stainless Steel.



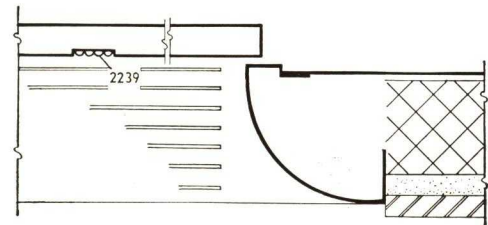
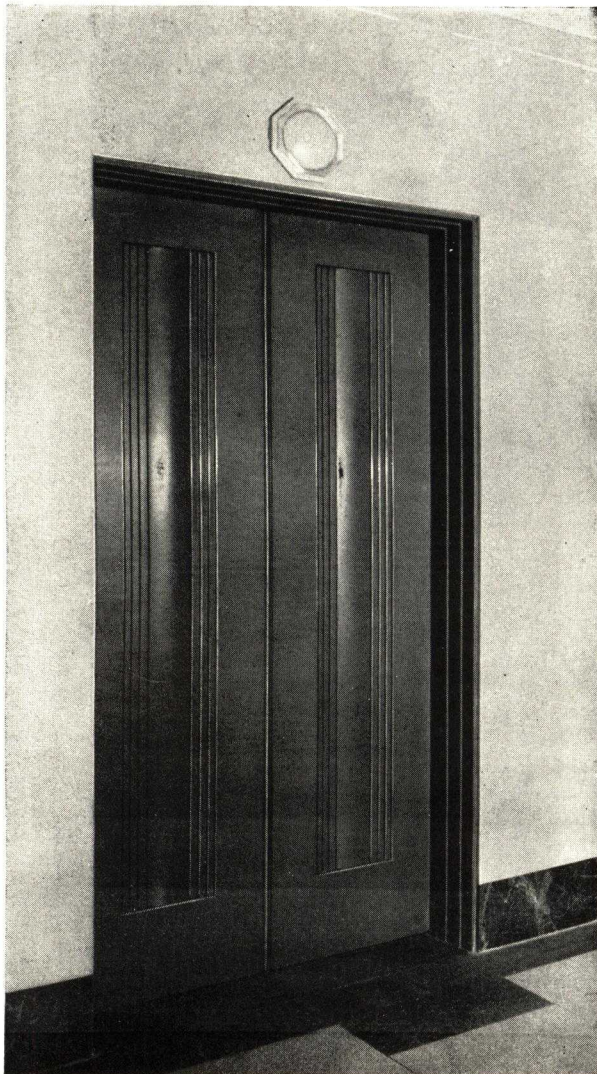
Although an economical medium of design, striping offers a great variety of decorative color arrangements.

Our Art Department will gladly cooperate in developing any special designs.

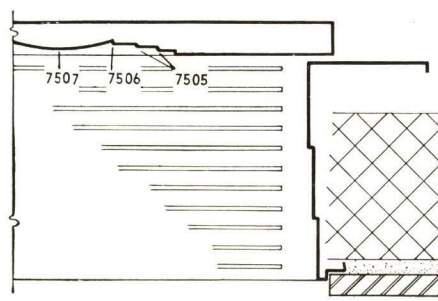
Custom Built by DAHLSTROM

Dahlstrom custom built elevator entrances are faithful reproductions of the Architect's designs, plus Dahlstrom quality construction and almost unlimited possibilities in design treatment including:

- Beautifully modelled cast doors.
- Etched beauty in natural metal finishes or with color inlays.
- Pierced design with colored metal backgrounds or glass inserts.
- Natural woods with metal inserts.
- Fine grained wood reproductions in metal—etched design inlays.
- Decorative striping with plain enamel, stippled, grained or natural metal finishes.



ROCKEFELLER CENTER, NEW YORK, N. Y. ARCHTS.,
REINHARD & HOFMEISTER.—CORBETT, HARRISON &
MACMURRY—HOOD & FOUILLOUX. TYPICAL FLOOR
UNITS IN BUILDINGS 1 AND 9, IN BROWN ENAMEL
WITH CHROME NICKEL STEEL, DAHLSTROM INSERTS.



EMPIRE STATE BLDG., NEW
YORK, N. Y. ARCHTS.,
SHREVE, LAMB & HARMON.
GRAY ENAMELED TYPICAL
ENTRANCES. DOOR PANELS
ARE DIE FORMED HOLLOW
METAL.

Notable OF CONSTRUCTION ELEVATOR ENTRANCES •

The following notable construction features are embodied in Dahlstrom elevator entrances:—

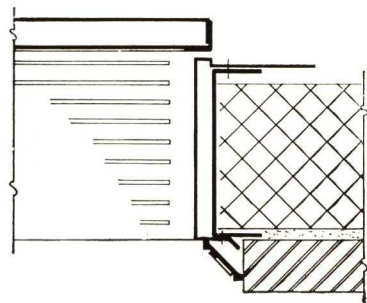
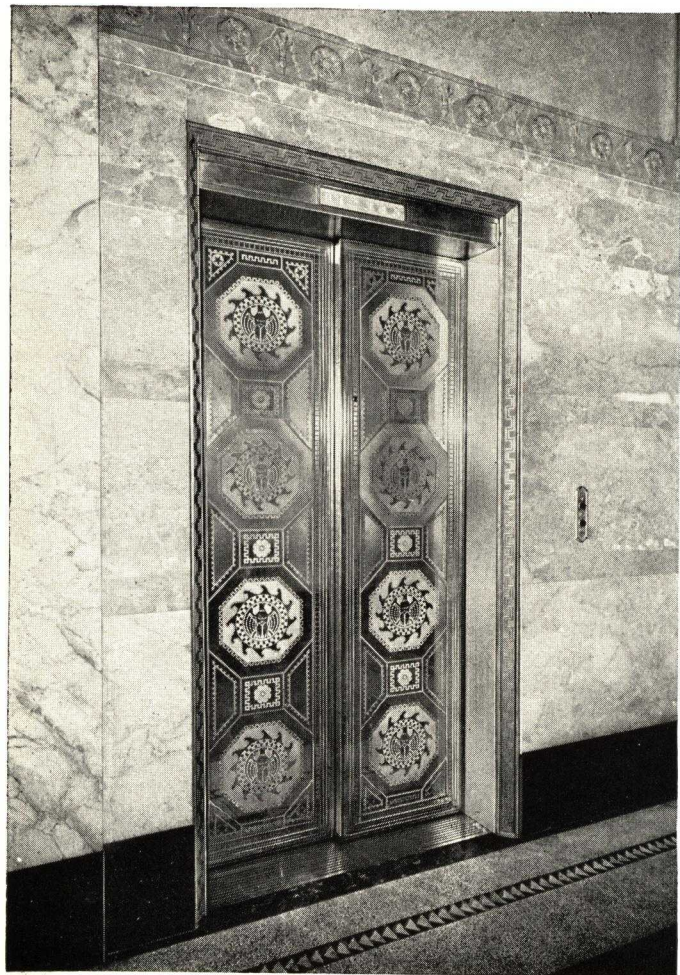
Invisible seams and perfect miters.

Wide frame flanges on hoistway side for complete concealment (with facias) of structural members and savings in plastered areas.

Dahlstrom Craftsmanship in Bronze, Aluminum, Chrome Nickel Steel, Nickel Silver and Steel.

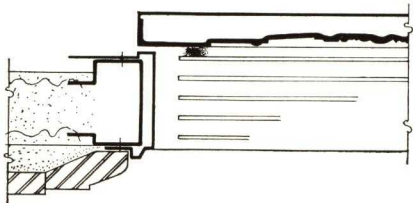
Machine planed sill grooves — minimum door guide clearance and smoother sliding doors.

Laminated canvas phenolic door guides — long wearing and quiet.



U. S. POST OFFICE AND COURT HOUSE, COLUMBUS, O. ARCHTS.: RICHARDS, McCARTY AND BULFORD, H. H. HIESTAND, ASSOC. ETCHED POLISHED ALUMINUM FRONTS. ETCHED JAMBS IN SANDED ALUMINUM.

METROPOLITAN LIFE INS. CO., NEW HOME OFFICE BUILDING, NEW YORK, N. Y. WAID & CORBETT, ARCHITECTS. OFFSET PANELED DOORS IN NICKEL SILVER WITH CAST ORNAMENTAL PANELS. UNIT FRAME AND TRIM NICKEL SILVER.



Features

FOUND IN DAHLSTROM

Cover plates sectioned for convenient hanger servicing from within cab.

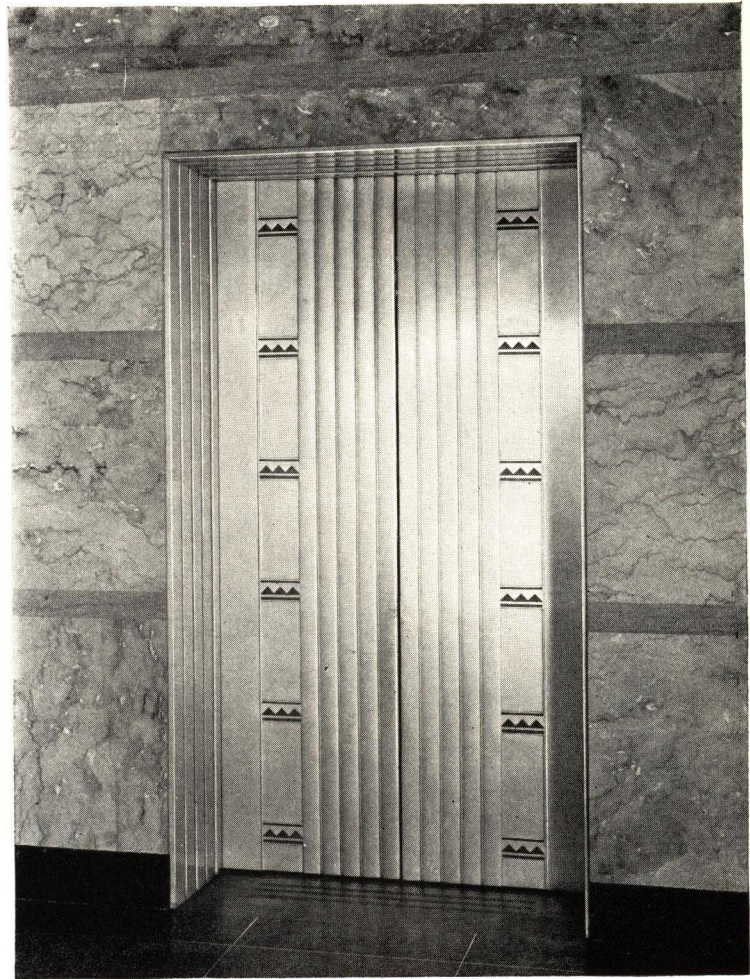
Dahlstrom quality finishes — longwearing beauty.

Finest materials and construction for minimum maintenance.

Rubber door bumpers on strike jamb for quiet closing.

Adaptability to any type of operating equipment.

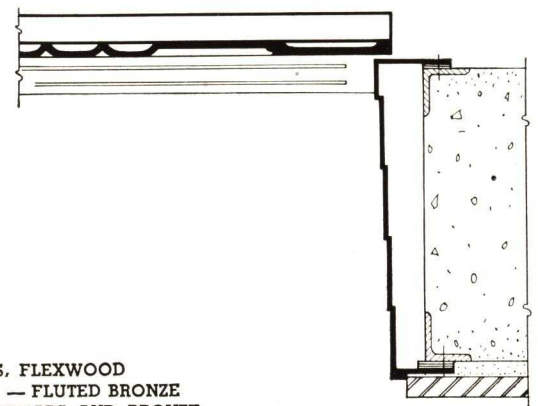
Sills with anti-slip abrasive surfaces.



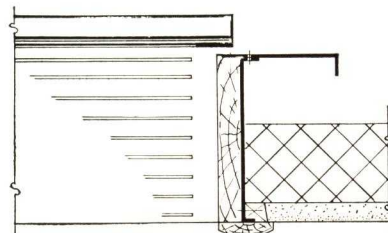
STATE PUBLIC WORKS BLDG., SACRAMENTO, CALIF. DIV. OF ARCHITECTURE, DEPT. OF PUBLIC WORKS, ARCHTS. CAST ALUMINUM FRONTS, ALUMILITE FINISH. HORIZONTAL DESIGN ETCHED WITH GRAY-LAVENDER ENAMELED INLAIS. CAST ALUMINUM JAMBS.



KRAFT-PHENIX CHEESE CORP. CHICAGO, ILL.
MUNDIE, JENSEN, BURKE & HAVENS, ARCHTS.



FLUSH DOORS, FLEXWOOD
BACKGROUND — FLUTED BRONZE
HORIZONTAL STRAPS AND BRONZE
BINDING ANGLES.



SINGLE *Swing* ELEVATOR ENTRANCE

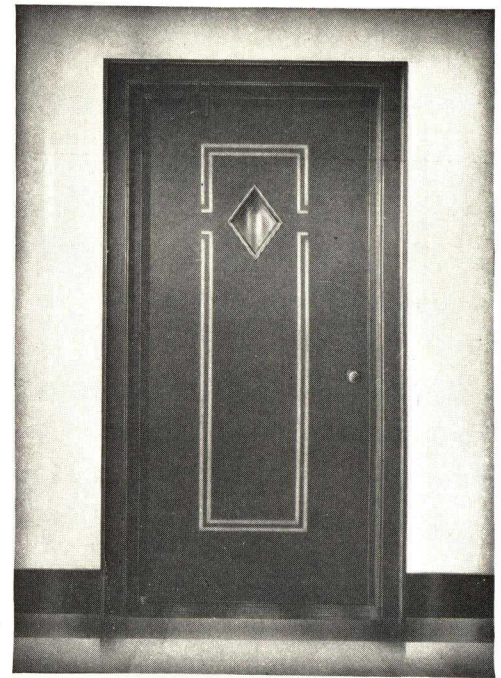
These details show the standard type single swing frame. For custom built units the trim is variable to suit requirements. Pages 6 and 7 illustrate other Dahlstrom Frames and Applied Trim.

Suggested striping design treatments for single swing doors are available on request.

Note "X"

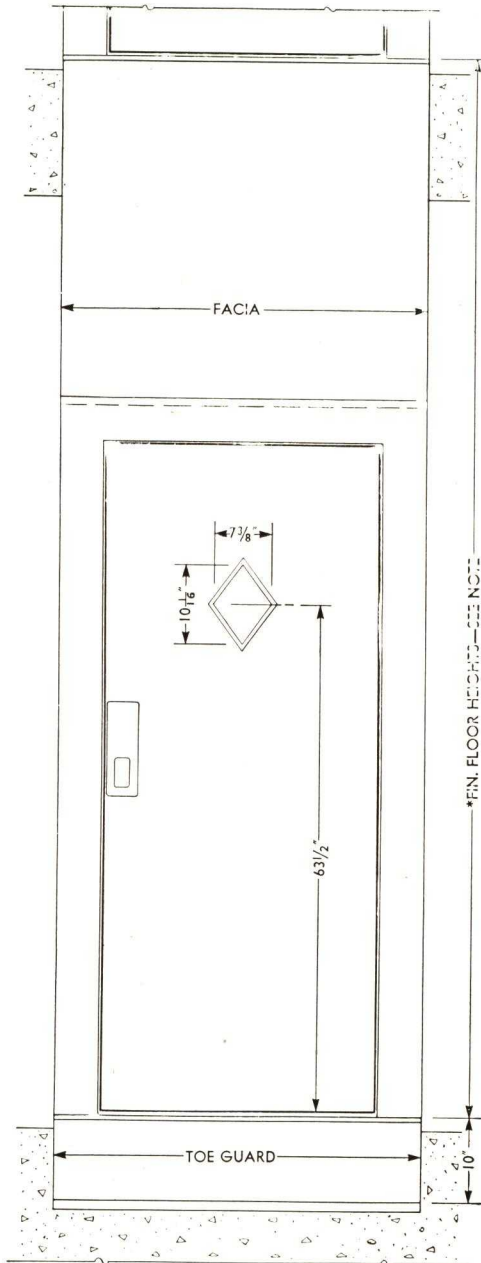
Construction at strike jamb varies with make of interlock specified. For details covering the various elevator manufacturers' interlock requirements consult Dahlstrom or elevator manufacturers' representatives.

SCALE—
ELEVATION 1/2" = 1'-0"
SECTIONS 1/2" = 1'-0"

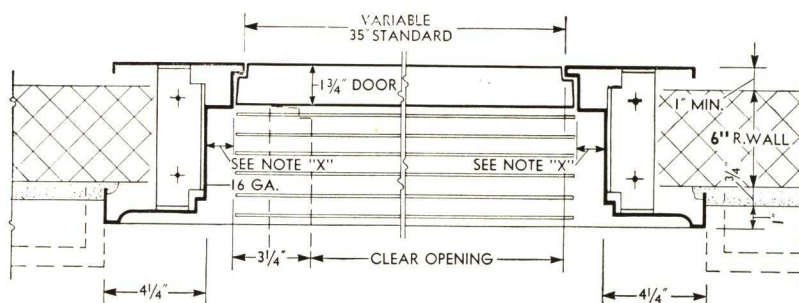
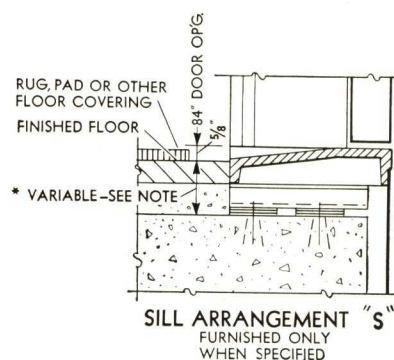
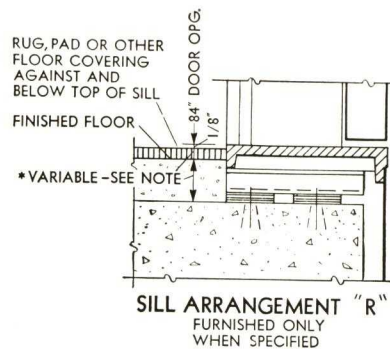


SWING ELEVATOR ENTRANCE
WITH STRIPING DESIGN No. 61.

FOR COMPLETE STANDARDIZED
SINGLE SWING ENTRANCES
WITH FIXED DIMENSIONS (32"
CLEAR OPENING) SEE FOLDER
D-56.

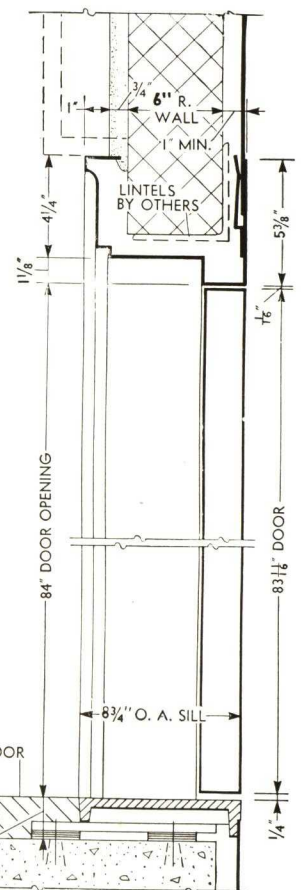


ELEVATION
FROM HOISTWAY SIDE
RIGHT HAND SHOWN • REVERSE FOR LEFT HAND

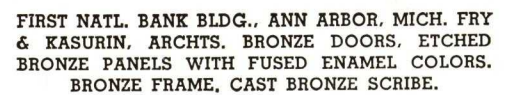


PLAN

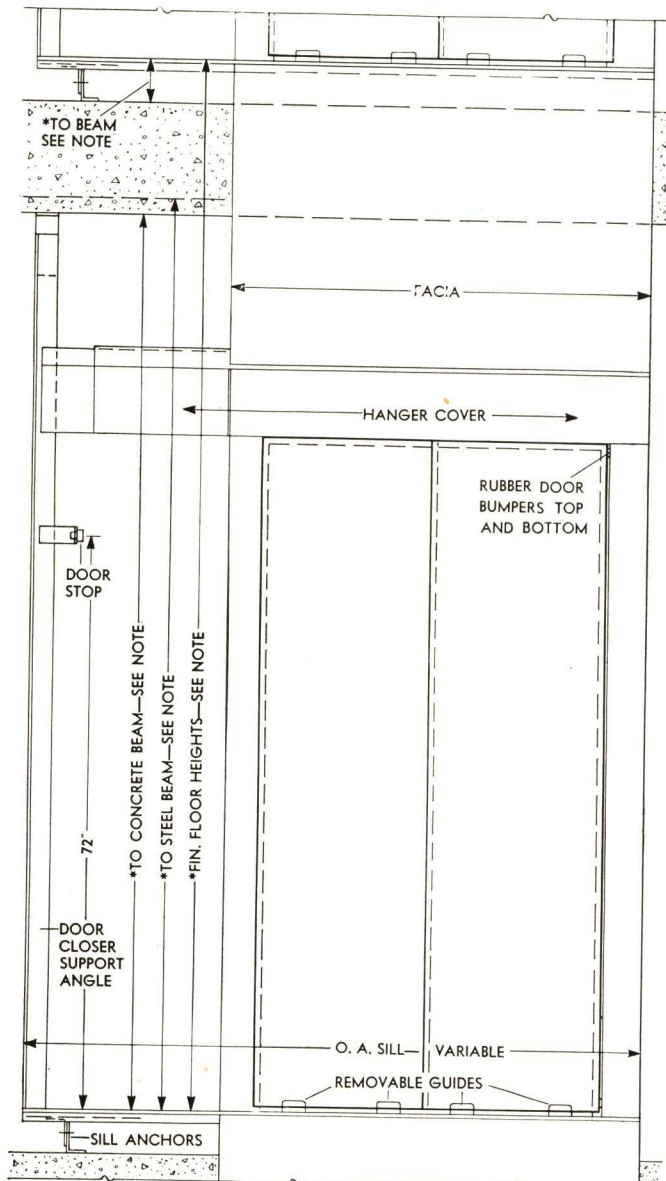
DIMENSIONS MARKED (*)
MUST BE ESTABLISHED



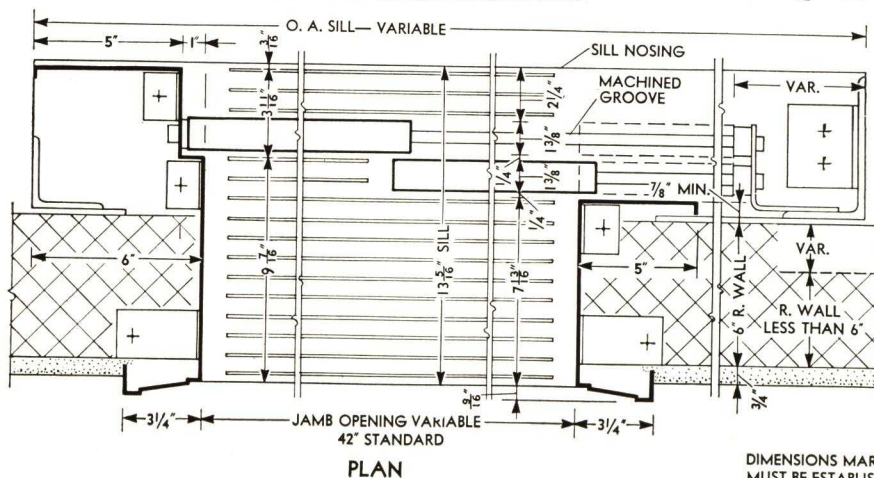
VERTICAL SECTION



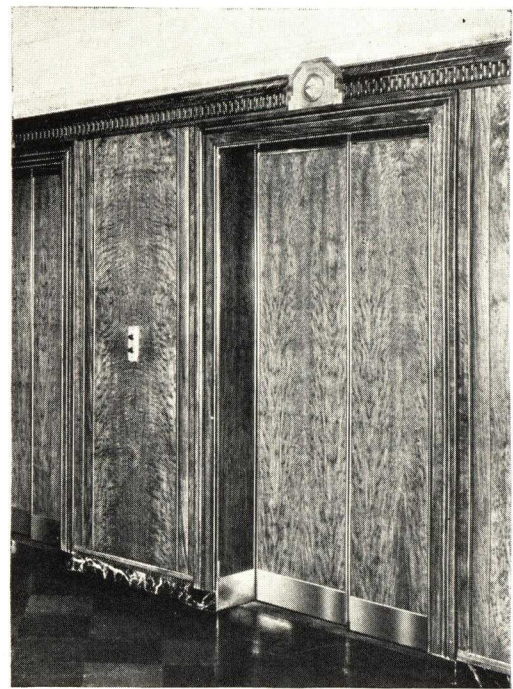
TWO-SPEED *Sliding* ELEVATOR ENTRANCE



ELEVATION FROM HOISTWAY SIDE
LEFT HAND SHOWN-REVERSE FOR RIGHT HAND



PLAN



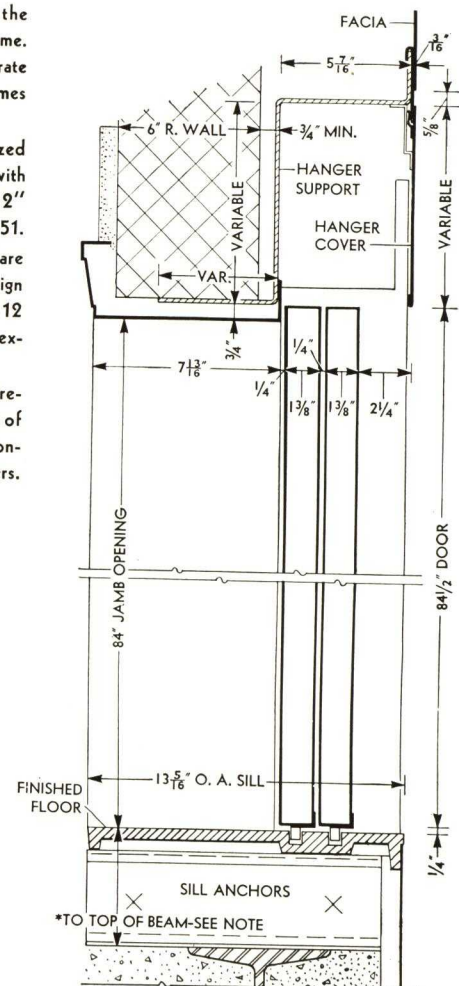
CITY BANK—FARMERS' TRUST BLDG. NEW YORK, N. Y.
CROSS & CROSS, ARCHTS. FLUSH DOORS, PLY METAL
VENEER FRONTS AND WHITE METAL EDGING. HARD-
WOOD VENEER JAMBS, WHITE METAL TRIM.

These details show the standard Type "E" Frame. Pages 6 and 7 illustrate other Dahlstrom Frames and Applied Trim.

For complete Standardized Two Speed Entrances with fixed dimensions (42" opening) see Folder D-51. Custom Built Entrances are variable to suit any design requirements. Pages 11, 12 and 13 show notable examples.

The overall space requirements vary with the type of operating equipment. Consult elevator manufacturers.

SCALE—
ELEVATION 1/2" = 1'-0"
SECTIONS 1 1/2" = 1'-0"

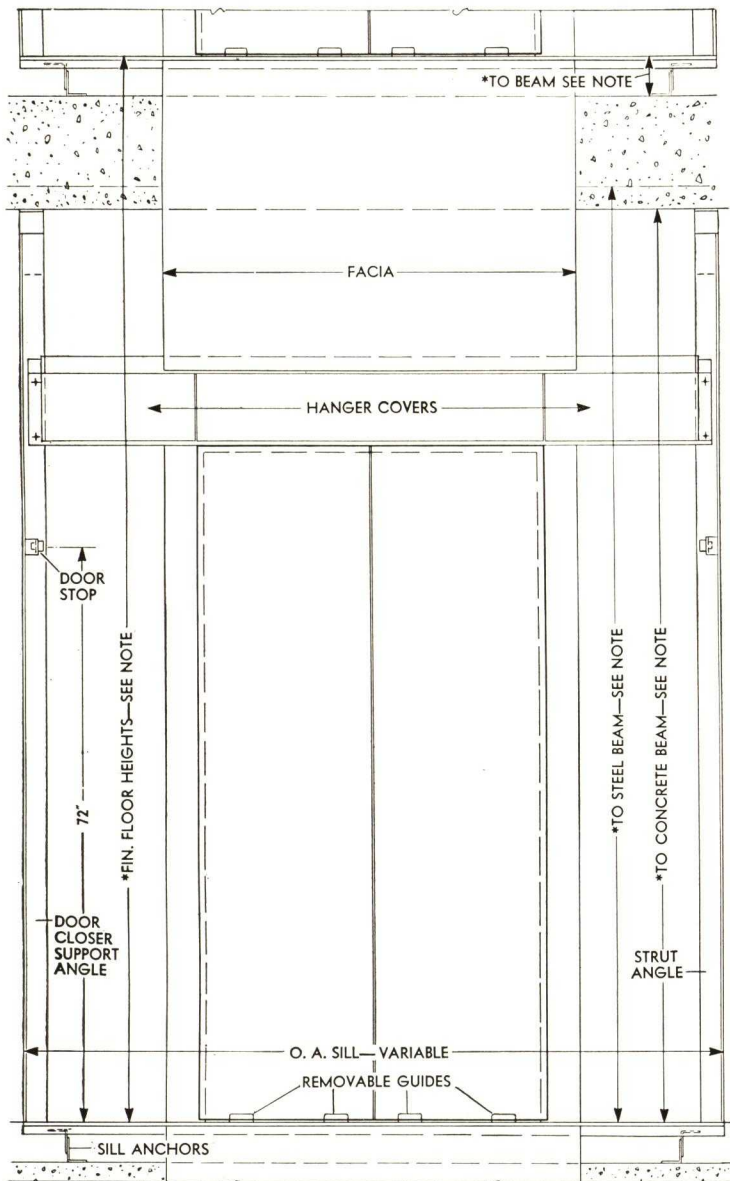


VERTICAL SECTION

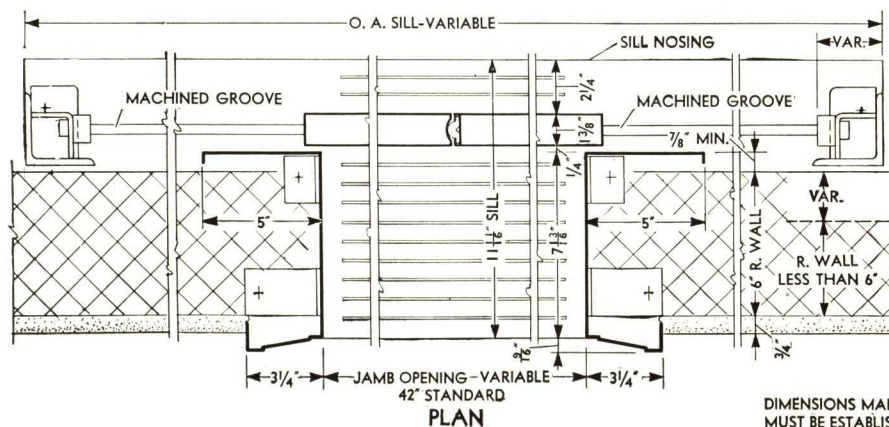
CENTER OPENING *Sliding* ELEVATOR ENTRANCE



FARMERS' DEPOSIT NATL. BANK, PITTSBURGH, PA.
WALKER & WEEKS, ARCHTS. FLUSH DOORS SAND-
BLASTED NICKEL SILVER BACKGROUND. YELLOW
BRONZE EDGING AND APPLIED ETCHED DESIGN.



ELEVATION • FROM HOISTWAY SIDE
LEFT HAND SHOWN • REVERSE FOR RIGHT HAND



PLAN

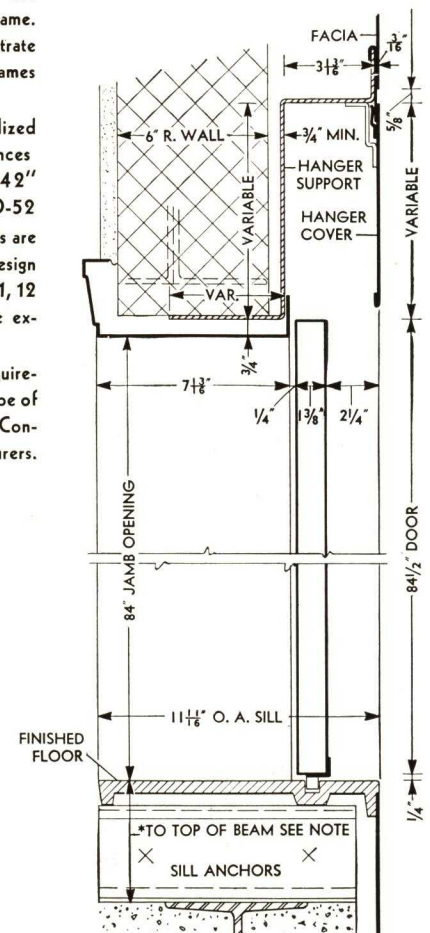
These details show the standard Type "E" Frame. Pages 6 and 7 illustrate other Dahlstrom Frames and Applied Trim.

For complete Standardized Center-opening Entrances (fixed dimensions 42" opening) see Folder D-52 Custom Built Entrances are variable to suit any design requirements. Pages 11, 12 and 13 show notable examples.

The overall space requirements vary with the type of operating equipment. Consult elevator manufacturers.

SCALE—
ELEVATION $\frac{1}{2}" = 1'-0"$
SECTIONS $\frac{1}{2}" = 1'-0"$

DIMENSIONS MARKED (*)
MUST BE ESTABLISHED



VERTICAL SECTION

DAHLSTROM *Finishes*

Dahlstrom finishes have always had an enviable reputation. Careful control of materials and processes is continually exercised to produce the finest finishes possible.

- Perfect adhesion of paint to metal, careful sanding, cleaning and baking and the finest materials all result in finishes that hold their original beauty thru long years of service. Dahlstrom finishes on installations in all parts of the country are daily proving their beauty and long wearing qualities.

- Faithful reproduction and matching of all fine woods and marbles and special surface finishes including all bronze and white metal finishes, color inlays and stipples are all a part of Dahlstrom craftsmanship. Fine wood grain-ing is done by hand, to insure the characteristic variety found in natural woods.

- Dahlstrom representatives have actual color samples of Dahlstrom finishes. They can also be obtained by writing the executive offices at Jamestown, New York. Dahlstrom artists will co-operate with you on any finishing problems you may have. Samples will be gladly furnished for matching or developing special finishes.

- As an aid in designing painted decoration for flush doors Dahlstrom has issued two new folders—"Striping Designs for Flush Doors" which will gladly be sent on request. (Nos. D-54 and D-55).

Underwriters' Labels

So that you may have the best in modern fireproof construction Dahlstrom offers the Underwriters' Label Service on custom built doors. This means Dahlstrom Label Construction for elevator doors, passes the rigid Fire Underwriters' tests. This label construction will be furnished when specified.



STEWART DRY GOODS STORE, LOUISVILLE, KY.
FLUSH DOORS IN TWO TONED GRAINED WALNUT.

FLATIRON BUILDING, SAN FRANCISCO, CALIF.
LORENTZ BRUNN - FACING, DOORS, FRAMES
AND TRIM BRONZE, STIPPLE, STRIPING, MAROON



Specifications • DAHLSTROM ELEVATOR ENTRANCES

FRAMES • Unitre (14 ga. steel) with or without integral trim or rough bucks (14 ga. steel) and cabinet jambs (16 ga. steel)—plinths optional.

DOORS • 18 ga. steel, 1 $\frac{3}{8}$ " thick, reinforced for all necessary hardware and operating appliances. Removable door guides (two per door), vision panels optional at extra cost (diamond light standard). All doors are rigidly constructed and contain suitable material for effective sound deadening.

SILLS • Material as specified with anti-slip abrasive surface, supported on steel anchors secured to floor beams. Machine planed grooves insuring quiet door operation.

HANGER SUPPORTS • 7 ga. (3/16") steel bolted to strut angles and closer support angles. Bottom flange serves as lintel for thin masonry walls. (All structural lintels by others.)

STRUTS • Structural steel strut angles and closer support angles of sufficient size to accommodate door closers are continuous and fasten to sill and building beam above.

HANGER COVER PLATES • 14 gauge steel extending full travel of doors. In sections for convenient access in servicing hangers. The section above door opening is removable from within car.

FACIAS • 14 gauge steel, reinforced to insure flat surface throughout and securely fastened in place.

TOE GUARDS • 14 ga. steel (height variable) provided at lowest landing only.

HARDWARE • Furnished on hoistway and corridor sides of door as required with service or emergency keyways to meet local code requirements. Finish—dull satin bronze or chrome. (For swing elevator doors, Rixson floor hinges or Russwin overhead semi-concealed door closers as specified. Both furnished with top and bottom pivots.)

FINISHES • All inside surfaces are thoroughly cleaned and coated with rust inhibiting paint before fabrication. Exposed surfaces have all oil, dirt and other impurities removed and are thoroughly sanded and cleaned. Exposed areas receive sufficient coats of mineral filler (each coat baked and sanded) to insure a smooth surface. Finishes, including striping or other painted decoration, to be as specified. Eggshell gloss rubbed finish is standard for doors and frames.

ERECTION • Sills, struts, hanger supports, hanger covers, facias, toe guards and frames are erected prior to erection of rough walls and are set in proper relation to elevator car guides. Doors are installed after walls are finished. When baked enamel or special finish is specified for unit frames, special care is taken to protect finished surfaces.

Note: The above general specifications are for steel. Standard gauges for other metals are as follows: Bronze 12 and 14 gauge (depending on design); Chrome Nickel Steel 16 gauge and Aluminum 12 gauge. For complete detailed specifications consult the nearest Dahlstrom representative.

DAHLSTROM REPRESENTATIVES IN ALL PRINCIPAL CITIES

Dahlstrom Metallic Door Company is a member of the Producers' Council.

Notable DAHLSTROM *Installations*

NEW BUILDINGS

Rockefeller Center.....	New York City	Dept. of Interior.....	Washington, D. C.
Empire State.....	New York City	Dept. of Commerce.....	Washington, D. C.
Metropolitan Life Insurance.....	New York City	Cathedral of Learning.....	Pittsburgh, Pa.
City Bank Farmers Trust.....	New York City	Allegheny General Hospital.....	Pittsburgh, Pa.
Cities Service.....	New York City	Grant Central Office Bldg.....	Pittsburgh, Pa.
Bankers Trust.....	New York City	University Hospitals, Inc.....	Pittsburgh, Pa.
Stone & Webster.....	New York City	Home Bank & Office.....	Durham, N. C.
Consolidated Edison.....	New York City	U. S. Post Office.....	Atlanta, Ga.
U. S. Customs House.....	New York City	U. S. Post Office.....	Montgomery, Ala.
Port of New York Authority		Alfred I. Dupont.....	Miami, Fla.
Inland Terminal.....	New York City	City Hospital.....	Cleveland, Ohio
General Electric.....	New York City	Mutual Home Insur.....	Dayton, Ohio
Central Hanover Bank.....	New York City	Union Terminal.....	Cincinnati, Ohio
#500 Fifth Ave.....	New York City	Union Gas & Electric Bldg.....	Cincinnati, Ohio
N. Y. State Office Bldg.....	New York City	First National Bank.....	Detroit, Mich.
Geo. A. Fuller.....	New York City	Union Guardian Bank.....	Detroit, Mich.
Daily News.....	New York City	S. S. Kresge Administration.....	Detroit, Mich.
Brooklyn Telephone.....	Brooklyn, N. Y.	Fisher Bldg.....	Detroit, Mich.
Queens County Court House.....	Jamaica, N. Y.	New Center.....	Detroit, Mich.
Suffolk County Court House.....	Boston, Mass.	Water Board.....	Detroit, Mich.
State Mutual Insurance.....	Boston, Mass.	Union Industrial Bank.....	Flint, Mich.
U. S. Court House.....	Buffalo, N. Y.	Kraft Phenix Cheese.....	Chicago, Ill.
Girard Trust.....	Philadelphia, Pa.	U. S. Post Office.....	Indianapolis, Indiana
Lincoln Liberty.....	Philadelphia, Pa.	Milwaukee Gas Light.....	Milwaukee, Wis.
Philadelphia Savings Fund.....	Philadelphia, Pa.	St. Louis County Court House.....	Duluth, Minn.
Penn Mutual Insurance.....	Philadelphia, Pa.	Northern Life Tower.....	Seattle, Washington
#1616 Walnut St.....	Philadelphia, Pa.	Municipal Auditorium.....	St. Louis, Mo.
Architects Bldg.....	Philadelphia, Pa.	Federal Court House.....	Kansas City, Mo.
U. S. Custom House.....	Philadelphia, Pa.	Southwestern Bell Tele.....	San Antonio, Tex.
U. S. Post Office.....	Philadelphia, Pa.	Gulf Building.....	Houston, Tex.
DuPont Office Bldg.....	Wilmington, Del.	Smith Young Tower.....	San Antonio, Tex.
Nemours Office Bldg.....	Wilmington, Del.	Charity Hospital.....	New Orleans, La.
Baltimore Trust.....	Baltimore, Md.	L.S.U. Dental Bldg.....	New Orleans, La.
Federal Reserve Board.....	Washington, D. C.	Louisiana State Capitol.....	Baton Rouge, La.

MODERNIZATIONS

St. James Bldg.....	1133 B'way, New York City	Reibold Bldg.....	Dayton, Ohio
U. S. Federal Bldg.....		Ford Bldg.....	Detroit, Mich.
Christopher St., New York City		Dime Savings Bank.....	Detroit, Mich.
Atlantic Mutual Insurance.....	New York City	Wrigley.....	Chicago, Ill.
Washington & Jewelers.....	Boston, Mass.	Continental Illinois Bank.....	Chicago, Ill.
General Electric Bldg.....	Buffalo, N. Y.	Tribune Tower.....	Chicago, Ill.
Palais Royal Store.....	Washington, D. C.	Marshall Field Store.....	Chicago, Ill.
Arlington.....	Washington, D. C.	Wells Building.....	Milwaukee, Wis.
U. S. Capitol.....	Washington, D. C.	Plymouth Bldg.....	Minneapolis, Minn.
U. S. Senate Office.....	Washington, D. C.	Syndicate Trust.....	St. Louis, Mo.
U. S. House Office.....	Washington, D. C.	Stewart Dry Goods.....	Louisville, Ky.
Willard Hotel.....	Washington, D. C.	Maison Blanche Store.....	New Orleans, La.
Virginia Electric & Power.....	Richmond, Va.	Hibernia Bank.....	New Orleans, La.
Oliver Bldg.....	Pittsburgh, Pa.	Kirby Building.....	Dallas, Texas
Gimbel's Dept. Store.....	Pittsburgh, Pa.	TransAmerica Bldg.....	Los Angeles, Cal.
First Nat. Bank.....	Pittsburgh, Pa.	Merchants Exchange.....	San Francisco, Cal.
Candler Bldg.....	Atlanta, Ga.	General Petroleum.....	San Francisco, Cal.
First National Bank.....	Atlanta, Ga.	Furniture Mart.....	San Francisco, Cal.
Nicholas Bldg.....	Toledo, Ohio	Insurance Exchange.....	San Francisco, Cal.
Toledo Edison.....	Toledo, Ohio	Porter Bldg.....	Portland, Ore.
New Secor Hotel.....	Toledo, Ohio	Crescent Store.....	Spokane, Wash.
Lion's Store.....	Toledo, Ohio		

For prompt delivery and economical cost specify the new Dahlstrom Standard Elevator Entrances. Ask for folders D-51, D-52, D-53, D-56 and the new Stripping Design Folders D-54 and D-55.

DAHLSTROM

METALLIC DOOR CO. • JAMESTOWN, NEW YORK

DAHLSTROM METALLIC DOOR COMPANY

EXECUTIVE OFFICES AND FACTORIES

JAMESTOWN, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

For Dahlstrom Elevator Entrances, Adjustable Steel Partitions, and Conduo Base, see File Index

Products

Manufacturers of METAL ELEVATOR ENTRANCES, METAL DOORS and METAL TRIM.

Also Insulated Metal Walls and Partitions, and General Trim for office buildings, hotels, apartments,



schools, banks and theatres; Hose Cabinets, Switch Box Panels, Specialty Work and Conduo Base.

Metal Doors were originated by the founder of this company. Thirty-four years of designing and manufacturing metal doors and trim have given Dahlstrom Products the title of "The Specified Standard".

DAHLSTROM HOLLOW METAL SWING DOORS

Notable Swing Door Installations

Rockefeller Center, New York, N. Y.
Lincoln Liberty Building, Philadelphia, Pa.
Baltimore Trust Co., Baltimore, Md.
New York Life Insurance Co., New York, N. Y.
Department of Commerce Building, Washington, D. C.
Internal Revenue Building, Washington, D. C.
Federal Reserve Building, Washington, D. C.
R.C.A.-Victor Building, New York, N. Y.
St. Louis Auditorium, St. Louis, Mo.
Metropolitan Life Insurance Co., New York, N. Y.
Midland Bank Building, Cleveland, Ohio.
Union Trust Co., Detroit, Mich.
Stevens Hotel, Chicago, Ill.
Salmon Tower, New York, N. Y.
Cathedral of Learning, Pittsburgh, Pa.
Philadelphia Savings Fund Society, Philadelphia, Pa.
Wyandotte High School, Kansas City, Mo.
Museum of Science and Industry, Chicago, Ill.
City Hall, Kansas City, Mo.
Penobscot Building, Detroit, Mich.
Rhode Island School of Design, Providence, R. I.
S. H. Kress & Company, New York, N. Y.
Davidson County Courthouse, Nashville, Tenn.
Fisher Building, Detroit, Mich.
U. S. Post Office, Galveston, Tex.
500 Fifth Avenue Bldg., New York, N. Y.
Northern Life Tower, Seattle, Wash.
Rockefeller Apartments, New York, N. Y.
Industrial Trust Building, Providence, R. I.



LOBBY ENTRANCE

Salmon Tower Building, New York, N. Y.

YORK & SAWYER, Architects

SPECIFICATIONS FOR DAHLSTROM STEEL SWING DOORS

The work embraced under this heading shall be furnished strictly in accordance with the specifications herein outlined.

Materials—All steel used in the construction of the doors and trim shall be of the best grade open hearth full cold rolled, full pickled, double annealed, patent leveled sheet steel entirely free from scale and pits, of the United States standard gauges specified herein under the various headings.

Workmanship—All work shall be executed and finished to conform to the generally accepted standards established by the DAHLSTROM METALLIC DOOR COMPANY of Jamestown, N. Y. The finished work in all cases shall be neat in appearance and free from defects. All surfaces shall be smooth and free from warps and buckles; all moulded members shall be clean cut, straight and true; all miters shall be well formed and in true alignment; all welded joints shall be neatly made and cleaned off flush.

Construction—All doors, rough bucks, jambs, casings, borrowed light and transom sash, base mouldings, picture mouldings, wire mouldings, metal partitions and railings shall be

constructed in accordance with the standard practices established by the DAHLSTROM METALLIC DOOR COMPANY (complete specifications furnished on request).

Finish—All preparations for finishing, all prime coating and final finishing shall be done in accordance with the standard practices of DAHLSTROM METALLIC DOOR COMPANY (complete specifications on request).

Erection—The materials embraced in this specification shall be set in place at locations designated on the Architect's plans and to levels established by the General Contractor or Architect's superintendent. Bucks and frames shall be plumb and true to insure satisfactory operations of the doors.

Cleaning and Final Finishing—The Erection Contractor who is in charge of setting this material shall leave the finished material clean and in condition satisfactory to the Architect. The Painting Contractor shall clean and finish in a manner satisfactory to the Architect only such portions of this material as are furnished by this contractor in prime finish.

DUSING & HUNT, INC.

Manufacturers of Metal Clad Doors, Pressed and Rolled Steel Frames
1927 Elmwood Avenue, BUFFALO, N. Y.

Products

UNDERWRITERS LABELED TIN CLAD and KALAMEIN DOORS; ROLLED and PRESSED STEEL FRAMES; COUNTER-BALANCED DUMB-WAITER DOOR UNITS.

Also Automatic Self-closing Ventilating Louvres and Projection Booth Shutters.

Facilities and Service

Thirty-five years of manufacturing Underwriters' fireproof doors and other fireproof retardants with modern plant and machinery enables our engineering staff to work out special problems in our line of manufactured products. We are especially set up for producing a high grade product for unusual prompt delivery.

Specifications for Kalamein Doors (Standard or Underwriters Types)

All kalamein doors to be as manufactured by DUSING & HUNT, INC., Buffalo, N. Y. (Underwriters' Label) (Standard non-labeled construction) (1 $\frac{3}{4}$ in. thick) (2 $\frac{1}{4}$ in. thick.)

Cores—Wood cores for stiles and rails to be kiln dried, clear white pine solid pieces extending full height of stiles full mortised and tenoned joints.

Metal Covering—(Furniture Steel) (Galvanized Steel) (Zinc Coated Steel) 20-oz. Copper. Draw over wood cores through steel dies to insure close adhesion of metal to wood core. All joints interlocked, filled with metal flux to produce an invisible joint.

Panels—($\frac{1}{4}$ -in. Composition board for standard doors) ($\frac{1}{4}$ -in. Asbestos Board for Underwriters' Doors) covered with same gauge and material as mentioned above and glued to same under high pressure. Stiles and rails plowed $\frac{3}{4}$ -in. deep to receive panels (metal covering on stiles and rails for labeled doors secured to panel with 3/16-in. rivets 10-in. on centers).

Panel Moulds—To be hollow drawn .035-gauge mitred, welded at corners and secured to door with special oval head screws.

Priming—All doors to be given a shop coat of metallic primer sprayed on free from runs or blisters.

Application of Hardware—All hardware to be applied at door manufacturer's plant, except surface hardware.

Frames—See specifications under pressed and rolled steel frames.

Underwriters Requirements and Limitations—Class "B" labels for openings in vertical shaft (Stair Wells or Elevator Shaft.)

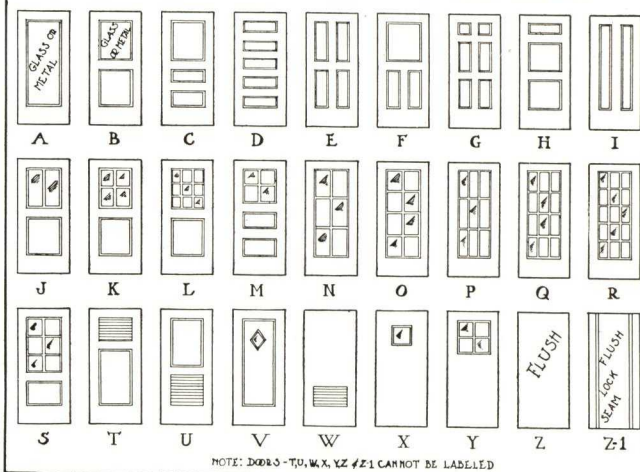
Single door up to 48 in. wide, pair of doors up to 96 in. high. No glass panels permitted.

Class "C" labels for openings in corridor or room partition size limitations same as above. Door can be constructed to receive 9 sq. ft. wire glass.

Class "D" labels for openings to fire escape. Size limitations as above. 5 sq. ft. of wire glass permitted.

All doors must be erected in "Underwriters' Inspected" steel frames to obtain highest credit rating.

DANDH STANDARD TYPES OF KALAMEIN DOORS



Specifications for Swing and Sliding Underwriters Doors

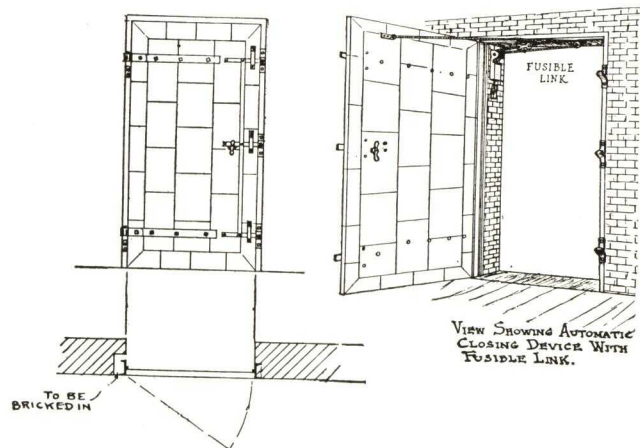
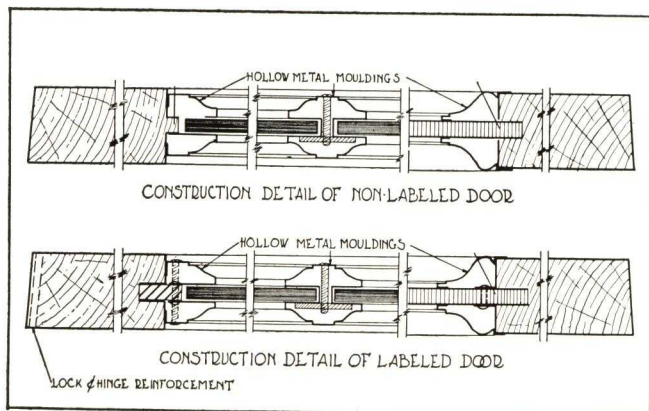
All tin clad doors to be as manufactured by DUSING & HUNT, INC., Buffalo, N. Y. All to be constructed in accordance with rules of National Board of Fire Underwriters and to bear their label.

Swing doors to be equipped with Underwriters labeled approved type hardware, including cast steel hinge pintles, hinge straps, approved type latches with mallable iron keepers and fused automatic closing devices (all erected in Underwriters labeled or inspected structural channel frames), except for lap type doors where frames are not required.

All sliding doors to bear label of National Board of Fire Underwriters. To be proper thickness as required and to be installed complete with Underwriters labeled hardware, including track, hangers, door hardware, binder, guide rollers, counterweights, combustible cord and fuse links. All wall hardware through bolted to wall.

Underwriters Requirements and Limitations—Class "A" label issued for openings in fire walls 2 $\frac{5}{8}$ in. or 3-ply doors. Single sliding door not exceeding 120 sq. ft., width or height not exceeding 12 ft. Single swing doors lap type or mounted in Underwriters inspected frames not exceeding 6 ft. in width or 12 ft. in height. Swinging doors in pairs not exceeding 10 ft. in width or 12 ft. in height. Glass panels not permitted. Double sliding doors cannot be labeled.

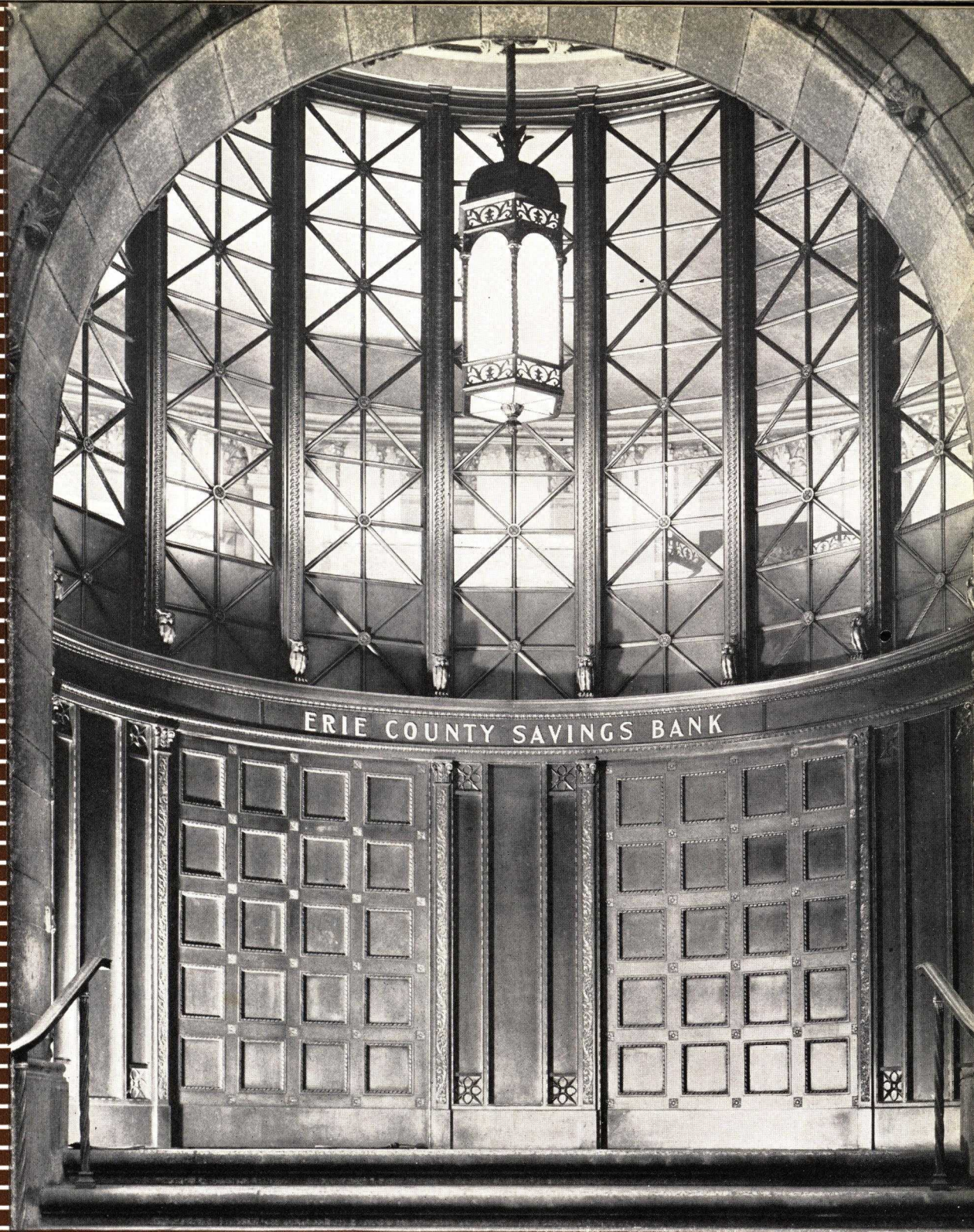
Class "B" labels for vertical shaft openings. Class "C" labels for corridor or room partitions. Class "D" and "E" for fire escape or exterior wall shutters. All 1 $\frac{3}{4}$ in. thick. Glass panels not exceeding 100 sq. in. in "B" doors, 1,296 sq. in. in "C" doors, 720 sq. in. in "D" and "E" doors.



The technical drawings illustrate the construction and components of dumbwaiter doors:

- FRONT ELEVATION OF DUMBWAITER DOORS:** Shows a rectangular door with a central circular handle labeled "WIDE GLASS". The door is mounted on a frame with "ANCHORS" at the top.
- VERTICAL SECTION:** A cross-section showing the door's internal structure and its connection to the shaft. Key components labeled include:
 - PULLY:** Located at the top of the door frame.
 - CHAIN:** Connecting the pulley to the door mechanism.
 - HEAD SECTION VARIES:** The top portion of the door frame.
 - SECTION THRU MEETING RAIL:** The horizontal rail where the door meets the shaft wall.
 - BUMPED:** A detail on the meeting rail.
 - BOTTOM SECTION:** The lower portion of the door frame.
 - 30 to 36 in.:** Dimension for the height of the door frame.
- PLAN:** A top-down view showing the door's width and its position within the shaft. Key dimensions and labels include:
 - 2 1/4" MIN.:** Minimum clearance on either side of the door.
 - CAD.:** Dimension for the door's width.
 - DOOR:** The central opening.
 - VARIES:** Dimension for the shaft width.
 - VARIES:** Dimension for the door's height.
 - PLAN:** The overall top-down view.

MEMORANDA



ARCHITECTURAL BRONZE

THE ELLISON BRONZE CO.



ORGANIZED IN 1911

the Ellison Bronze Company, Inc., has continually been engaged in the manufacture of Architectural Bronze work and Special Hardware.

This thoroughly experienced organization offers personal supervision and expert engineering and manufacturing service on any products in this line.

The facilities include modeling and pattern room, foundry, press room, machine shop, welding room, assembly department, chasing room, polishing and plating department, all using the best and latest equipment.

THE ELLISON BALANCED DOOR was placed on the market in 1932 and is now generally accepted as a practical and valuable addition to high class building products and as the greatest contribution to the solution of the entrance door problem in many years. Details, specifications and latest list of installations will be gladly furnished upon request. Representatives in all principal cities.

PRODUCTS

Ornamental Bronze, Aluminum, Nickel Silver, Stainless Steel and Monel Metal.

Entrance Doors

Bank Fixtures

Bronze Windows

Store Fronts

Mausoleum Equipment

Special Hardware

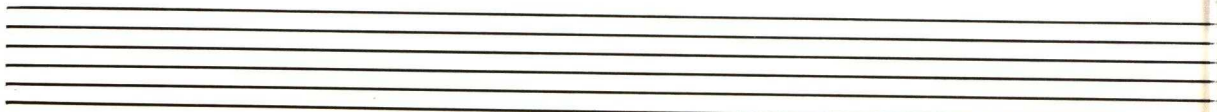
Elevator Fronts

Tablets and Signs

Ellison Balanced Doors

ELLISON BRONZE COMPANY, INC.

J A M E S T O W N . N E W Y O R K





ELLISON BALANCED DOORS

DESIGNED FOR EASY OPENING AGAINST WIND PRESSURE AND AIR SUCTION

The Principle of Operation

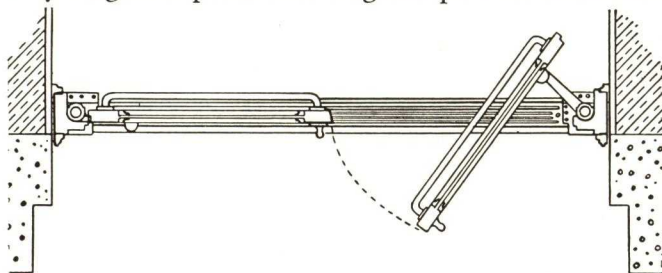
When the door is being opened, the pull handle edge of door swings outward *against* the wind and opposite edge swings inward *with* the wind and the entire door moves easily and quickly to one side of the door opening.

The surface of this door is subjected to the same wind pressure as the ordinary hinged type, but due to the fact that the two edges swing in opposite directions, the pressure on the swinging surface counterbalances the pressure on the outswinging surface.

Counterbalancing of the door makes necessary only a slight spring action in the closing device and door can be opened under any condition of weather with a minimum effort.

Quick Closing Minimizes Heat Losses

Because of this balancing action, this door when released closes quickly, without slamming, and stays closed, preventing heat losses occasioned by the slow closing of ordinary hinged or pivoted door against pressure or suction.



Facilitates Handling of Large Crowds

The easy opening and quick closing of this door permits an uninterrupted flow of traffic, in any wind and weather condition.

Doors of Any Metal

These doors are the regular Ellison welded bronze, nickel silver or aluminum doors with extruded moulding and trim. Steel doors and jambs are made of 16-gauge chrome nickel steel or copper bearing steel with baked enamel. Doors are also available in wood construction with metal jambs, metal binding all around the edges, metal glass mouldings, kick plates and hardware same as for metal doors.

Doors and Frames—Self Contained Unit

These doors are furnished by us complete as self-contained unit, including frames, mullions, trim, saddles, and all necessary hardware — door checks, pivots, door holders, locks, bolts, pulls, etc.

Special designs and sizes of doors can be made to the architect's details. Each unit is made to be built into the architectural treatment surrounding the doors. Other metal work, in connection with the entrance and vestibule, can be furnished and installed by others, although we are equipped to bid on any ornamental metal work.

OPERATING HARDWARE

The Pivot Arms

The operating hardware consists of top and bottom arms connected by a substantial vertical shaft inside the jamb; both ends of shaft are on ball bearings. The lower arm carries weight of the door and is connected with bottom pivot which also contains a spring bumper to prevent door from striking the jamb when opened. Upper arm acts as a guide and is connected with the door check.

Door Check

Door check is of the liquid type operated with rack and pinion, adjustable for various speeds; solid cast bronze material; ball bearing guide roller.

Closer Spring

Closer spring is located inside of the vertical shaft connecting top and bottom arm and tension is adjusted with a simple device located on saddle.

Saddle

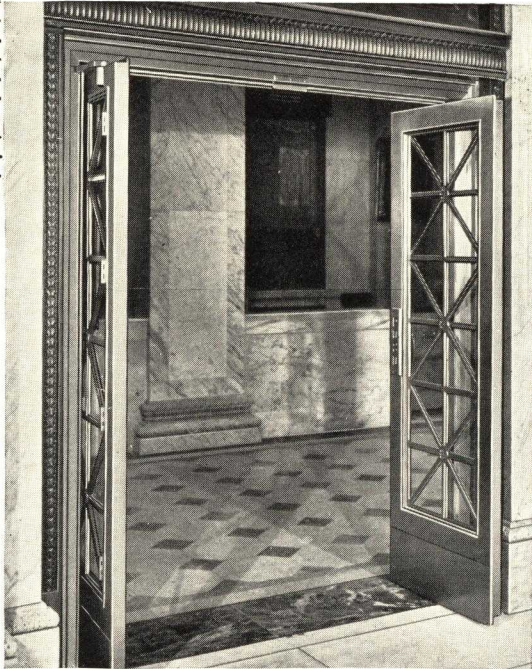
Saddles rest on top of finished floor, no cutting required, except for fastening bolts. Saddles regularly furnished in cast bronze, or abrasive materials.

Door Holder

Doors can be held in open position by a simple and easily operated gravity device located in the head jamb.

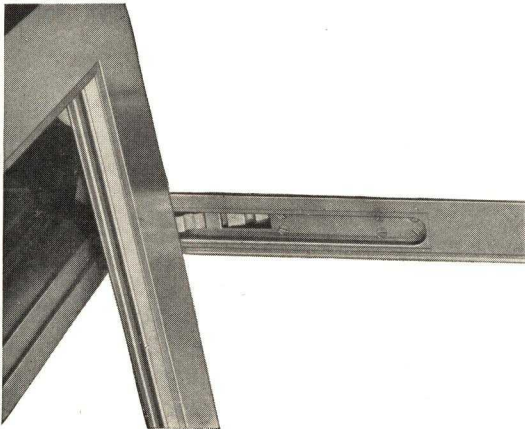
Other Hardware

Any standard locks, flush bolts, handles and push bars, to match other hardware in the building, can be used with these doors and are furnished and installed by us. Large choice of pulls and push bar designs available in stock patterns or we can furnish special work made to detail.

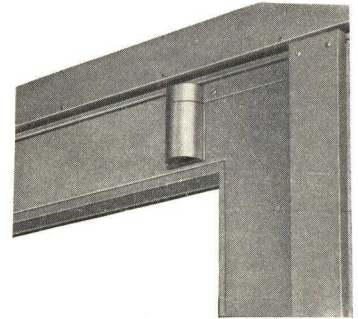


Double Door Installation

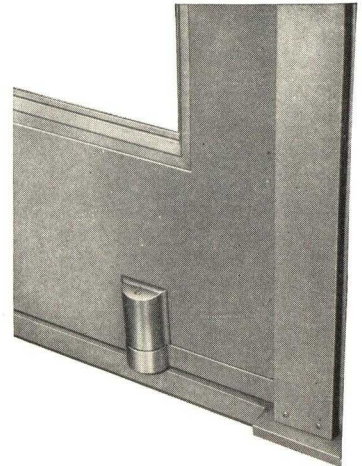
Free head room without projecting check brackets or door holders. The unit illustrated requires no saddle



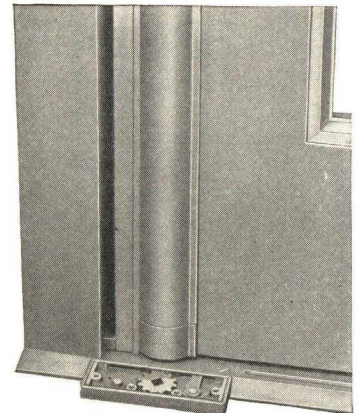
View looking at soffit of head jamb showing location of Gravity Holding Device



Top Pivot and Concealed Door Closer



Concealed Bumper and Pivot in Bottom Rail



Closer Spring Adjustment in Saddle with cover plate removed

SPECIFICATIONS

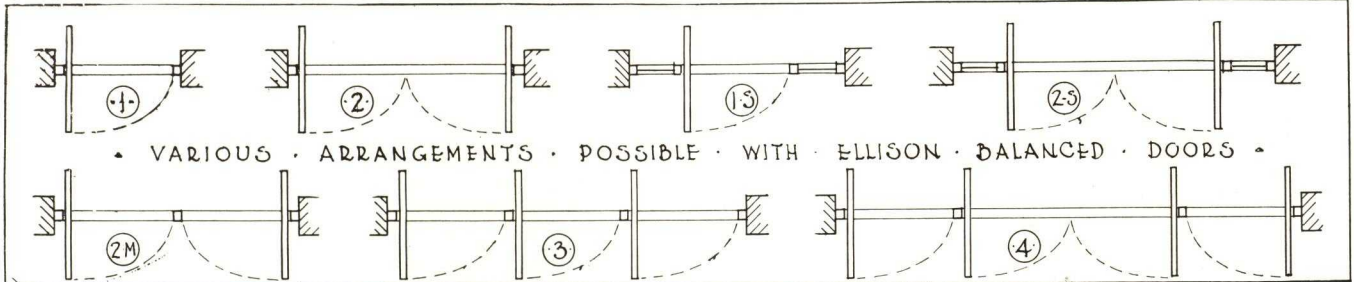
Furnish and install, where shown on plans, Balanced Doors as manufactured by Ellison Bronze Co., Inc., James town, N. Y. Each entrance to be an integral unit and to consist of the doors, frames, threshold and all hardware. (Also transom sash and trim where required.)

Operating mechanism to include ball bearing pivots, liquid door checks, concealed in upper stile of door, and hold-open device, concealed in head jambs. The operation

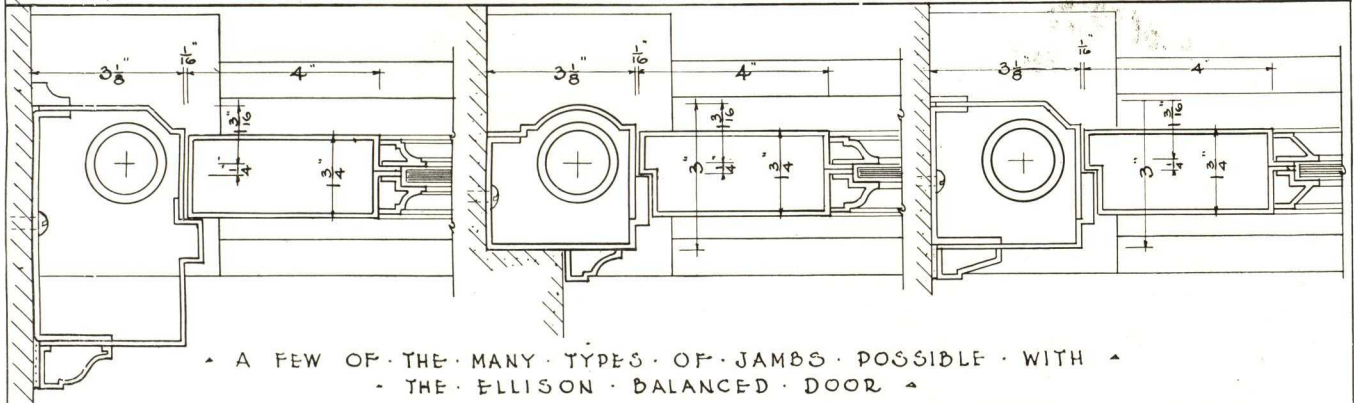
to be such that part of the door swings out and part of the door swings in, thereby equalizing the wind pressure and permitting uniform ease in operating the doors at all times.

Provide cylinder deadlocks on each single door and on one leaf of double doors, other leaf to have flush bolts top and bottom. Pulls, push plates or push bars to be cast bronze of design as indicated or selected.

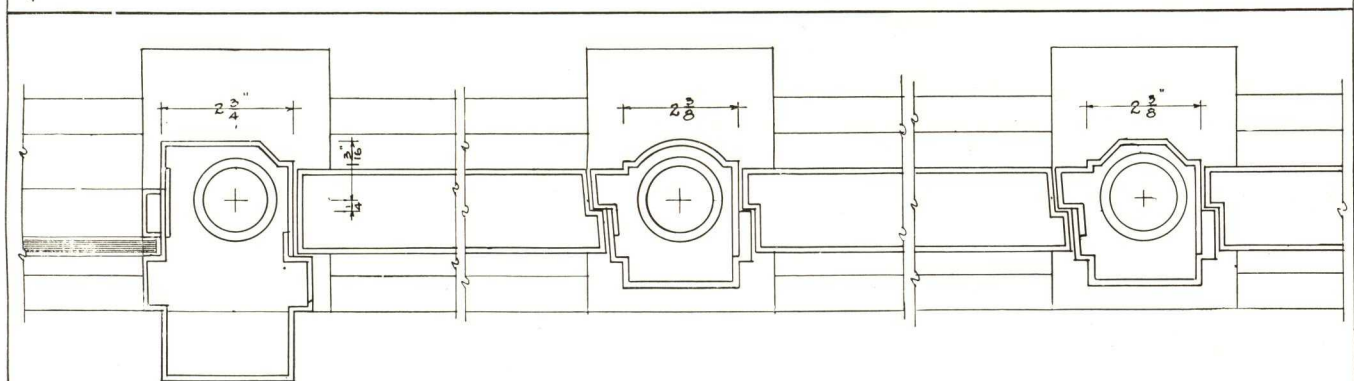
ELLISON BRONZE



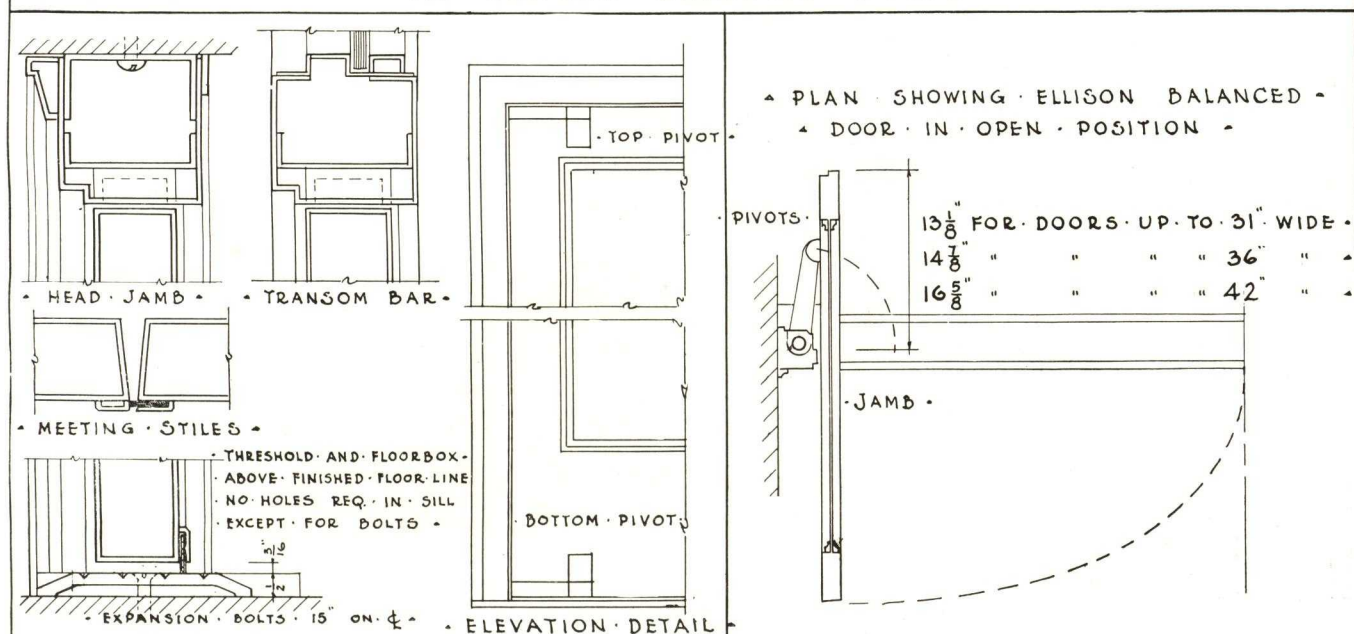
• VARIOUS • ARRANGEMENTS • POSSIBLE • WITH • ELLISON • BALANCED • DOORS •



• A FEW OF THE MANY TYPES OF JAMBS POSSIBLE WITH •
• THE ELLISON BALANCED DOOR •



• A FEW OF THE MANY TYPES OF MULLIONS POSSIBLE WITH •
• THE ELLISON BALANCED DOORS •



• DETAILS OF ELLISON BALANCED DOORS •

• ELLISON BRONZE CO. INC. •
• JAMESTOWN NEW YORK •

ELLISON BALANCED



Southern California Gas Company, Los Angeles, Cal.



Sulka Store, 661 Fifth Avenue, New York City

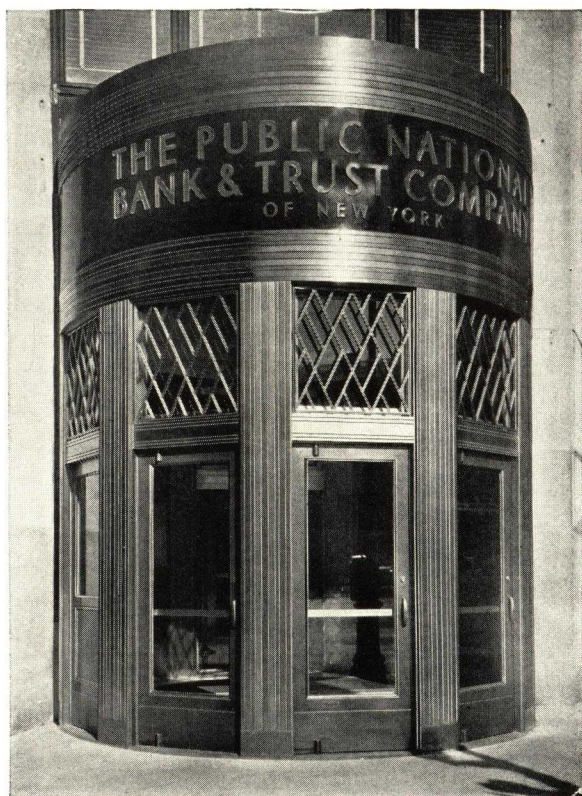


*Erie County Savings Bank, Buffalo, New York.
Green & James, Architects*

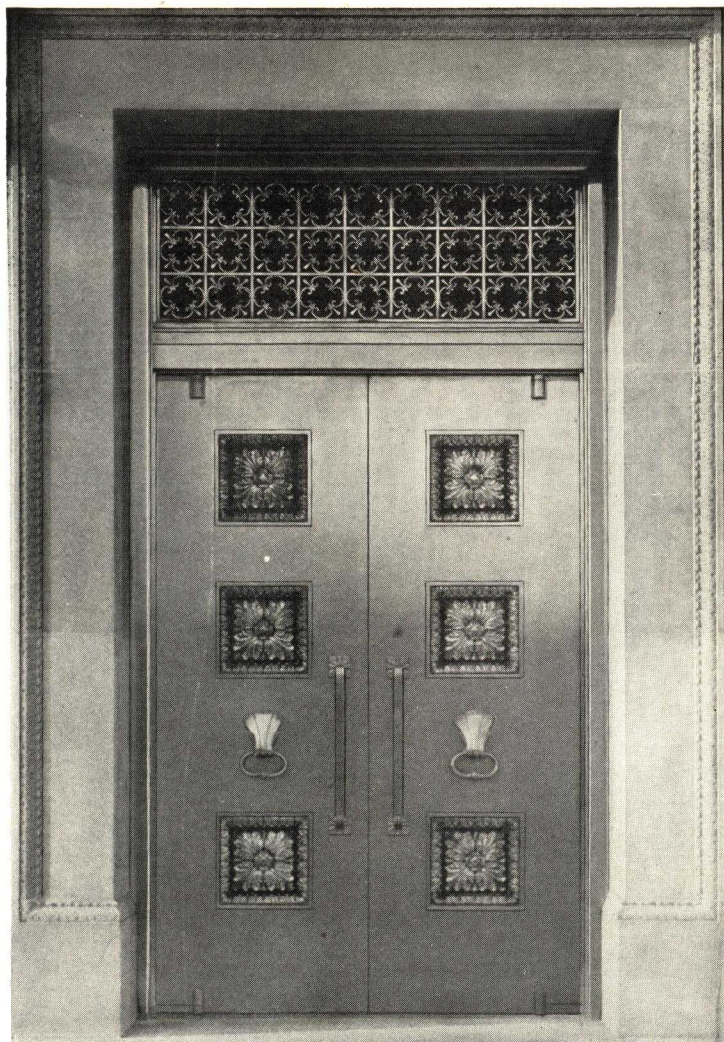


*Boston Automatic Fire Alarm Company, Boston, Mass.
Blackall, Clapp, Whittemore & Clark, Architects*

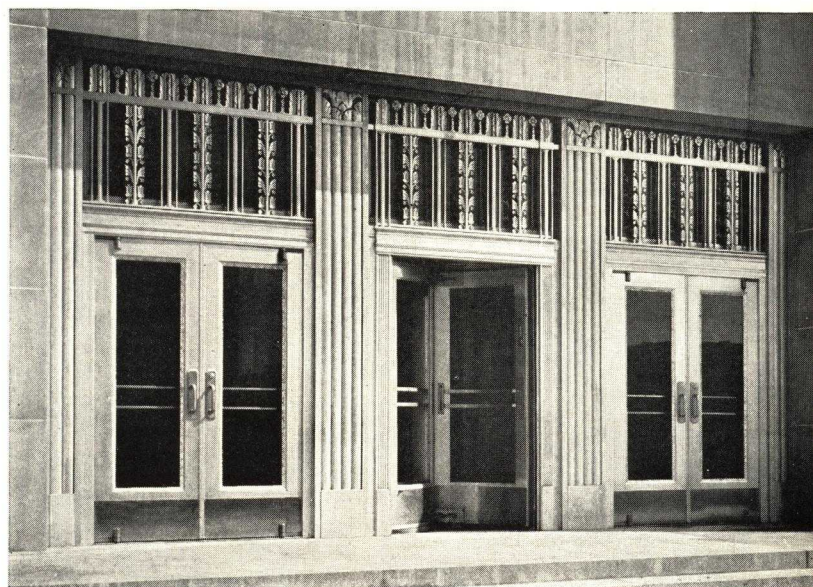
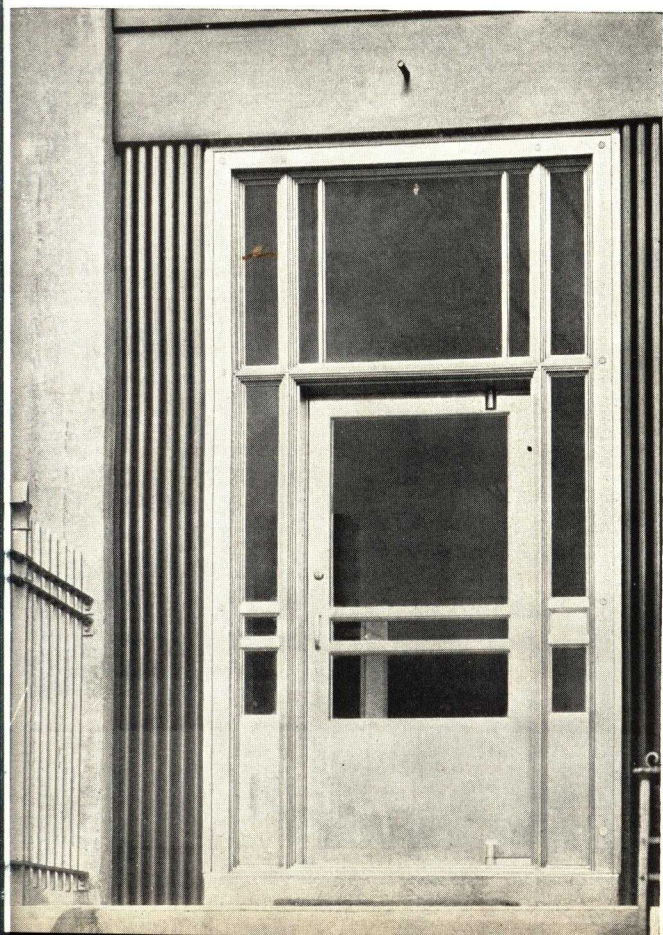
DOORS



Public National Bank, New York City



*Municipal Building, Longview, Texas.
Zimmerman & Morgan, Architects*

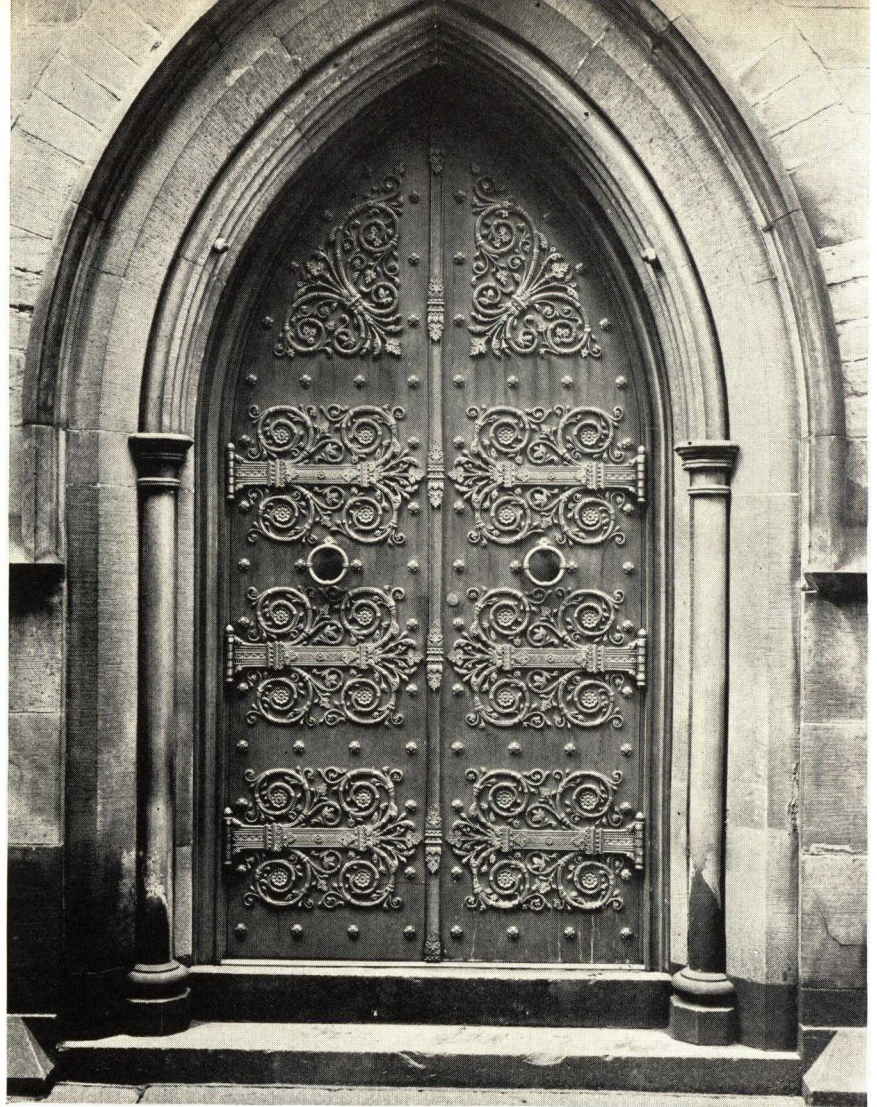


*Above—City Hall, Kansas City, Missouri.
Wight & Wight, Architects*

*At Left—Bead Chain Manufacturing Company, Bridgeport, Conn.
Walter John Skinner, Architect*

ELLISON DISTINCTIVE ENTRANCES

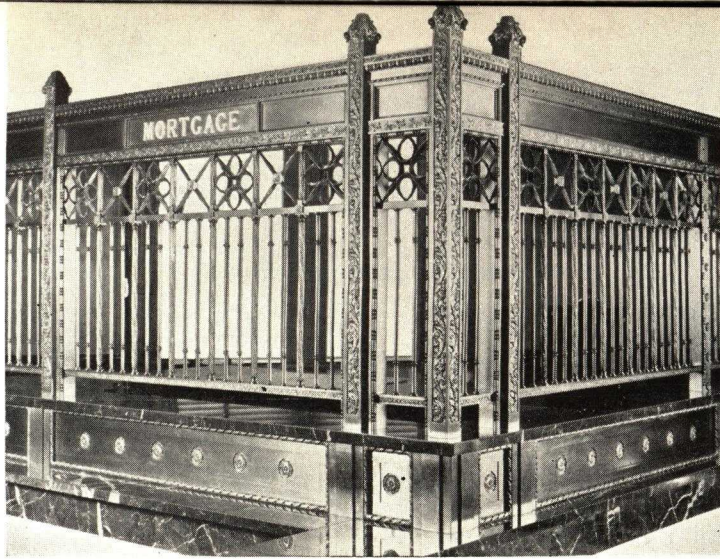
*St. Peter's Church, Albany, N. Y.
Marcus T. Reynolds, Architect*



*Above—Memorial to the Women of the World War,
Washington, D.C.
Trowbridge & Livingston, Architects*

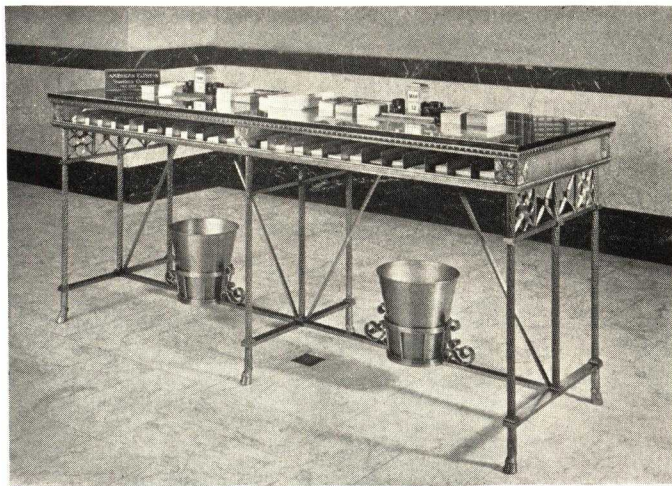
*At Right—Scottish Rite Temple, Kansas City, Mo.
Keene & Simpson, Architects*





Bronze Banking Screen

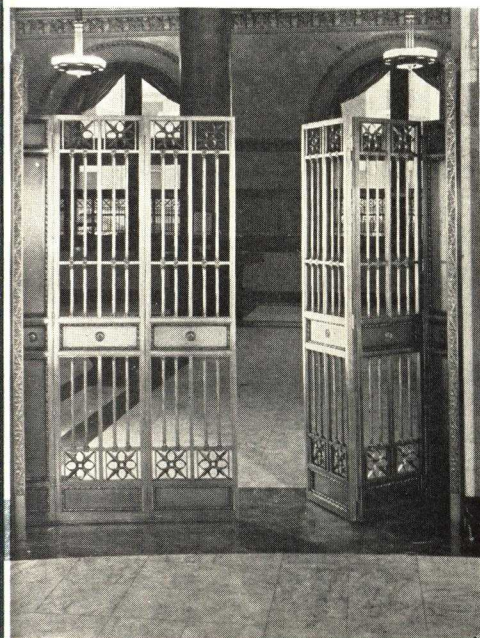
ELLISON BANK INTERIORS



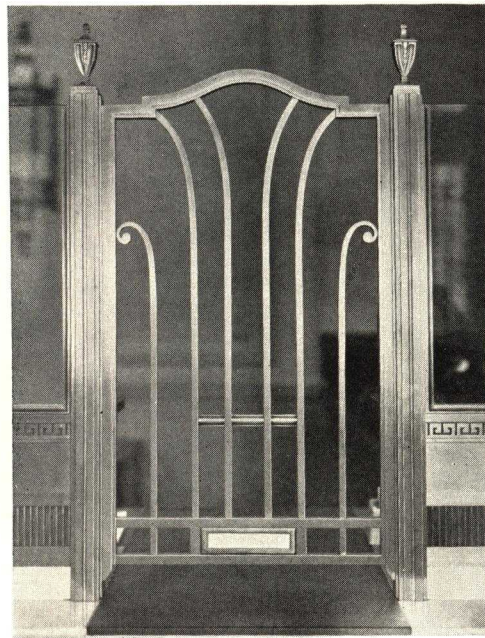
Bronze Check Desk



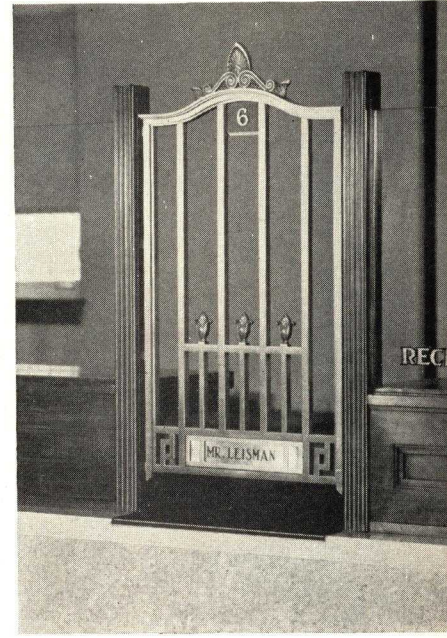
Bronze Vestibule



Bronze Folding Gates

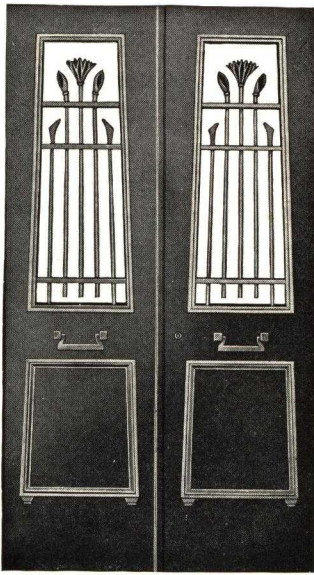


Banking Screen Detail

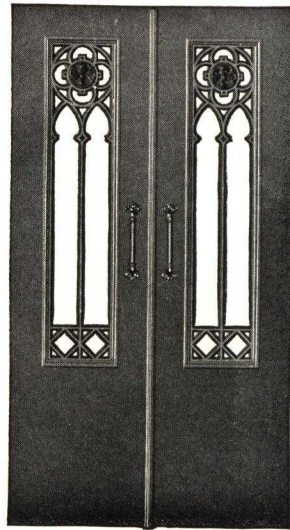


Bronze Wicket

ELLISON MAUSOLEUMS and TABLETS



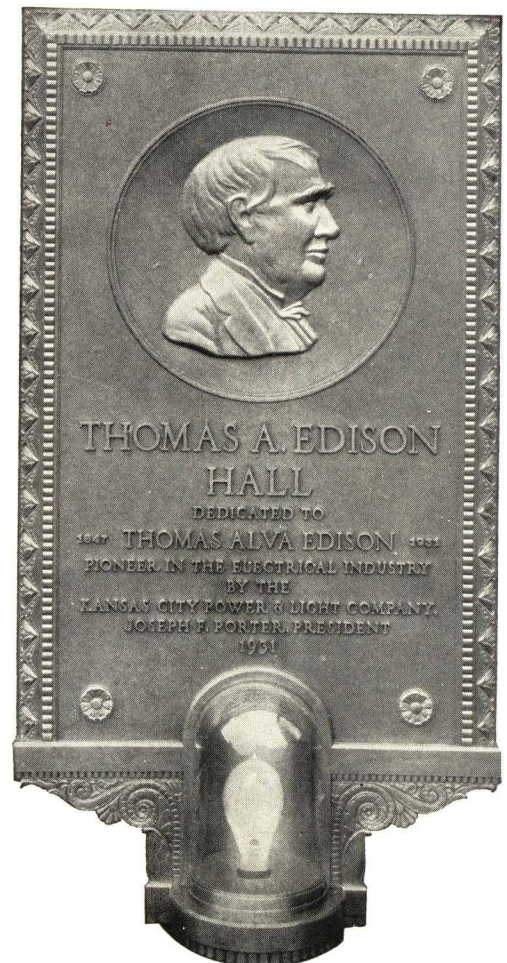
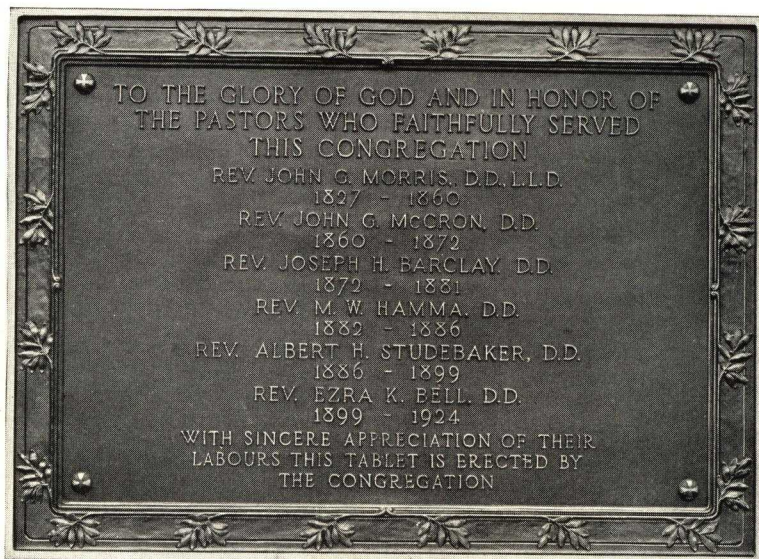
Design No. 37-24



Design No. 37-21

Ellison Mausoleum Doors meet the most exacting requirements and are designed to last forever being made of the best materials and with the highest grade of workmanship. Each unit is equipped with solid bronze hardware and furnished complete with glass and all fastenings for installation. Send for catalog "Bronze Doors and Mausoleum Equipment" illustrating many stock designs with details and specifications.

A large variety of Memorial Tablets, Signs and Placques is illustrated in our booklet, "Tributes in Bronze, the Metal Eternal," which we will gladly send upon request.



ELLISON SPECIAL HARDWARE

We develop and produce solid bronze hardware for leading manufacturers of metal windows, metal doors and metal furniture.

Consult our services for special design push bars and pulls for entrance and vestibule doors made to meet individual requirements. Send for detail drawings of stock designs available in all metals and finishes.

All "Finish Hardware" and operating mechanism for Ellison Balanced Doors made in our own Hardware Department.

Push Bars and Pulls

Kickplates and Push Plates

Window Operators

Window Fasteners

Transom Operators

Pivots and Hinges

Knobs and Lever Handles

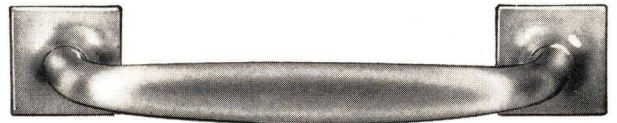
Drawer Pulls and Label Holders

Foot Castings

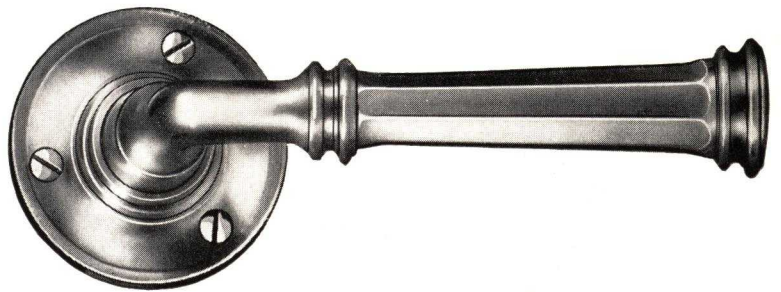
Saddles and Sills



Wrought Bronze Pull



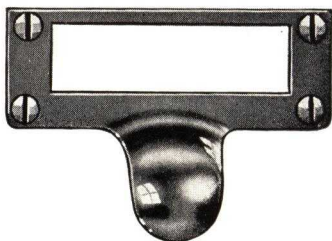
Wrought Bronze Pull



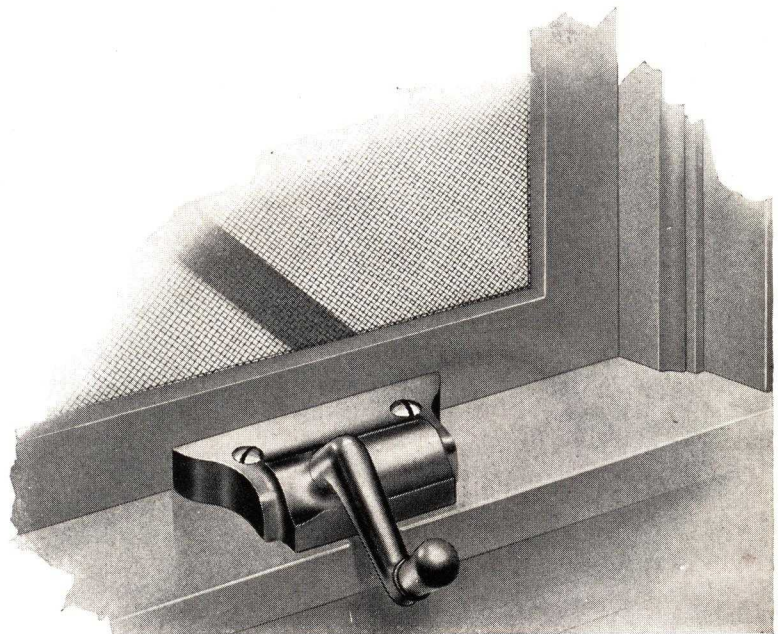
Cast Bronze Lever Handle



Cast Bronze Label Holder



Cast Bronze Pull and Label Holder



Casement Window Operator

ARCHITECTURAL BRONZE

THE ELLISON BRONZE CO.

E. H. FRIEDRICH COMPANY

Metal Covered Doors, Windows, Partitions and Trim; Combination Steel Door Frames, Tin Clad Fire Doors and Hardware
HOLYOKE, MASS.

ALBANY, N. Y., Harding Building Specialties Co.
ATLANTA, GA., J. M. Van Harlingen
BALTIMORE, MD., Consolidated Supply Co.
BOSTON, MASS., Rubin Burke Co.

REPRESENTATIVES
DETROIT, MICH., Detroit Fire Door Co.
HARRISBURG, PA., Metal Building Products Co.
HARTFORD, CONN., Scherer Steel Co.
MILWAUKEE, WIS., Jos. C. Millman

NEW HAVEN, CONN., A. R. Kirschner Co.
PHILADELPHIA, PA., M. O. Sundelius
PITTSBURGH, PA., J. F. Haldeman
WASHINGTON, D. C., Zimmer Sales Co.

Products

HIGH GRADE METAL COVERED WOOD DOORS, FRAMES and TRIM, METAL COVERED DOUBLE HUNG WINDOWS, PARTITIONS, ENTRANCES, etc., furnished in Kalamein Iron, Steel, Copper and Bronze.

Kalamein and Tin Clad Fire Doors, furnished with Underwriters' label when required.

FIREPROOF HOLLOW METAL WINDOWS with Underwriters' label.



TRADE-MARK

Facilities and Workmanship

Our factory is especially well equipped to produce any design in metal covered work, such as is used for bank entrances, office buildings and schools.

This work is done by craftsmen well skilled in their trade who are capable of producing finished material to suit any architectural conditions relative to design and exacting workmanship.

FRIEDRICH CONSTRUCTION SPECIFICATIONS

Metal Covered Work

Wood Cores—The cores of all metal covered work are made up from clear kiln-dried white pine, free from large or loose knots, sap and dry rot.

All cores are milled true to form through moulding machines.

When stiles and rails are more than 6 ins. wide, they are made of strips glued together with waterproof glue.

Metal Covering—All woodwork is covered by drawing through steel dies.

Panels are of composition, wood or asbestos and are covered by gluing metal to surface under pressure.

Metal covering may be kalamein iron, furniture steel, copper or bronze.

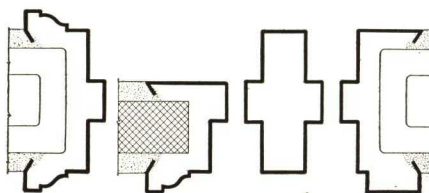
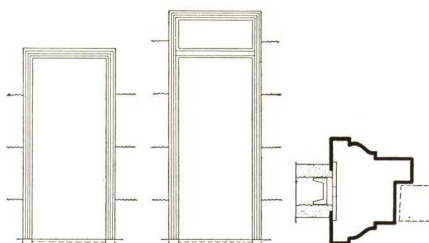
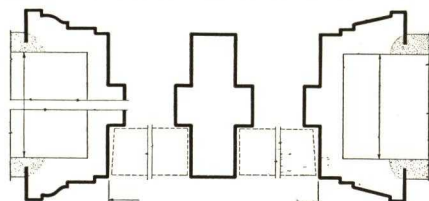
Kalamein iron or furniture steel can be furnished in gauges from 28 to 20; copper from 14 to 48 oz., and bronze from 24 to 16 gauge.

Unless otherwise specified, standard manufacture is based on 26-gauge kalamein iron; 24-gauge furniture steel; 16-oz copper and 20-gauge bronze.

Assembly—All doors are assembled with mortise and tenon joints glued together and nailed.

All joints between metal are soldered flush and scraped smooth, making an even surface throughout.

Joints in bronze doors are made by locking the metal and sweating to a



Combination Steel Door Bucks

plate fastened on the wood core, making a hairline joint when finished.

Muntin bars are completely covered with metal, and all coped to fit contour of moulding and joints soldered and scraped smooth.

Finish—Copper cleaned and oiled, or oxidized when specified. Bronze cleaned and oiled or finished statuary.

All kalamein material is furnished with a prime coat of paint.

Hollow Metal Windows

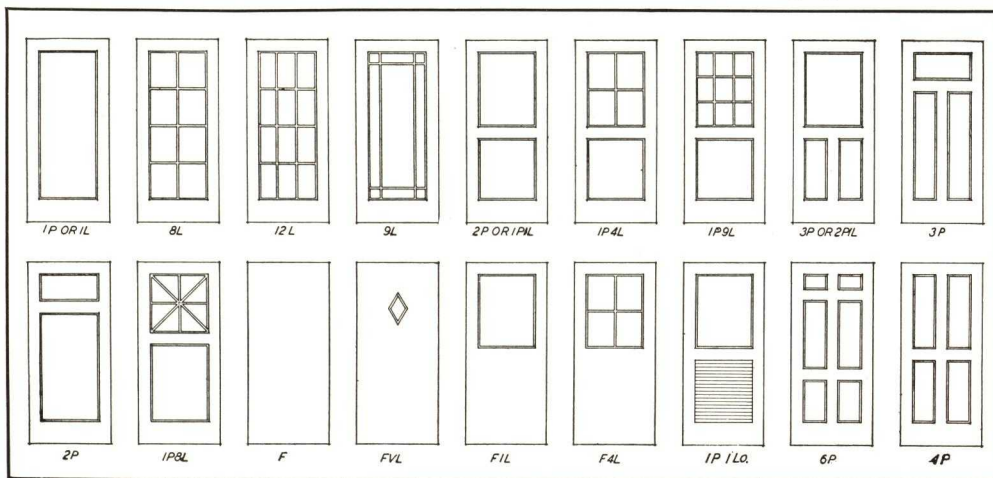
A complete line of all types of hollow metal windows, Underwriters' labeled, is manufactured by this company.

This includes double hung, stationary, pivoted and combinations of these types.

All windows are made with cutting and forming dies which insure the fitting of every member when assembled and a perfect operating window. Made in standard 24-gauge, also heavy type 20-gauge. Specifications and details sent on request.

Combination Steel Bucks

Made of 16 and 14-gauge steel with integral moulded or flat trim. Miters have full continuous weld. Bucks are reinforced, drilled and tapped for all mortise hardware and reinforced only for surface hardware. Bucks can be made of 12-gauge steel with flat trim.



Representative Door Types

THE HOWIE COMPANY

Underwriter's Labeled Kalamein and Metal Clad Doors

GENERAL OFFICE AND FACTORY

9011 Central Avenue, DETROIT, MICH.

REPRESENTATIVES IN PRINCIPAL CITIES

For Howie Co. Peerless Skylights, see File Index

Products

METAL COVERED KALAMEIN DOORS, FRAMES, TRIM, UNDERWRITER'S LABELED KALAMEIN AND TIN CLAD DOORS; SMOKE SCREENS; DUMB WAITER DOORS; WINDOWS; BRONZE, COPPER and ALUMINUM COVERED ENTRANCE DOORS.

PEERLESS PUTTYLESS SKYLIGHTS.

Metal Covered Doors

Howie metal covered doors are furnished both labeled and non-labeled, stock designs but we are equipped to furnish doors, sash, windows, sidelights, transom and trim to conform to Architect's design or to match wood doors and trim.

Kalamein Doors

Howie standard doors are made of 3-ply kiln dried white pine or chestnut nailed together with clinch nails and covered with No. 26 gauge galvanized iron, securely fastened and all joints concealed. Made in several stock designs but more generally made to Architect's design.

Labeled Kalamein Doors

Howie Underwriter's labeled kalamein doors are built with wood cores of No. 1 sound, kiln dried white pine or chestnut, free from loose or large knots, dry rot, sap or shake, clinch nailed. Surface to be covered with 14 lb. asbestos paper and all to be covered with No. 26 gauge galvanized iron, securely laid on and fastened with concealed bolts.

All material to have shop coat of paint.

Labeled doors in corridor or room partition openings may have glass openings not to exceed 1296 sq. in.

Labeled doors in vertical shaft openings must be solid panel.

Labeled doors in fire escape openings may have glass opening not to exceed 720 sq. in.

Maximum size permitted by Underwriter's in all cases is 4 ft. wide by 8 ft. high for single doors and 8 ft. wide by 8 ft. high for pair of doors, with the exception of FLUSH DOORS which are 3 ft. wide by 7 ft. 6 in. high for single doors and 6 ft. wide by 7 ft. 6 in. high for pair of doors.

Hardware

We are in a position to fit and reinforce for all mortised hardware on receipt of hardware schedule and samples.

Metal Covered Windows

Double hung or casement type of windows in standard design or to conform to Architect's designs or to match adjoining wood trim.

Kalamein Smoke Screens

Kalamein covered smoke screens of all types and for all conditions, in standard design or to conform to Architect's design.

Entrance Doors

We also manufacture a high grade line of bronze, copper and aluminum kalamein door for entrance in banks, theatres, public buildings, etc.

Service

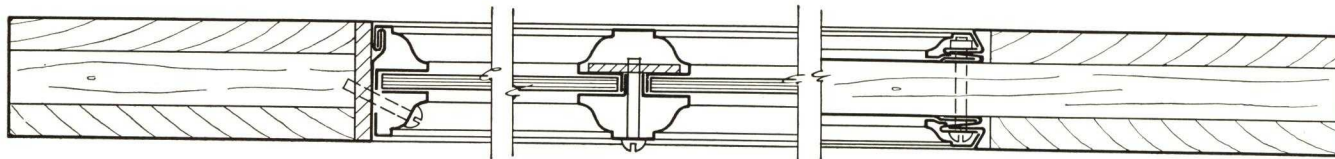
Estimates will be furnished from Architect's plans and specifications. Suggestions and shop drawings will be furnished whenever desired.

We solicit your inquiries.

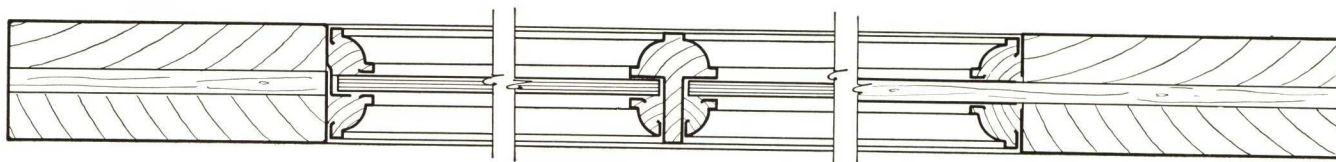
Special Note

We are equipped to finish kalamein doors, frames and trim in plain or grained, baked enamel finish.

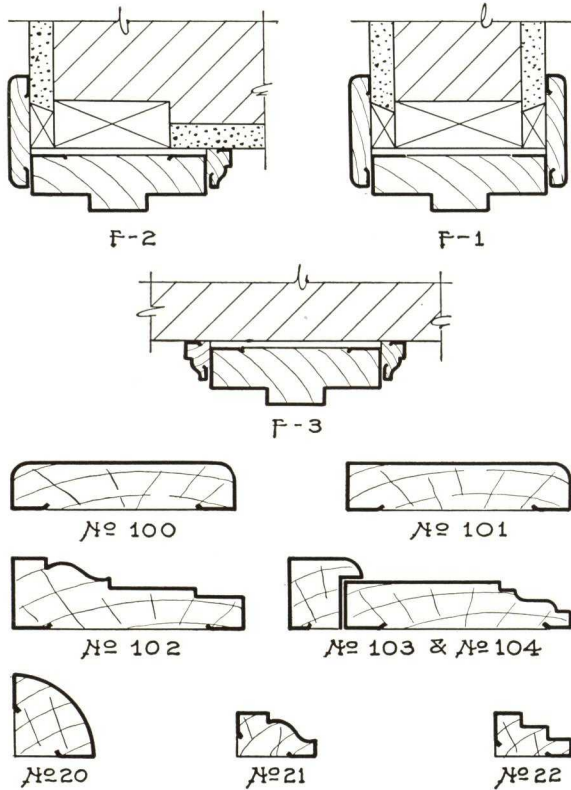
In order to obtain best results, specifications should plainly state that finish is to be applied at the factory, giving type of finish desired.



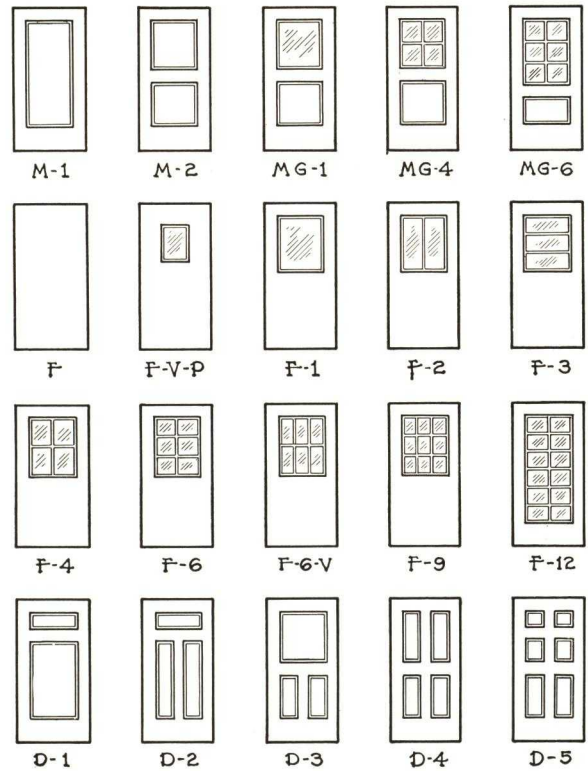
- SECTION THRU LABELED DOOR -



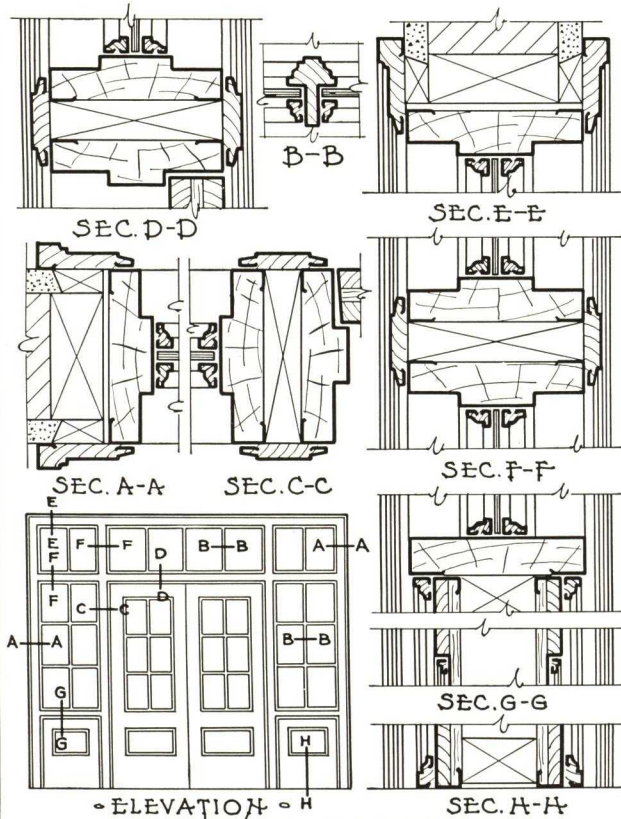
- SECTION THRU NON-LABELED DOOR -



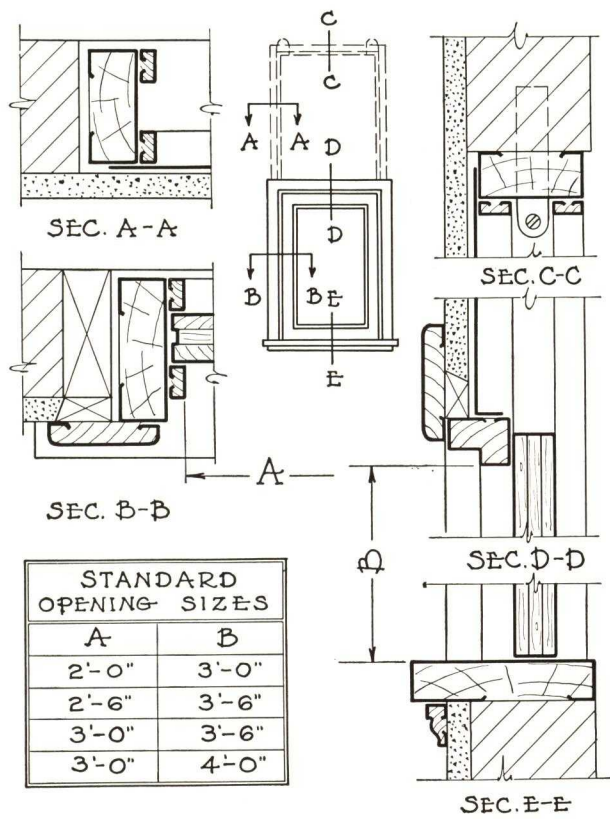
◦ STANDARD FRAMES AND TRIM ◦



◦ TYPICAL DOOR DESIGNS ◦



◦ CORRIDOR PARTITION -
SMOKE SCREEN AND STAIR ENCLOSURE ◦



◦ DUMB WAITER ◦

MEMORANDA

JAMESTOWN METAL CORPORATION

FORMERLY JAMESTOWN METAL DESK COMPANY, INC.

Elevator Enclosures—Metal Doors and Jambs—Partitions and Interior Trim—Steel Office Furniture—Filing Equipment

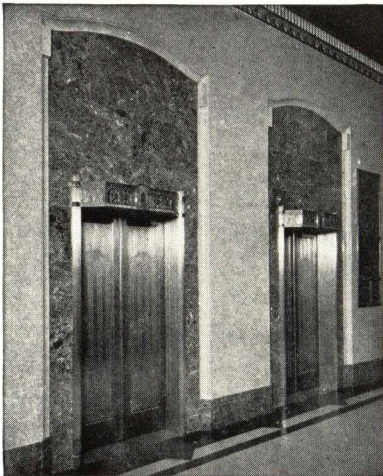
EXECUTIVE OFFICES AND FACTORY
JAMESTOWN, NEW YORK

SALES OFFICES

ATLANTA, GA., Harry E. Lindley, 323A Mortgage & Guarantee Bldg.
BOSTON, MASS., E. A. Richards, 115 Federal St.
BUFFALO, N. Y., Shults Engineering Co., Morgan Bldg.
CHICAGO, ILL., W. C. White, 1401 Merchandise Mart
CLEVELAND, OHIO, Frank Reske, 990 The Arcade
DALLAS, TEX., Metal Products Co., 406 Linz Bldg.
DES MOINES, IOWA, Hansen Metalkraft Co., 3905 Amick Ave.

DETROIT, MICH., Robbie Robinson, 226 Murphy Bldg.
NEW HAVEN, CONN., A. R. Kirschner Co., 30 Whitney Ave.
NEW YORK, N. Y., Farber Brandin, Grand Central Terminal
PHILADELPHIA, PA., R. R. Mackay, 2206 Chestnut St.
PITTSBURGH, PA., E. W. Lauschke, 207 Fulton Bldg.
SAN FRANCISCO, CAL., Gleason & Richardson, 1310 63rd St.
WASHINGTON, D. C., H. G. Garlock, 405 Southern Bldg.

REPRESENTATIVES IN MOST PRINCIPAL CITIES



Hollow Metal Doors and Jambs

A special engineering section is maintained to analyze building requirements and prepare the necessary drawings to meet the architect's most exacting ideas.

Elevator Enclosures

A fireproof labeled elevator landing unit installation will obtain certain insurance credits that will greatly offset the slightly higher original construction cost. Investigate the advantage of hollow metal from an insurance standpoint very carefully.

Partitions and Interior Trim

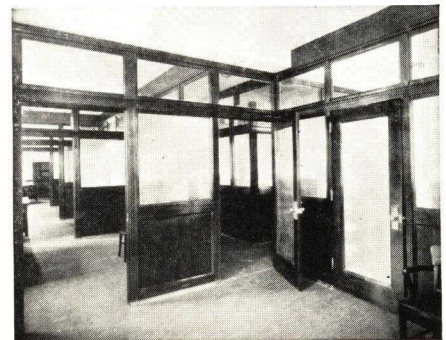
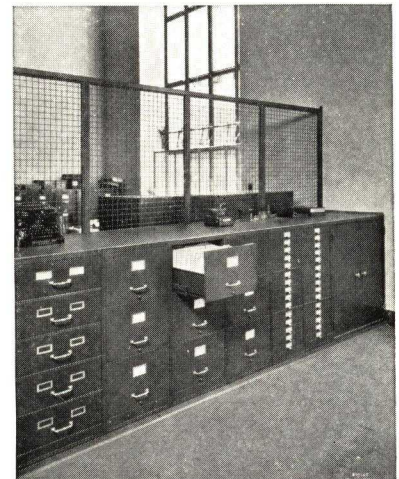
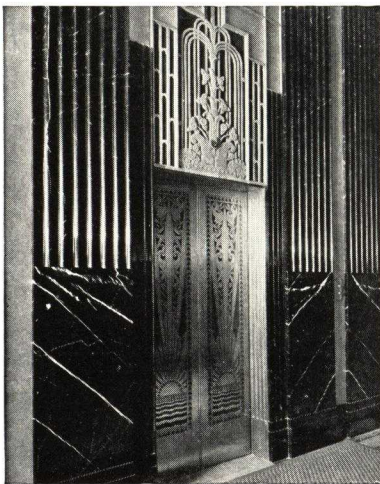
When hollow metal construction is used, the units can be taken down and rearranged to suit individual tenant requirements. There is no waste and little depreciation.

Steel Office Furniture

This company is one of the pioneers in the manufacture of steel office furniture of the better quality. Desks with drawers that always slide easily, panels properly sound-proofed, large selection of models.

Filing Equipment

This department is a natural development of the desk business. Our various lines of Filing Equipment have all the fine features of our desks plus many added developments.



KIROMAC MANUFACTURING COMPANY

Manufacturers of Labeled and Non-labeled Kalamein Doors
RICHMOND, INDIANA

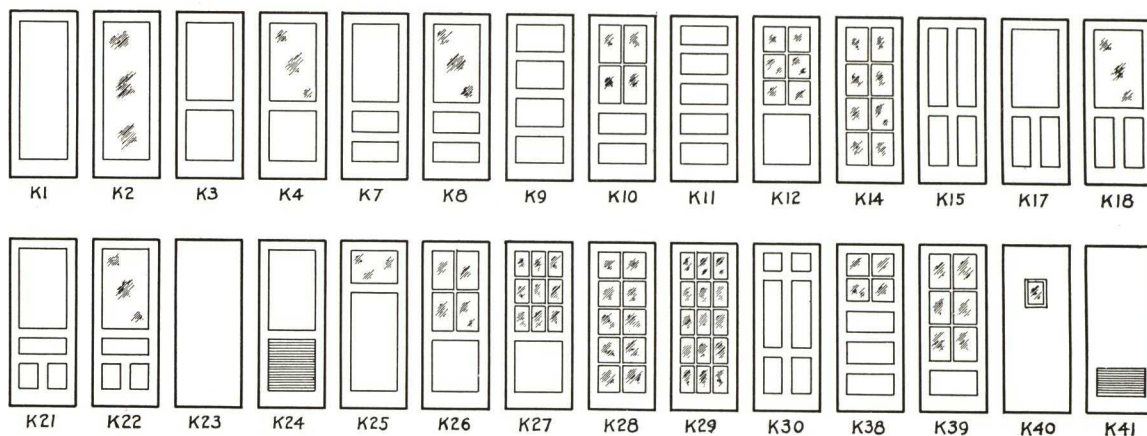
PRODUCTS

ANGLE, CHANNEL and PRESSED STEEL FRAMES.
KALAMEIN DOORS, FRAMES and TRIM.
STANDARD TIN CLAD DOORS and HARDWARE.
STEEL PLATE DOORS with FRAMES and HARDWARE.
COMPLETE UNDERWRITERS' LABEL SERVICE on Tin Clad Doors and Hardware, Kalamein Doors, Channel and PRESSED Steel Frames.

FACILITIES AND EXPERIENCE

We have a centrally located plant with modern machinery and ample facilities for the production of all standard and many special types of fireproof door equipment. Our manufacturing experience extends over a period of thirty-five years. Our Engineering Staff will gladly co-operate in working out difficult and unusual construction and erection problems.

ELEVATIONS SHOWING VARIOUS STANDARD TYPE KALAMEIN DOORS



SECTION THRU NON-LABELED DOOR



SECTION THRU LABELED DOOR

KIROMAC Kalamein doors can be furnished in standard types as shown above or other special types.

KIROMAC doors are usually covered with galvanized steel

sheets or metal furniture sheets; they may also be covered with aluminum, bronze, copper, monel or stainless steel sheets.

SPECIFICATIONS FOR LABELED AND NON-LABELED KALAMEIN DOORS

Wood Cores to be of selected non-resinous white pine thoroughly kiln dried. Stiles to extend full height of door with rails tenoned into stiles; all machine sized to proper width and thickness.

Metal Covering shall be not less than 24-gauge galvanized steel or metal furniture sheets (copper or bronze, 22-B&S gauge), tightly drawn over wood cores, free from waves or other irregularities. All seams shall be soldered and ground smooth. Seams of labeled doors to be of lock joint type.

Panel shall be metal covered with sheets of same gauge and material used on stiles and rails, the metal to be glued to panels under heavy pressure. Panels shall extend into grooves in rails and stiles at least $\frac{1}{2}$ in. Labeled door panels shall be $\frac{1}{4}$ in. asbestos mill board; and for non-labeled doors, $\frac{1}{4}$ in. fir plywood.

Panel Moulding shall be metal covered or hollow drawn with all joints neatly coped or mitred.

On labeled doors with glass panels, there shall be provided a steel frame $\frac{1}{4} \times \frac{3}{8}$ in. around the entire glass area. When divided glass panels occur, the muntins shall be hollow metal with suitable reinforcing steel center bars between the fixed muntin and the removable glass stop.

On non-labeled doors with divided glass panels, the muntins shall be metal covered with welded joint solid steel center bars.

Labeled doors having mortise locks and butt hinges shall be provided with offset steel reinforcing plates attached to wood cores and metal covering. Steel reinforcements are not required for non-labeled doors.

Hardware shall be furnished and applied by others unless otherwise specified.

All kalamein doors shall be given one shop coat of metal primer. Copper and bronze covered doors shall be finished as specified.

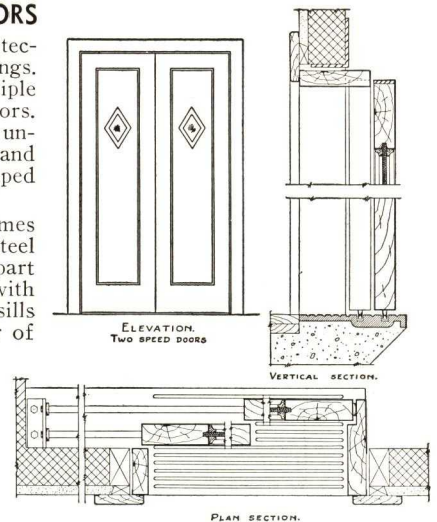
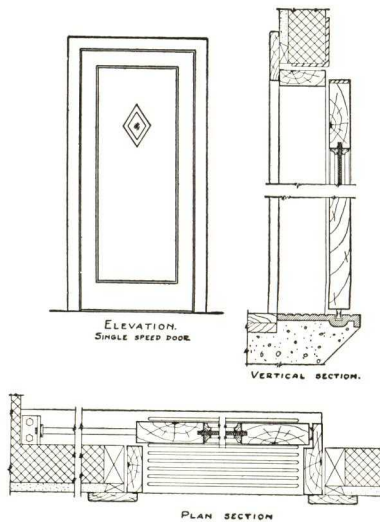
KALAMEIN PASSENGER ELEVATOR DOORS

Kalamein enclosures form dependable fire protection when installed in passenger elevator openings. Types most commonly used are single or multiple section sliding or combination slide and swing doors. Panel arrangement of the doors is practically unlimited. Designs most commonly used are single and flush panel doors. Small circular or diamond shaped vision panels can be provided if so desired.

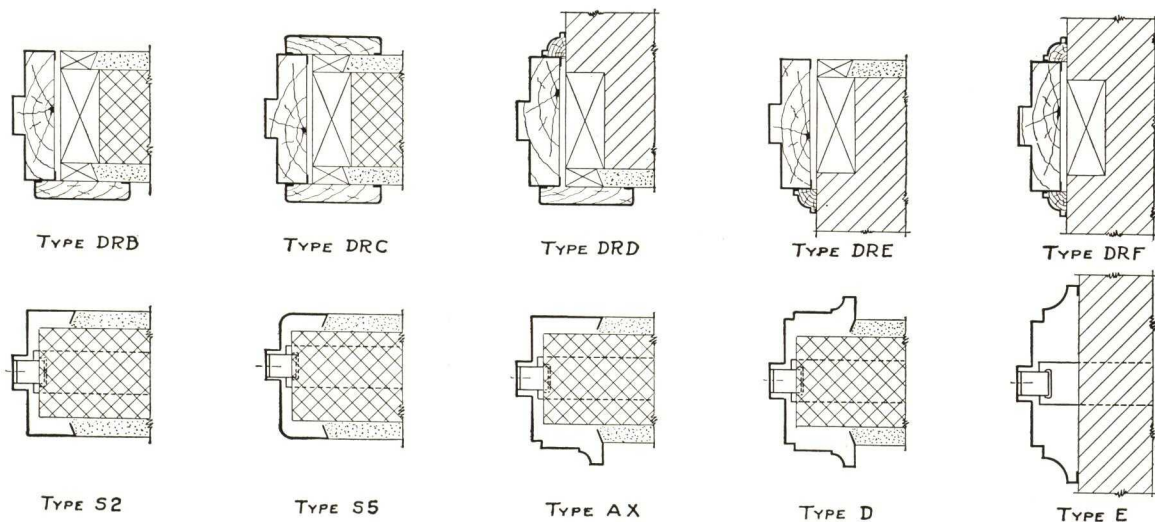
Pressed steel, structural steel, and kalamein frames may be used with these doors. The pressed steel frames may have the trim formed as an integral part of the frame. Metal covered trim may be used with the structural steel and kalamein frames. The sills may be either cast iron or fabricated steel, either of which serve equally well.

There being several reputable makes of track and door operators, it is quite often that these items are furnished under either the hardware or elevator contract.

Complete units consisting of doors, frames and trim, sills and hardware can be furnished by us.



KALAMEIN AND PRESSED STEEL FRAMES

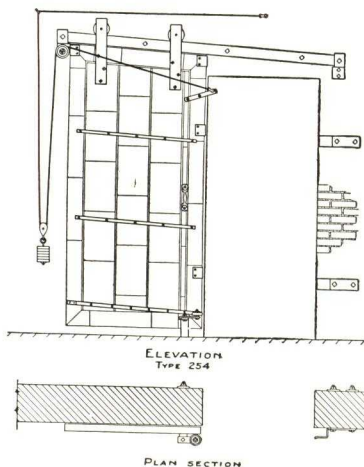


Kalamein and Pressed Steel Frames can be furnished in various types other than those shown and of various widths.

The Kalamein Frames cannot bear Underwriters' Label. The Pressed Steel Frames can be furnished either with or without Underwriters' Label.

TIN CLAD FIRE DOORS AND HARDWARE

Sliding—Labeled construction, with hardware also labeled, is recommended by insurance authorities for all fire wall openings. Swing type doors are acceptable when sliding doors cannot be used. Various combinations of automatic attachments are supplied to conform with the regulations of local and state inspection departments.



Swinging—Overlap or flush type mounted in angle or channel frames is extensively used for stairway and corridor openings. Labeled doors and hardware should be used. Automatic attachments in various combinations are supplied to conform with the requirements of local and state inspection departments.

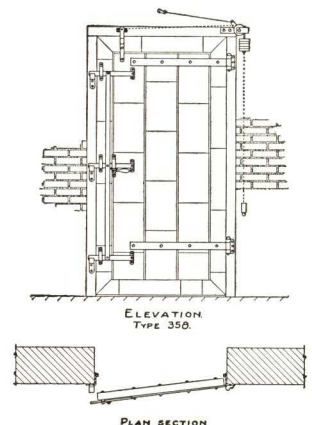
Labels

Class A Labels are used on three-ply doors for openings in fire walls. For sliding doors, openings must not exceed 120 sq. ft., the width or height not over 12 ft. For double swing doors, opening must not be over 10 ft. wide or 12 ft. high. For single swing doors, opening must not be over 6 ft. wide or 12 ft. high. Glass panels are not permitted.

Class B Labels are used on two-ply doors for vertical shaft openings.

Class C Labels are used on two-ply doors for corridor or room partition opening.

Class D and E Labels are used on two-ply doors for fire escape or other exterior openings.



THE R. C. MAHON COMPANY

Manufacturers of Kalamein and Tin Clad Doors
8650 Mt. Elliott Ave., DETROIT, MICH.
REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

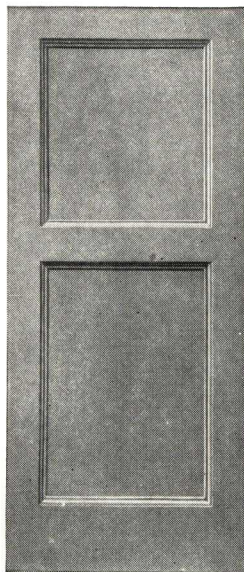
MAHON KALAMEIN and TIN CLAD DOORS; TRANSOMS, JAMBS, TRIM and MOULDING SECTIONS.

For Mahon Steel Roof Deck, Rolling Steel Doors, and Cast Iron Roof Sumps, see File Index.

MAHON KALAMEIN DOORS

Underwriters' Labeled Doors—Mahon Underwriters' Labeled Kalamein Doors are manufactured from the finest selected kiln-dried pine, covered with 24-gauge sheet steel. All joints are welded, making a sturdy, fire safe, fine appearing door.

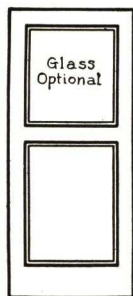
Standard Kalamein Doors—Mahon Standard Kalamein Doors embody the same high quality materials and fine workmanship as Mahon Underwriters' Labeled Doors.



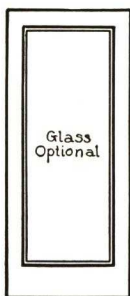
Type 1 Kalamein Door

STANDARD SIZES—MAHON KALAMEIN DOORS

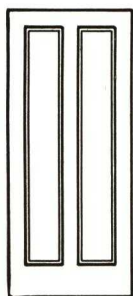
2'6"x6' 6"	2'8"x6' 6"	2'10"x6' 6"	3'0"x6' 6"
2'6"x6' 8"	2'8"x6' 8"	2'10"x6' 8"	3'0"x6' 8"
2'6"x6'10"	2'8"x6'10"	2'10"x6'10"	3'0"x6'10"
2'6"x7' 0"	2'8"x7' 0"	2'10"x7' 0"	3'0"x7' 0"



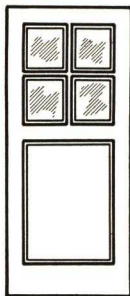
Type 1



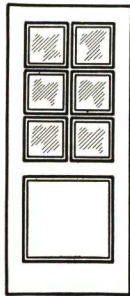
Type 2



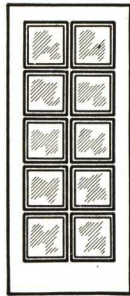
Type 3



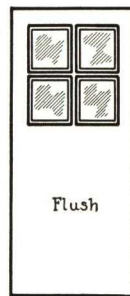
Type 4G



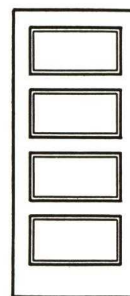
Type 5G



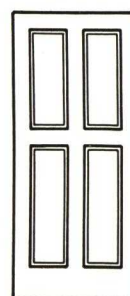
Type 6G



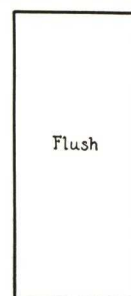
Type 7G



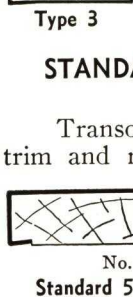
Type 8



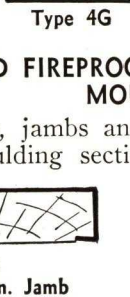
Type 11



Type 12



Type 9



Type 10

These doors are manufactured for use in locations where quality fire doors are desirable when labeled doors are not specified.

Standard Types and Sizes—

Mahon Underwriters' Labeled and Standard Kalamein Doors are available in 12 distinctive designs in 16 standard sizes. These doors, with their sharp, clearly defined lines, are masterpieces of fine workmanship—fit companions for the finest materials that can go into any building.

Service—Mahon designers are available and will co-operate on special conditions where standard size doors cannot be used.

MAHON TIN CLAD DOORS

THE R. C. MAHON COMPANY also manufactures tin clad doors (Underwriters' labeled) to meet every requirement.

STANDARD FIREPROOFED JAMBS, TRIM AND MOULDING

Transoms, jambs and many attractively designed trim and moulding sections, manufactured from the

same high quality materials and fireproofed in the same manner as Mahon Kalamein Doors, are carried in stock for immediate delivery.



No. 101

Standard 5 1/2-in. Jamb



No. 200



No. 201



No. 203



Nos. 204 and 206

Standard Trim Sections



No. 100



No. 101



No. 102

Standard Stop Sections



No. 300



No. 301



No. 305



No. 307



Nos. 309 and 308



No. 310



No. 311

Standard Moulding Sections

METCLA CLAD DOORS, INC.

73 Pond Street, WALTHAM, MASS.

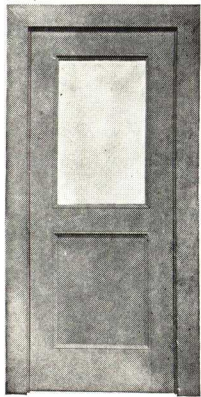


Products

METAL COVERED DOORS, FRAMES, TRIM and ENTRANCES; TIN CLAD FIRE DOORS and SHUTTERS; PRESSED STEEL DOOR FRAMES; METAL TOILET PARTITIONS and Specialties.

Doors and Frames are furnished with or without Underwriters' label.

Metcla Metal Covered Doors, Frames and Trim



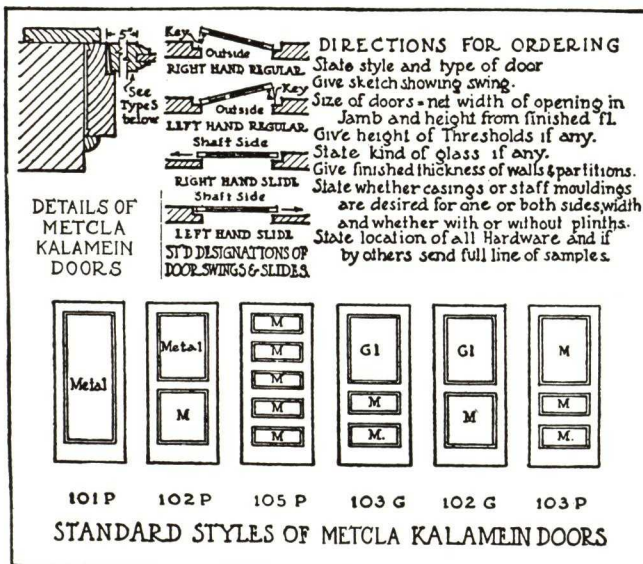
No. 102G
Metcla Metal
Covered Door

Made by drawing sheet metal through steel dies over a wood core of white pine. This process practically welds the metal covering to its core, eliminates buckles and brings out all moulding members in clear relief.

Made in kalamein iron, galvanized steel, copper or low brass; in sections, tongued, grooved and pinned together, and finished with a priming coat of paint. Glass is not furnished by us.

Standard styles in kalamein iron are illustrated. Special styles and sizes will be furnished on short notice.

Metcla metal covered doors, frames and trim are approved by leading architects and engineers, and have been used under the most severe conditions. In specifying Metcla doors, frames and trim the architect is assured of the utmost in quality, workmanship and durability, upheld by continuous service and a high reputation for materials and workmanship.



Metcla Kalamein Elevator Fronts

Metcla kalamein elevator fronts are specified for durability, ease of operation and appearance, where sheet steel doors are not desired, or where hollow metal doors would be too expensive.

Metcla Metal Covered Entrances

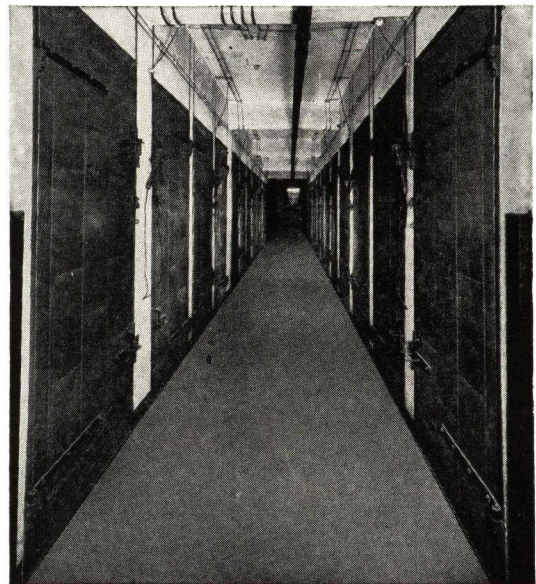
Metcla entrances of copper, bronze or kalamein are made in accordance with the architect's details to meet every requirement. They are a striking feature of many prominent public and private buildings and have all the advantages of the appearance of cast metal doors, without their extreme weight or cost.



Mill Entrance—Metcla Copper Kalamein

Tin Clad Doors and Shutters

These are made in any style and size, and are furnished with or without hardware f.o.b. Boston or installed with or without Underwriters' labels.



Storage Warehouse Equipment

Tin clad doors, iron frames, special hardware

Pressed Steel Door Frames

Our combination frames are fabricated in any gauge from No. 10 to No. 18 with plain or moulded trim as an integral part of frame. Head and jamb are continuously welded and anchors are provided to bond frames rigidly to walls. Frames are provided with cutouts to receive finished hardware. Steel spreader bars are welded to frames at bottom to insure parallel alignment, and the finished product is primed with one shop coat of metallic paint.

Metal Toilet Partitions

Metal toilet partitions are of the flush filled type. Hardware is of brass, chromium plated, and partitions come complete with all necessary fittings. Finish is of baked enamel in any standard color.

THE MOESCHL-EDWARDS CORRUGATING CO., INC.

Manufacturers of Kalamein and Tin Clad Doors
CINCINNATI, OHIO

PRODUCTS

"MECCO" KALAMEIN and TIN CLAD DOORS;
JAMBS, TRIM, TRANSOMS and MOULDING SEC-
TIONS.

For "Mecco" Rolling Steel Doors, see File
Index.

KALAMEIN DOORS

Kalamein doors are Underwriters' labeled for class "B," "C,"
"D" and "E" openings. Frames to be labeled must be hollow
metal. Mecco labeled doors and frames will give you the best
possible rating obtainable. A circular giving complete details
will be mailed upon request.

Non-labeled doors are acceptable in many cities and states
and can be furnished in all designs and with all types of
frames.

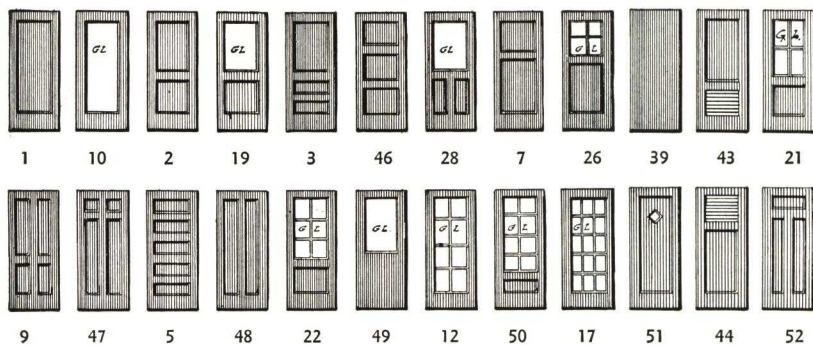


Specifications for Underwriters' Labeled Kalamein Doors

Where specified or marked "Kalamein Doors," same shall
be metal covered with wood cores and labeled by Na-
tional Board of Underwriters and all to be as manufactured
by THE MOESCHL-EDWARDS CORRUGATING CO., INC., of Cin-
cinnati, Ohio.

Cores to be built of non-resinous wood assembled with mortise and
tenon joints. Panels to be $\frac{1}{4}$ in. thick formed of asbestos mill board
and two thicknesses of 24-gauge galvanized steel. Covering for rails
and stiles to be not less than 24-gauge galvanized steel applied to fit
cores snugly, and edges of covering to be riveted through the panels,
all in neat and workmanlike manner.

Where stiles and rails meet, they shall be joined by a lock joint.
Panel moulds to be hollow metal or of wood core, drawn metal con-
struction with members sharp and true. Glass moulds to be of drawn
hollow metal, joined as approved by the Underwriters. Doors to receive
one prime coat of paint at factory.



Kalamein Door Designs

Specifications for Commercial Non-Labeled Kalamein Doors

Where specified or marked "Kalamein Doors," same
shall be metal covered with wood cores, as manu-
factured by THE MOESCHL-EDWARDS CORRUGATING CO.,
INC., of Cincinnati, Ohio.

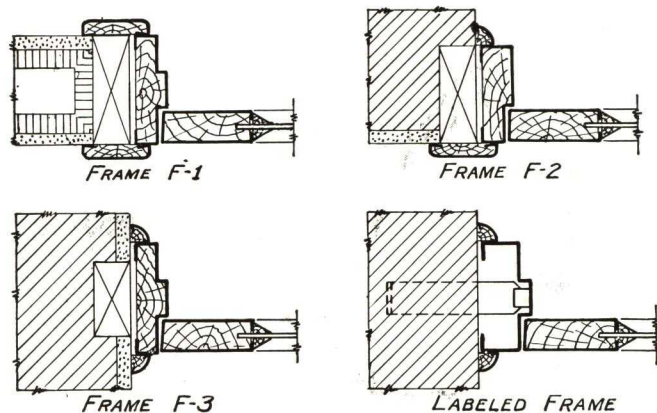
Cores to be of non-resinous wood with mortise and
tenon joints, thoroughly glued and nailed.

Covering to be less than 25-gauge stretcher leveled
kalamein iron for interior doors and 24-gauge galvanized
steel for exterior doors, applied to fit cores snugly, in
the most approved and workmanlike manner.

Panel and glass moulds may have wood cores with
metal covering drawn tightly on by means of steel dies,
or they may be hollow metal. All members to be sharp
and true; no pressed moulds will be permitted.

Doors to receive one prime coat of paint at factory.
Frames, casing and staff moulds, where required, to
be wood core, metal covered of equal workmanship.

Hardware is furnished by others, but must be mor-
tised for by the door manufacturer at factory.



Kalamein Frames, Casings and Moulds

TIN CLAD FIRE DOORS AND HARDWARE

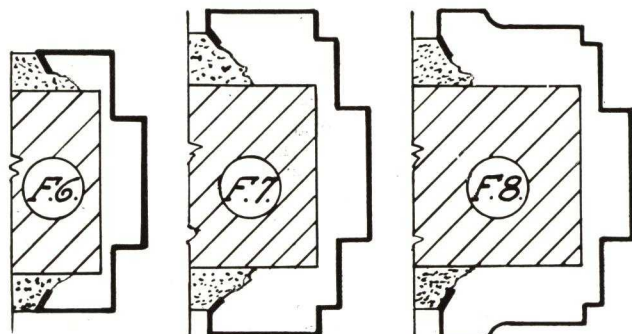
All types of Underwriters' labeled and non-labeled two-ply
and three-ply tin clad fire doors and shutters, together with
complete fire door hardware, to fill conditions imposed by in-
surance and building requirements. An installation of Under-
writers' labeled fire doors and hardware makes a first-class fire
retardant, and in many cases, will lower insurance rates con-
siderably.

Specifications for Tin Clad Fire Doors and Hardware

Core to be well seasoned redwood, fir, or spruce, tongue and grooved,
dressed both sides to $\frac{3}{8}$ -in. two or three-ply as indicated by the plans,
assembled with standard cut iron nails.

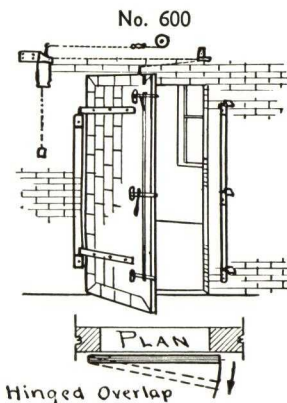
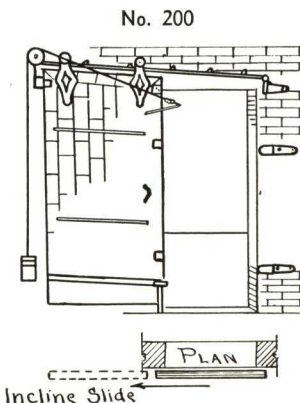
Covering to be standard I. C. 20-lb. fire door terne plate laid flat to
core. All seams locked. All in accordance with Underwriters' standards.

Doors to be manufactured by THE MOESCHL-EDWARDS CORRUGATING CO.,
INC., of Cincinnati, Ohio, and bear the Underwriters' label.



Hollow Metal Frames

Made of 16 and 14-gauge steel in designs as illustrated, other designs
can be supplied



PETERSON AND NEVILLE, INC.

BUILDING PRODUCTS DIVISION

Manufacturers of Hollow Metal Door Frames and Metal Trim

MAIN OFFICE AND FACTORY

365 Dorchester Avenue, BOSTON, MASS

For Metal Trim, see File Index

Steelweld Hollow Metal Door Frames

The majority of sections below are for 1 $\frac{3}{4}$ -in. door, 4-in. rough wall, with $\frac{3}{4}$ -in. plaster, but, with the exceptions of B2, F1 and H1, may be used in glazed tile or brick walls. Dimensions may be varied to suit any door, wall or plaster thickness. For walls 8 in. or over, we recommend K2. Plain trim or cove may be used on one side with any moulded trim on the other. B2 is shown in wood stud partition and all sections may be so adapted. F1 has special anchor bolt that may be tightened after wall is built, tying frame firmly to wall. K3 and L are designed for erection after wall is built. Any section may be furnished with single rebate, if so desired. Trim may be adapted to take standard electrical switch boxes.

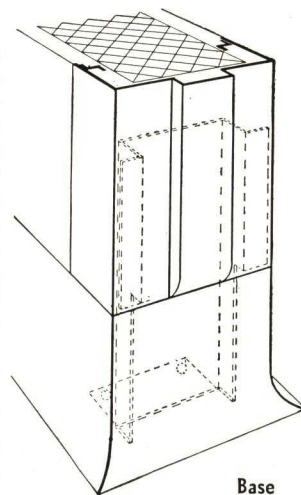
Section "O" shows rough buck which eliminates wood grounds and provides solid nailing for back of trim.

We recommend the use of "Lok Tite" anchors. (See specifications, also sections A1 and H1.) They keep the frame from twisting and this, together with improved plaster stop, tends to prevent cracks which sometimes appear with ordinary construction. Welded anchors furnished if desired.

We are equipped to furnish special frames of any size, gauge or design.

Hospital Work

Where frames are to be used on hospital work, this detail shows a very desirable feature. Frame is cut off at top of base, and is supported on a channel leg which extends to rough floor. Thus the base, whether tile, terrazzo, granolithic or composition, may be carried through the doorway, eliminating corners and recesses and making the whole more sanitary and easily cleaned. Furnished when specified on all plain trim sections; also on moulded trim with special fittings.



Base

Specifications

All interior openings, except as noted, shall have Hollow Metal Frames (with hospital type base), Peterson and Neville type ... with "Lok-Tite" anchors, or frames of similar construction, as approved by architect.

Frames formed to suit the various wall conditions from ... gauge annealed and pickled first quality sheets, and painted with one coat of metal primer.

Anchors not over 2 ft. o.c. extending at least 10 in. into wall, welded to cross ties which fit tightly inside the frame, and lock inside the trim to prevent its spreading.

Heads continuously welded to jambs, with welds ground smooth and even to produce invisible joints.

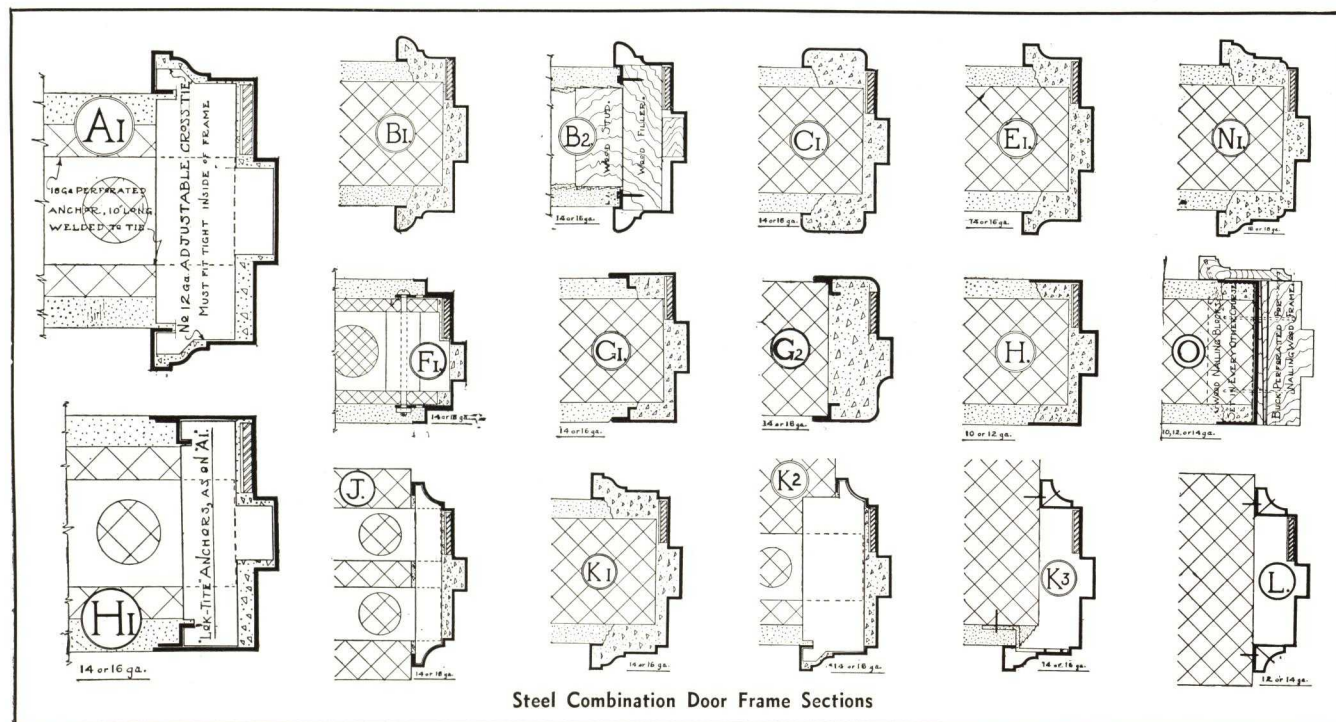
Mortise reinforce, drill and tap for all hardware as per schedule to be furnished by hardware contractor.

Frames shall extend to rough floor, and have 14-gauge angle clips welded to back of jambs for attaching to floor. Mortar guards over butt and strike reinforcing. Spreader bars welded between jambs at bottom, left in place until wall is set.

Transom bars, where transoms are indicated, with frame prepared for hardware on swinging transoms or with removable stops for fixed sash or glass.

General contractor to furnish partition lines and locations of frames, which shall be set plumb and square, braced in such a manner that wall may be built and allowed to set before bracing is removed.

Space between masonry and back of frame shall be filled solid with cement mortar as wall is laid up.



Steel Combination Door Frame Sections

THE PHILIPP MANUFACTURING COMPANY

Manufacturers of Kalamein Doors, Underwriters' Tin Clad Doors,
Sliding Door Hardware
EASTHAMPTON, MASS.

Products

METAL COVERED KALAMEIN DOORS, WINDOWS, DOOR FRAMES, TRIM, UNDERWRITER'S LABELED KALAMEIN DOORS; SMOKE SCREENS; ELEVATOR FRONTS; DUMB-WAITER DOORS; BRONZE and COPPER KALAMEIN DOORS; UNDERWRITER'S TIN CLAD DOORS.

Metal Covered Doors

Wood cores are made of No. 1 sound, kiln dried white pine, free from loose or large knots, dry rot, sap or shake. Machine sized to accurate dimensions.

Stiles and rails mortised and tenoned, are glued with waterproof glue, doweled and wedged, grooved to receive panels.

Metal covering for stiles, rails and panels is 26-gauge galvanized or kalamein, 16 to 32-oz. copper, 20-gauge bronze. Door mouldings and trim, 26-gauge kalamein, 14-oz. copper or 24-gauge bronze.

Panels are composition board with metal glued to surfaces with waterproof glue, under pressure.

Special care is taken in assembling to avoid bench marks as much as possible. All joints between metal filled with solder and scraped smooth. All material has shop coat of special metal primer.

Specifications for Underwriters' Labeled Kalamein Doors

Our Underwriters' labeled kalamein doors are built with wood cores of No. 1 sound, kiln dried white pine, free from loose or large knots, dry rot, sap or shake. Machine sized to accurate dimensions.

Stiles and rails mortised and tenoned, are glued with waterproof glue, doweled and wedged, grooved to receive panels. Metal covering for stiles, rails and panels is 24-gauge patent leveled galvanized sheets. All joints between stiles and rails interlocked and filled with solder, which is scraped off to smooth surface.

Panels are 1/4-in. asbestos with metal glued to surface with waterproof glue under pressure. Panels grooved into stiles and rails and bolted through stile metal, making metal covering practically one piece. All material to have shop coat of paint.

Labeled doors in vertical shaft opening must be solid panel.

Labeled doors in corridor or room partition opening may have glass openings not exceeding 1296 sq. in.

Labeled doors in fire escape opening may have glass openings not exceeding 720 sq. in.

Maximum size permitted by Underwriters in all cases is 4 ft. wide by 8 ft. high for single door; and 8 ft. wide by 8 ft. high for pair of doors.

Hardware

We are in position to fit for all mortised hardware on receipt of hardware schedule and samples.

Metal Covered Windows

Double hung or casement type windows are made in our standard design. All metal drawn on core to give neat and serviceable window.

Kalamein Elevator Fronts

Combined slide and swing, two-speed and three-speed, and standard swing elevator doors are serviceable and noiseless and are extensively used.

Kalamein Smoke Screens

We manufacture kalamein covered smoke screens of all types and for all conditions.

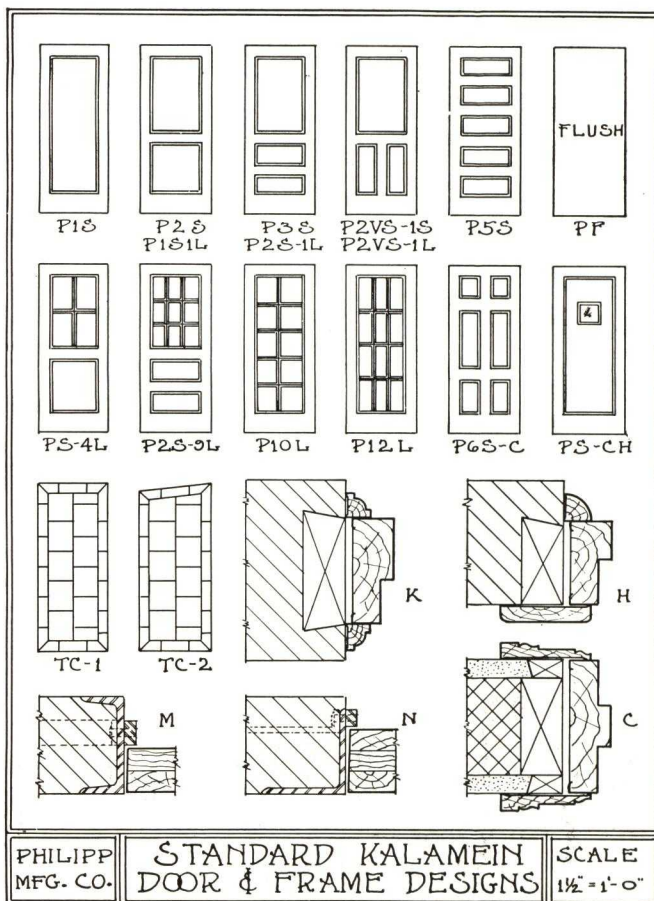
Bronze and Copper Kalamein Doors

We also manufacture a high grade line of bronze and copper kalamein doors, etc., for entrances in banks, theatres, public buildings, etc.

Service

Estimates and Drawings—Estimates will be furnished from the architect's plans and specifications. Suggestions and shop drawings will be furnished whenever desired. We solicit your inquiries.

Blue Prints of Mouldings and Casings—We have a series of blue prints of our various stock designs of panel mouldings, stop mouldings, and casings which we will be glad to mail upon request.



THE RUDA COMPANY, INC.

Manufacturers of Hollow Metal Doors and Frames

2306-10 South Kedzie Ave.

CHICAGO, ILL.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

METAL DOORS, INTEGRAL FRAMES, WINDOWS AND SHEET METAL.

Materials

Materials used are the best of their respective kinds, and those best suited for their particular purpose. All steels and ingot iron are the best grades commercial furniture stock of the United States standard gauge.

Workmanship

All work is executed by craftsmen in accordance with the latest principles of construction and most modern methods of manufacture.

Doors and Sash

Stiles and rails are formed of No. 18 gauge stock with cold drawn panel mouldings securely keyed thereto and properly reinforced for hardware. Stiles are provided with compressed cork insulation for eliminating metallic sound.

Joints are fitted reinforced, welded and dressed to provide invisible connections.

Metal panels consist of two plates of 20 gauge stock separated by 1/4-in. heat retarding insulation.

Glass panels are retained by removable cold drawn moulding frames closely fitted and secured to panel mouldings by No. 8-32 countersunk oval-head screws or concealed clips.

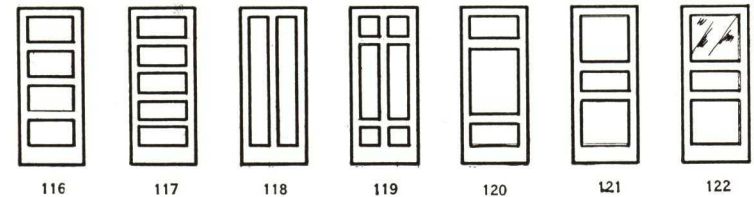
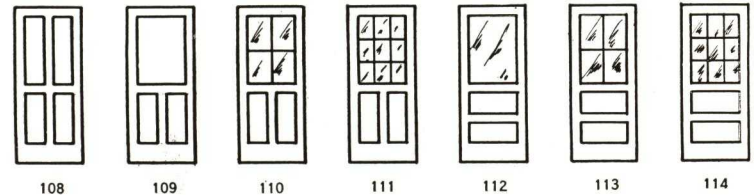
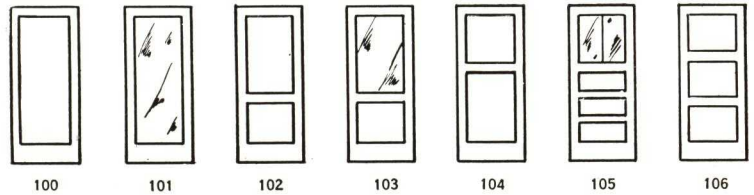
Muntins are constructed of cold drawn interlocking shapes fitted and welded to panel mouldings.

Astragals are of cold drawn interlocking shapes welded to door stiles.

Flush Doors—Are fabricated from 16 gauge sheets, interlocked at edges with metal key device. \square spreaders approximately 8 inch centers vertically between sheets. Cork inserts between spreaders.

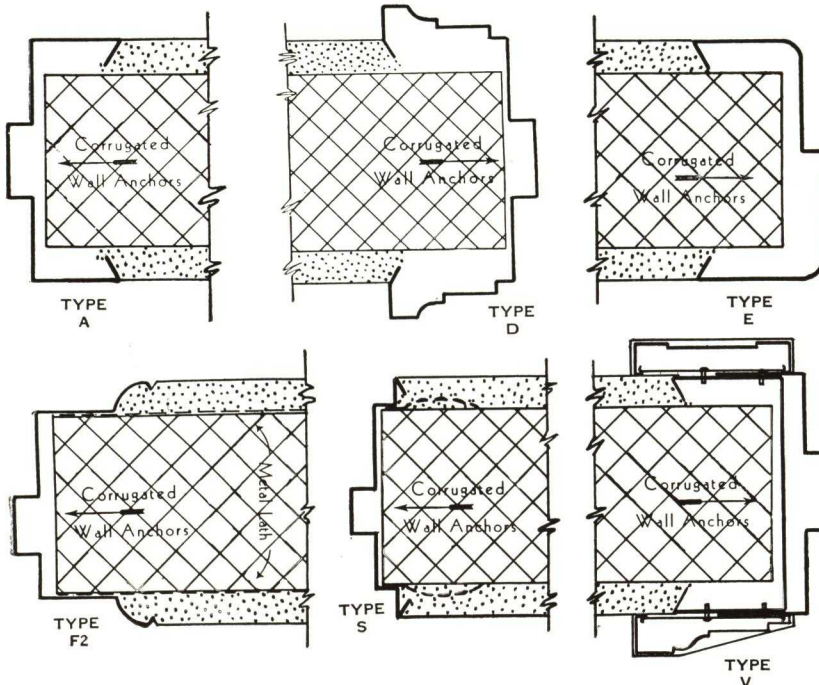
Hardware selected or purchased by owner applied at factory.

Underwriters Labeled; Class B, C, D & E



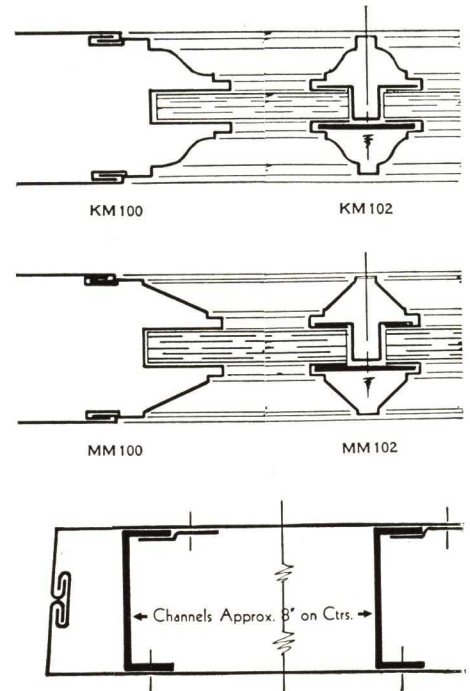
Door Designs

Literature describing other designs and details will be gladly sent on request.



Frame Designs

Fabricated in 16, 14, 12 and 10-gauge steel depending on design. Mitred, coped and acetylene or electric welded



FL 100

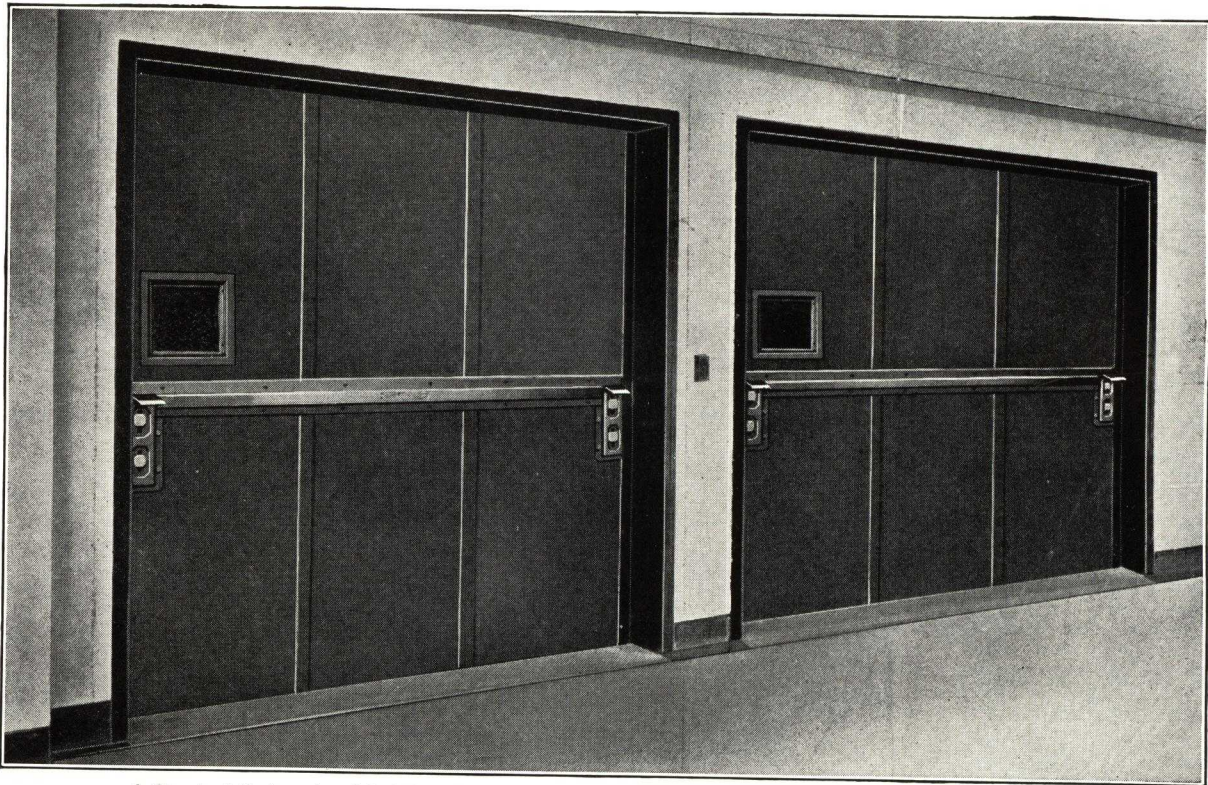
Door Sections

ST. LOUIS FIRE DOOR CO.

Freight Elevator, Dumbwaiter and All Types of Fireproof Doors,
Electrically Operated Counterbalanced and Warehouse Doors

1134-42 So. Sixth Street, ST. LOUIS, MO.

REPRESENTATIVES IN ALL PRINCIPAL CITIES



A Standard Underwriters' Labeled "St. Louis Super Dor" Installation. Equipped with Exclusive Features

THESE EXCLUSIVE FEATURES ARE STANDARD PATENTED EQUIPMENT ON ALL ST. LOUIS DOORS

(1) **Renewable and Adjustable Malleable Iron Guide Shoes**—Are minutely adjusted to eliminate excessive side play and friction between the guides, and assure easy and free movement when the door is operating. Provide also for *renewal* of wearing surfaces, without the necessity of dismantling the doors or loss of use of the elevator. Shoes can be replaced in a few moments, making the door operate like new.

(2) **Heavy Malleable Iron Adjustable Combination Sill Levelers and Gusset Plate Supports**—An integral part of the heavy-duty trucking sill and door frame structure. This assures perfect alignment with the building sill, which permits smooth trucking over the door, and simultaneously transfers the load to building sill.

(3) **Adjustable Latch Bar Lock Arrangement**—Definitely engages with our Underwriters' approved electric mechanical interlock, and, after it has been adjusted and permanently fastened and set, it entirely eliminates electrical interruption common to elevators.

(4) **Sheaves**—With double radial ball-bearing raceways, have sealed self-contained internal oil reservoirs which constantly distribute lubricant by means of the centrifugal rotation of the sheaves.

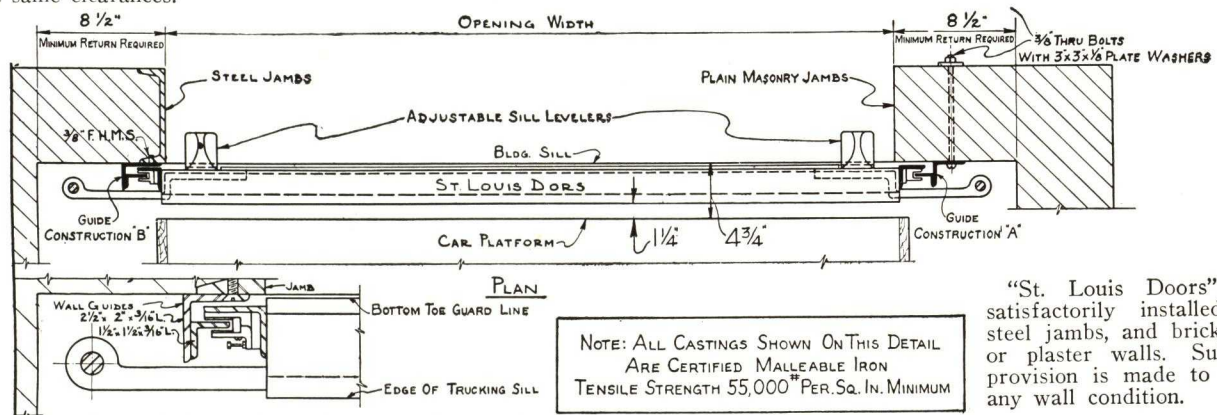
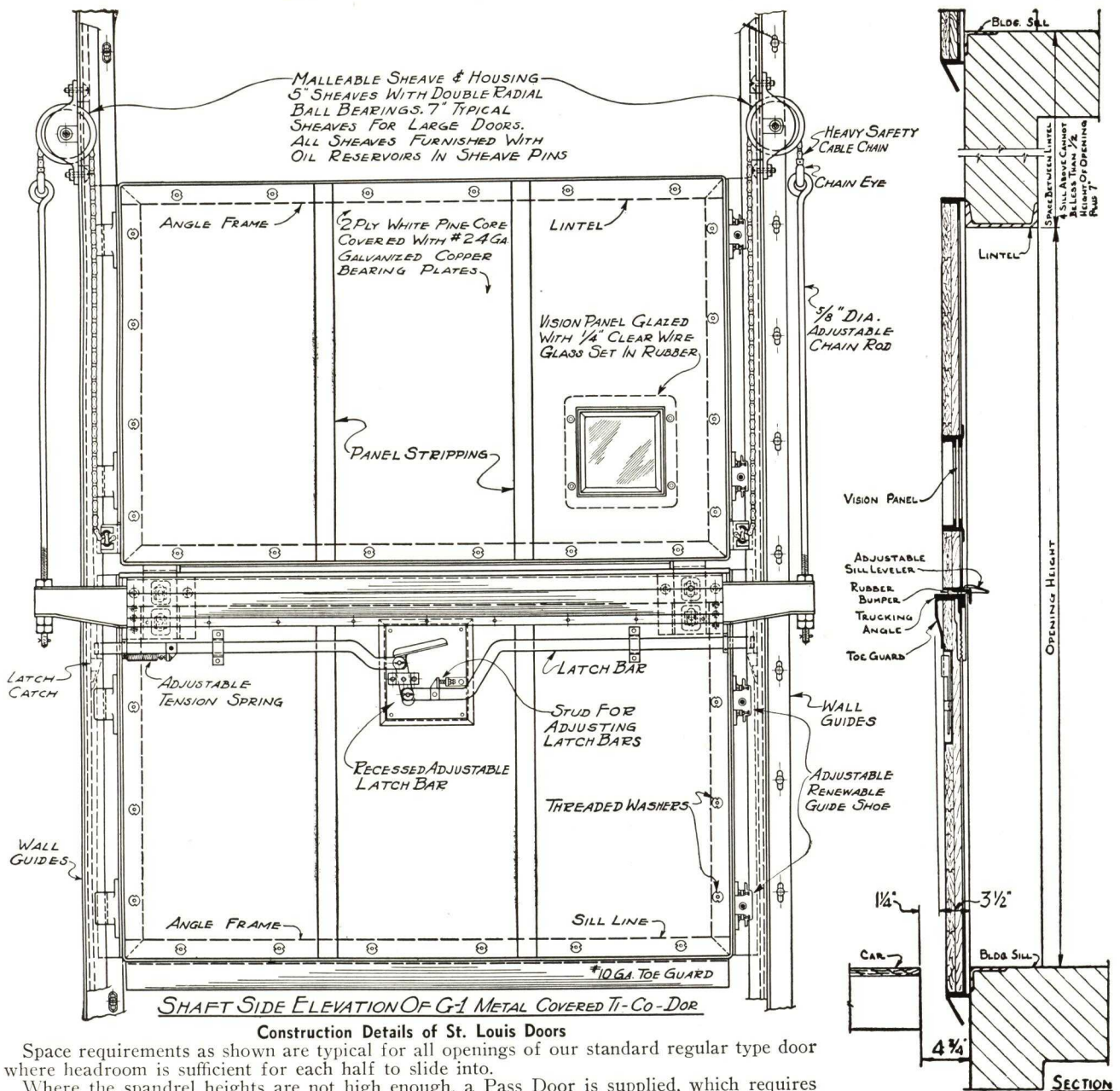
(5) **Door Panels**—Are of laminated white pine, covered with galvanized copper bearing sheets, glued on under pressure. This results in a neat and smooth appearance that resembles hollow metal construction.

(6) **A Safety Feature**—Of particular importance in conjunction with the electric mechanical interlock, is the *safety lock rod*, which positively prevents "plugging" the interlock, thereby forestalling the movement of elevator, unless all doors are closed and locked.

St. Louis Interlocks, approved by the National Bureau of Casualty and Surety Underwriters, wherever used, reduce liability insurance in the amount of 10 per cent.

The details on the next page give full and complete construction and information, showing all required clearances for St. Louis Doors.

CONSTRUCTION DETAILS AND SPACE REQUIREMENTS

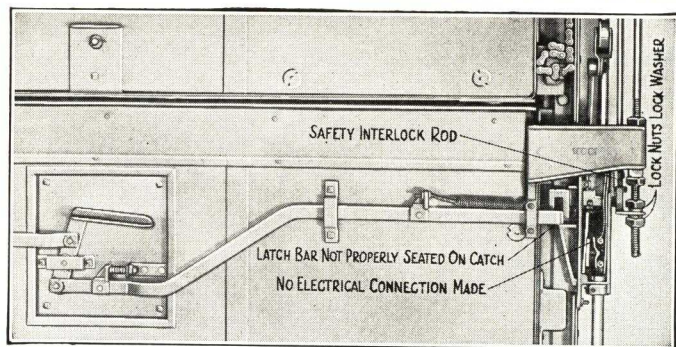


"St. Louis Doors" are satisfactorily installed on steel jambs, and brick, tile or plaster walls. Suitable provision is made to meet any wall condition.

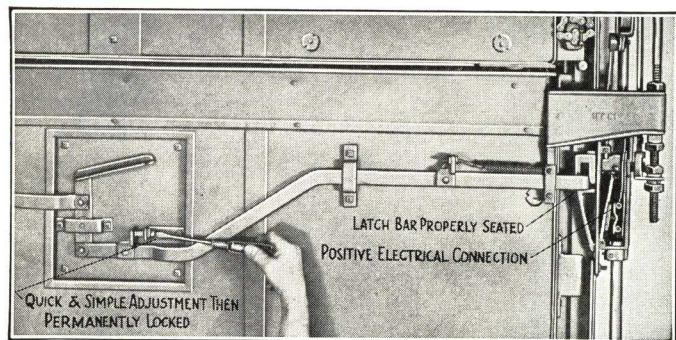
Car clearances are essential; therefore, proper space in shaft should be provided to accommodate elevator doors so as not to interfere with elevator travel.

No trouble to serve you. Ask for additional details.

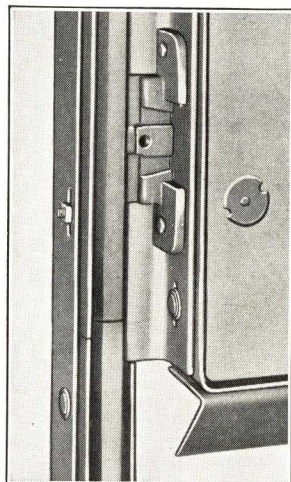
SOMETHING NEW IN FREIGHT ELEVATOR DOORS



Erectors often leave too much side play in guides, which prevents latch bars from making proper interlock connection, causing electrical interruption and elevator operating trouble.

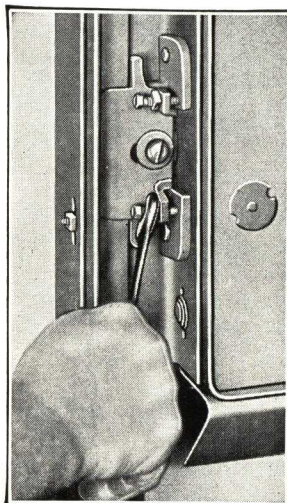


This illustration shows how simple it is to adjust the St. Louis "Adjustable" latch bar to the electric mechanical interlock and catch, by turning a bolt, then permanently setting and locking it, all in a moment's time.



THESE
PATENTED
DEVICES
ARE
FURNISHED
WITH
ALL
ST. LOUIS
DOORS

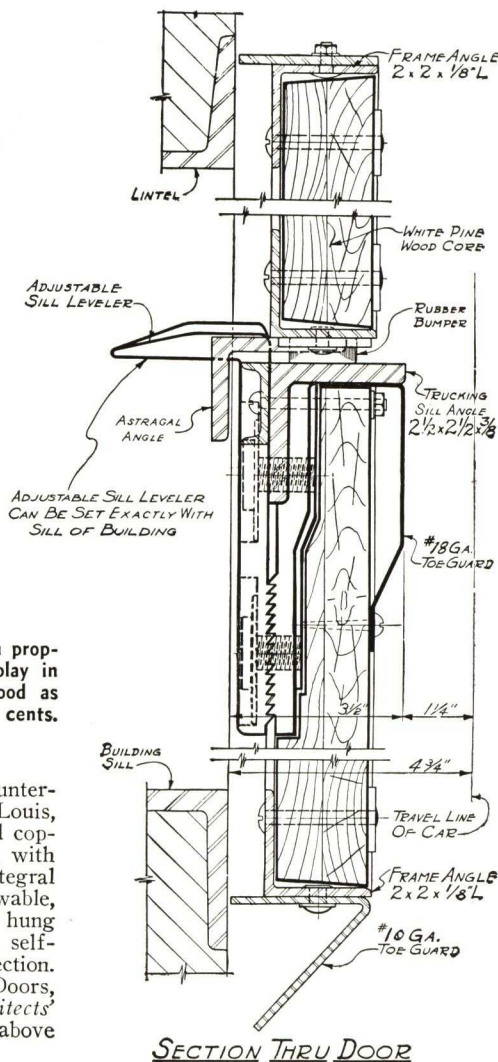
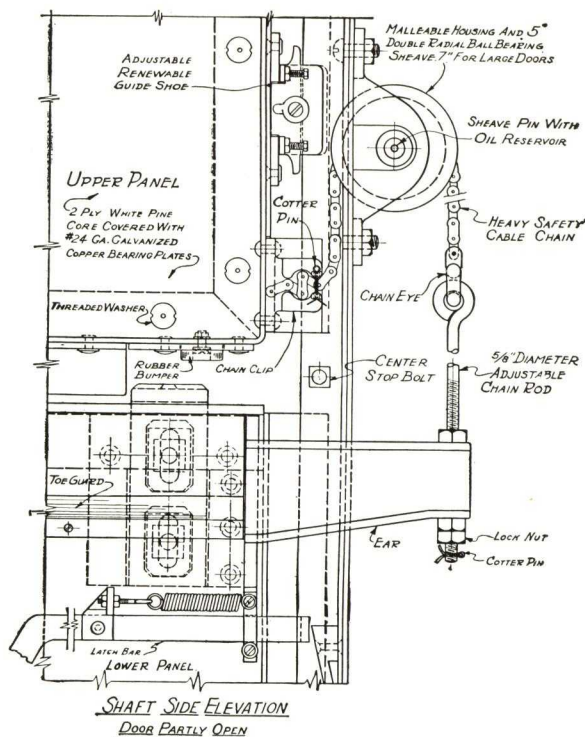
Renewable
Adjustable
Guide Shoes



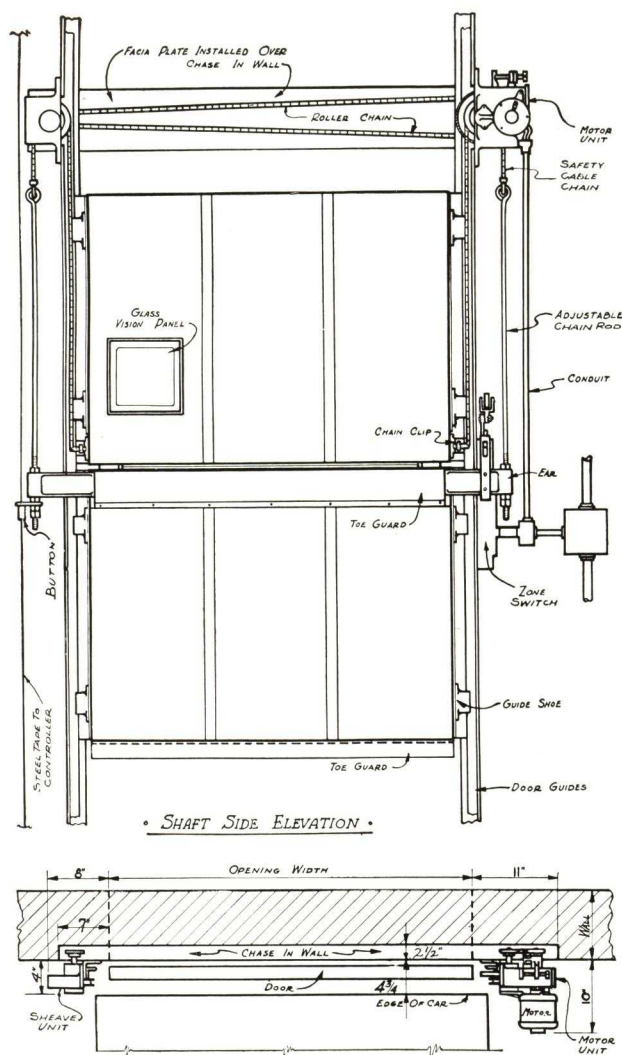
Showing the stationary base, permanently riveted to the door frame, from which the "worn out" renewable shoe was removed. It caused canting, improper alignment and maintenance expense.

The new shoe and gib set in place, then properly adjusted, taking out all the side play in guides, thereby making the door as good as new, at the expense of only a few cents. Patented.

Specifications—Furnish and install Underwriters' Labeled flush paneled counterbalanced "Ti-Co-Dors" as manufactured by the St. Louis Fire Door Co., St. Louis, Mo. Panels to be built of laminated selected white pine, covered with galvanized copper bearing sheets and bolted into angle iron frames. Doors to be constructed with a heavy angle truckable sill across full width of each lower section, with integral adjustable gusset plate sill levelers. Doors to be equipped with malleable, renewable, adjustable guide shoes and adjustable automatic latch arrangements. Doors to be hung on heavy safety chain running over 5 in. double-radial ball bearing malleable self-lubricating sheaves. Provide one 10 in. square vision panel in each upper section. Install tamper-proof electric interlocks with safety lock rods, completely wired. Doors, guides and hardware to receive a coat of special steel primer at the factory. *Architects' Note*—Kalamine paneled or corrugated steel doors may also be furnished with the above equipment.



ST. LOUIS MOTOR OPERATED FREIGHT ELEVATOR DOORS

**Increased Traffic with Low Operating Cost**

Use and Construction—St. Louis *Individual Motor Operated* doors are installed on the shaft side of wall, and are applied to any standard St. Louis door. Manual operation is possible in case of power failure without disconnecting any part of the mechanism or the electrical connection, therefore, the use of the elevator is available at all times.

St. Louis motor operated doors open and close—a regulation size door—in about five seconds' time, thus they give the greatest efficiency and speed in each working day. The speed of operation, without any lost time or motion, therefore gives 40% more efficiency with St. Louis motor operated doors.

Motor and Mechanism

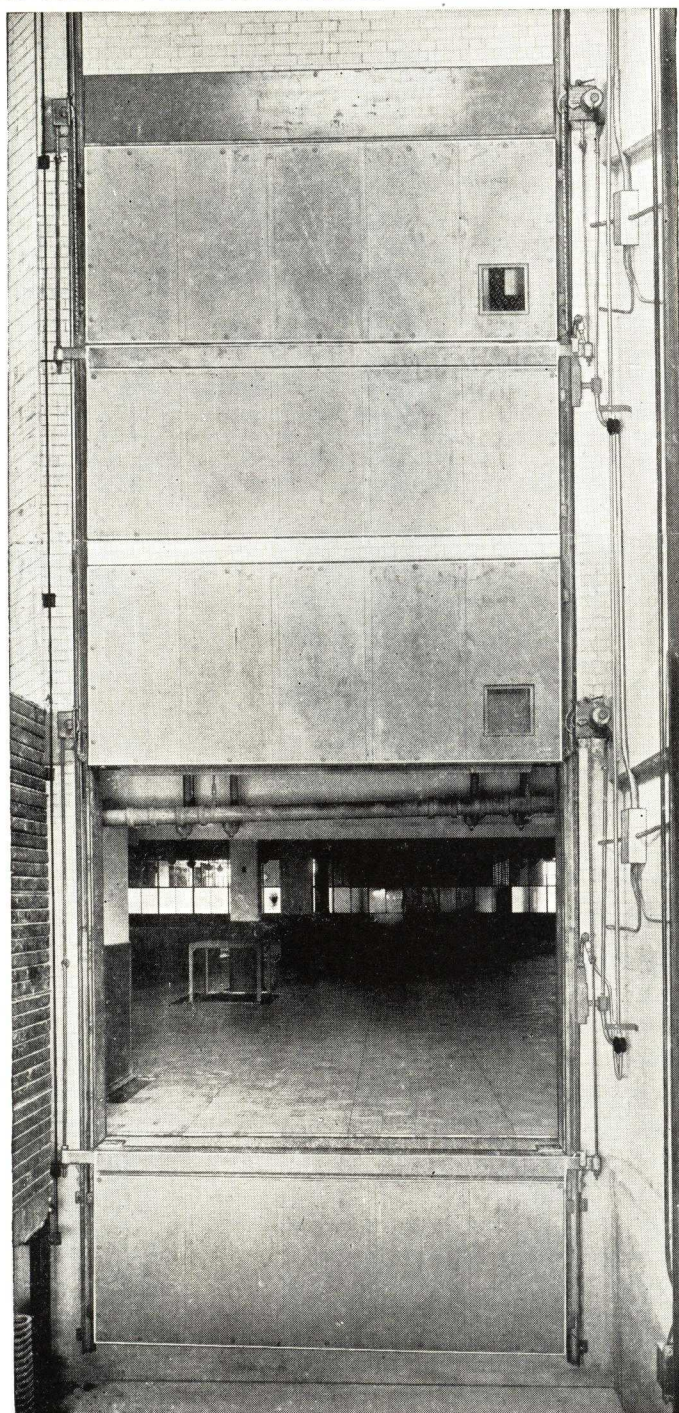
A specially built ball bearing reversible Torque motor 16 to 32 ounce, depending upon the size of door, is securely bolted to the operator housing, which also contains the door sheaves, assembled in a complete unit and which is completely assembled, wired and tested at our factory, ready for use.

The motor can be removed from the operator unit in a few moments, without loss of the use of the elevator car or the door.

All internal gears, sprockets, sheaves and shafts are fitted with the finest precision ground ball bearings, and oil impregnated, self lubricating bronze bushings, however, the complete gravity oiling system which lubricates every part is an added precaution. The performance of the unit is remarkable and practically noiseless and all parts are readily accessible.

Control

It is controlled by push buttons marked "OPEN", "CLOSE" and "EMERGENCY STOP" all mounted conveniently in the car wainscot or on the room side of shaft.



A Typical St. Louis Operated Door Installation

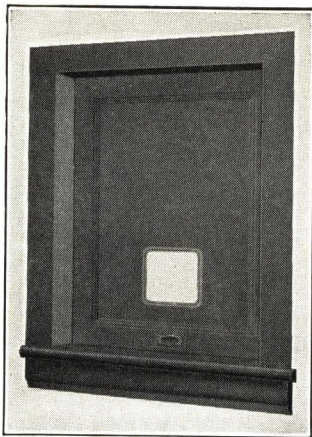
Safety Feature

The safety devices act simultaneously with the opening movement of the door and remain in effect until the door is again closed and locked. Absolute protection against accidents is provided, as our devices are inter-locked with the elevator machinery which controls the movement of the car. The doors cannot be opened from the room side, without a specially constructed key. Retiring cams are customarily used when the shaft is over two landings high.

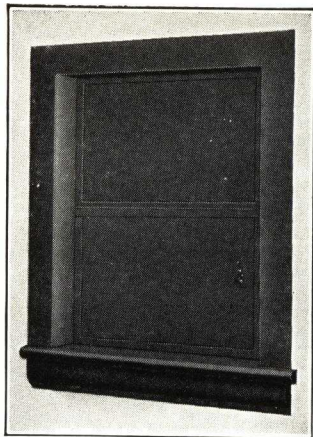
The entire wiring system is protected by an overload relay so that should anything happen to the electric current, or a door obstructed while in motion, the current will be automatically disconnected.

Anti-Slamming Device

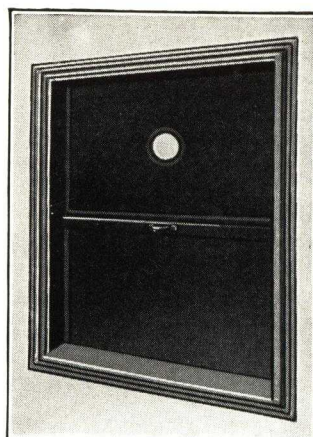
An important, positive and exclusive patented feature of St. Louis Motor Operated Doors, is the "ANTI-SLAMMING DEVICE" built into the units, that prevent the slamming of the elevator door in opening and closing, making the door practically noiseless. This feature is essential and important as it saves maintenance expense and replacements.



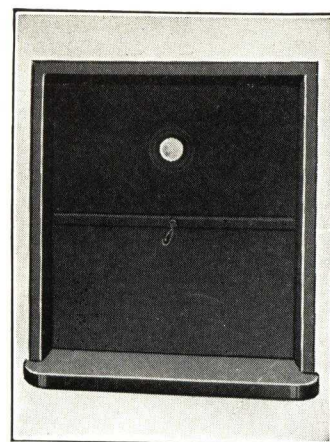
One-piece Paneled Slide-Up-Door,
with Projecting Sill and
Steel Frame
H-12



Counterbalanced Door, with Steel
Frame, Sill and Apron
D-1-R



Counterbalanced Door, with Steel
Frame and Moulded Trim
M-6



Counterbalanced Door, with Steel
Frame, Plain Trim and
Plain Sill
G-6-R

DUMBWAITER DOORS

"St. Louis" Dumbwaiter Doors are made in two classes:

(1) Underwriters' Laboratories labeled, with door sections made of hollow metal construction, consisting of two steel sheets, with reinforced ribs insulated with 1-in. thick soundproof asbestos, and hung on pressed metal frames.

(2) Heavy No. 10 gauge steel plate sections, securely reinforced with angle iron frame, mounted on a pressed metal frame.

Construction and Description

Both these types are made in Counterbalanced, Slide-Up and Under-the-Counter-Slide-Down construction. They are mounted in smooth metal guides with double radial ball-bearing sheaves, fastened together with rust-proof safety cable chain. The combination pressed metal frame, mitered and welded at corners, can be furnished with flush or moulded trim, with or without shelves, made of any desired material, to correspond with surrounding work.

Use

"St. Louis" Dumbwaiter Doors are made to fit any type of dumbwaiter, in office buildings, hospitals, hotels, restaurants, or clubs. They operate on the inside of shaft and can be made to conform to any combination of arrangement desired. Doors are built with a 5-in. observation light, and glazed with 1/4-in. clear wire glass, and operated with latch handle. The entire unit is completely assembled in the factory, adjusted and tested, so that it can be installed and the wall built around it, without any additional labor at the job.

Materials

Unless otherwise specified, St. Louis dumbwaiter doors and frames are made of steel sheets; however polished stainless steel, aluminum and monel metal wherever used, gives an exceptionally beautiful appearance, or the steel can be given a baked enamel finish of any color desired.

Operation

The two halves when closed, lock together automatically, preventing the opening of the dumbwaiter door, except when the dumbwaiter is at a regular landing.

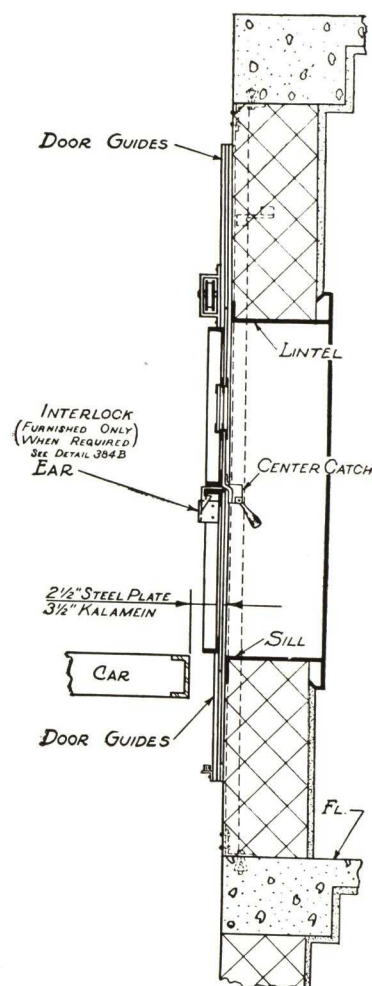
As they are equipped with double radial ball-bearing sheaves, perfectly balanced and provided with malleable frictionless shoes, they operate quietly and smoothly.

Safety Features

Each unit is equipped with an electric mechanical interlock which prevents the opening of any door when the dumbwaiter is not at the floor landing, and also prevents the operation of the dumbwaiter when

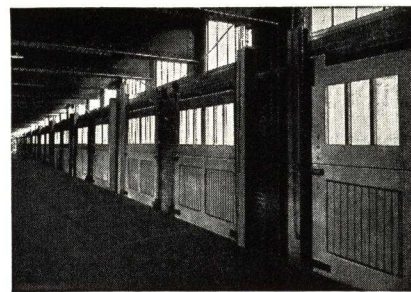
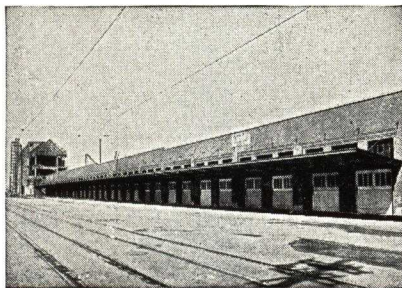
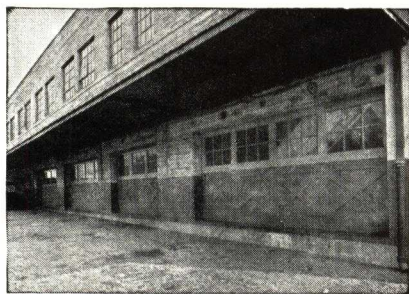
any door in the shaft is open. With the combination of the automatic lock, placed at the center and the interlock, the shaft is absolutely safe and closed at all times.

"St. Louis" Dumbwaiter Doors are given a prime coat of metal paint at factory and shipped out fully crated and protected.



• SECTION •

SHIPPING PLATFORM AND LOADING DOORS

**Fold-Up-Dor Installations**

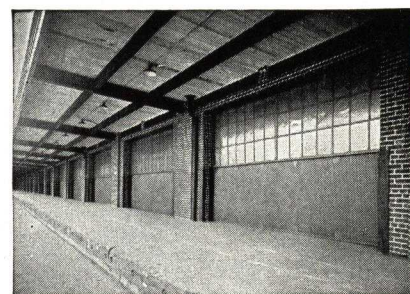
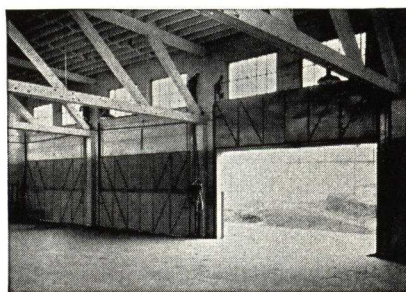
FOLD-UP-DORS are extensively used for freight houses and shipping platforms where there is a limited amount of headroom space above the lintel.

They are made of 2½-in. thick clear white pine stiles and rails with ¾-in. matched and beaded panels.

They are also made of steel construction, reinforced with heavy angle iron frames, and of any design desired.

The great advantage of the FOLD-UP-DOR is that it permits the use of glass panels in the upper half, admitting light into the building.

Write for further information, specifications and prices.

**Compound Slide-Up-Dors**

Made of 2½-in. thick white pine stiles and rails, or of steel construction, they have become very popular for shipping platforms, automobile entrances and other traffic openings.

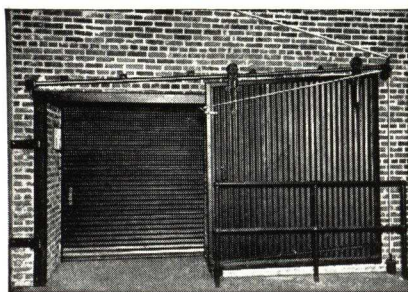
When made of steel with heavy angle iron frame, they give the desired protection where a rigid and indestructible type of door is essential.

These doors are used where there is considerable headroom 1½ times opening height plus 16" to slide the halves up above the lintel.

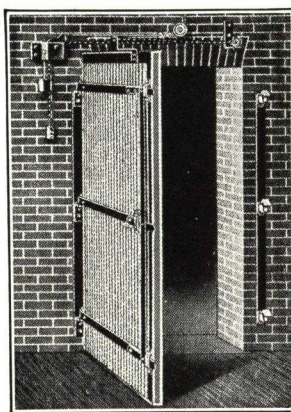
The great advantage of this type of door is that when open and in use, it is out of the way of trucking; therefore, it is practically indestructible and will last indefinitely. Glass can be used in the upper half.

We will submit details and prices upon request.

ST. LOUIS ALSTEEL UNDERWRITERS APPROVED FIRE DOORS



Double Standard Slide

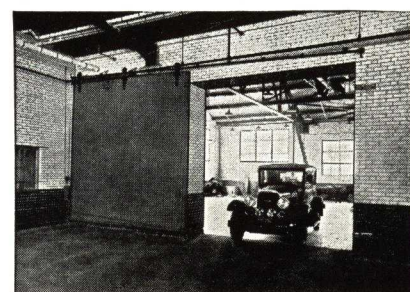


Swing Door

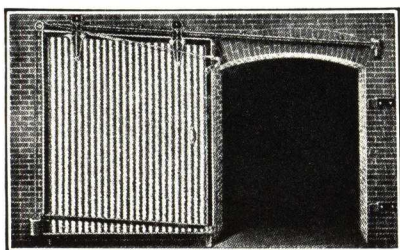
Use "St. Louis" Alsteel-Dors

Costs no more than a tin clad door—Is easier to operate—Gives greater fire protection.

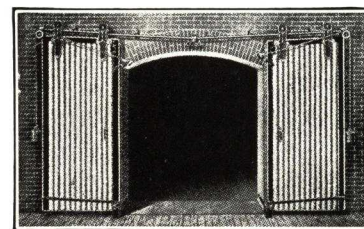
Approved and labeled by the Underwriters' Laboratories and Factory Mutuals.



Large Single Slide



Single Slide



Twin Slide

ALSTEEL-DORS are indestructible, made of two sheets of No. 20 gauge corrugated iron, with asbestos between, all securely riveted into a heavy angle iron frame.

They are furnished with hardware, complete for all types of Slide and Swing construction.

Because they are protected by a heavy angle iron frame, bump-

ing them by trucks does not distort or injure the door; so it will therefore withstand a great deal of abuse, whereas the tin clad door would be ruined, in comparison.

The lowest rate of insurance is given wherever the door is installed. The tin clad door is passé.

Let us quote on your requirements, without obligation.

SYRACUSE FIRE DOOR CORPORATION

900 Canal Street

SYRACUSE, N. Y.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

UNDERWRITERS' LABELED and NON-LABELED KALAMEIN DOORS; UNDERWRITERS' LABELED TIN CLAD FIRE DOORS and FIRE DOOR HARDWARE, and UNDERWRITERS' LABELED CHANNEL IRON FRAMES.

Non-labeled Kalamein Jambs, Trim, etc.; Angle Iron Frames.

Custom Kalamein Work in Copper, Bronze, Aluminum, Aluminum, Monel, Stainless Steel, etc.

Syracuse Kalamein Doors

Careful selection of raw materials and the most modern equipment, coupled with a highly trained and efficient factory force, have enabled Syracuse Kalamein Doors to build an enviable reputation for long life and exceptional service. Because of this reputation, a specification calling for Syracuse doors assures the architect of the very best in materials and workmanship.

Specifications For Syracuse Kalamein Doors

Cores—Wood used for cores is sound, kiln-dried California Redwood or Washington Red Cedar, with core members being milled in one piece. Cores are assembled through the use of $\frac{3}{4}$ -in. hardwood dowels and special glue.

Panels—Composition board for non-labeled doors and asbestos board for labeled doors.

Metal Covering—24-gauge galvanized coated roller level copper bearing steel sheets. For non-labeled doors the metal is tightly drawn over the core members through steel dies before the doors are assembled. For labeled doors, the wood cores are first assembled and the metal is then applied with an integral lock seam process. All joints in the metal covering

between stiles and rails of both labeled and non-labeled doors are thoroughly soldered and ground flush and smooth. Metal on panels is tightly glued thereto under pressure.

Special Reinforcement—Each Syracuse door, both non-labeled and labeled, contains a special reinforcement at the top and bottom, whereby the stiles are rigidly and securely bound together to prevent any broken joints or warping or twisting. These reinforcements are entirely separate from, and are not part of the rails or the metal covering.

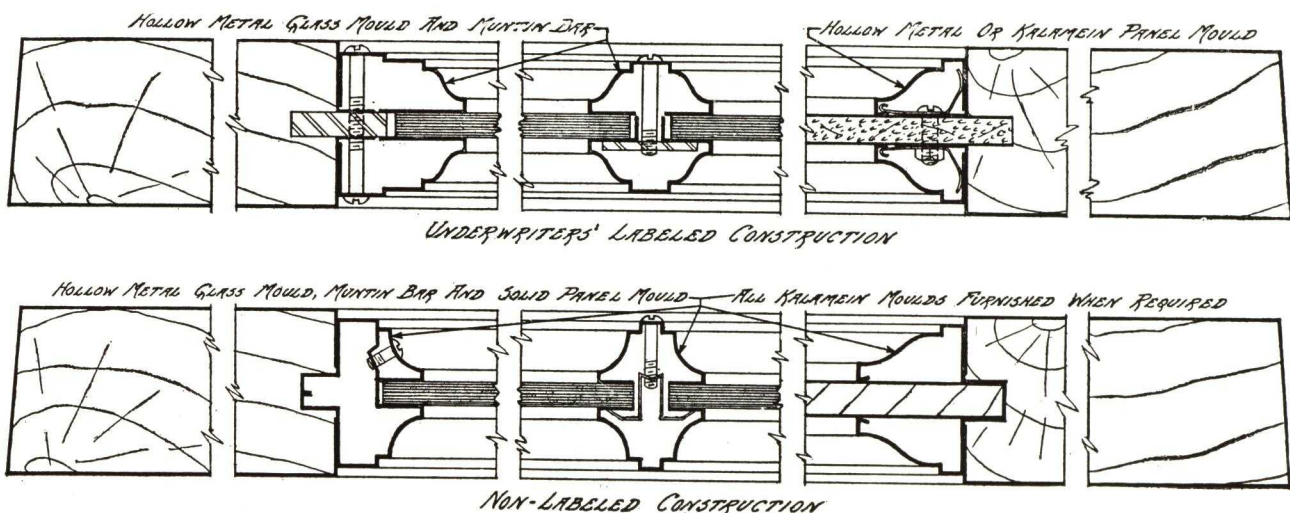
Finishes—Unless otherwise specified, all kalamein work is given one shop coat of special gray metallic primer for galvanized coated steel. Copper and bronze kalamein work finished to individual specification.

Tin Clad Fire Doors and Hardware

All types of Underwriters' labeled and non-labeled two-ply and three-ply tin clad fire doors and shutters, together with complete fire door hardware, to fill conditions imposed by insurance and building requirements. An installation of Underwriters' labeled fire doors and hardware makes a first-class fire retardant, and in many cases, will lower insurance rates considerably.

Special Services

Our many years of activity have enabled our Engineering Department to gain a wealth of experience in solving special construction and installation problems. This Department is completely at your service, and will be glad to render assistance in solving any such special problems, or in furnishing general information.



TYLER

INTERIOR
AND
EXTERIOR
ARCHITECTURAL
METAL WORK



ELEVATOR
DOORS
AND
ENTRANCES



ELEVATOR
CARS AND
CAR
ACCESSORIES



STORE FRONTS,
WINDOW
FRAMES
AND
MARQUISES



DISPLAY CASES
AND
STORE
FIXTURES



THE W. S. TYLER COMPANY • CLEVELAND, OHIO

TYLER

FACILITIES . . . ORGANIZATION . . . SERVICE

Tyler Elevator Entrances and Cars and architectural metal products are built by an organization which accepts full responsibility for the complete installation.

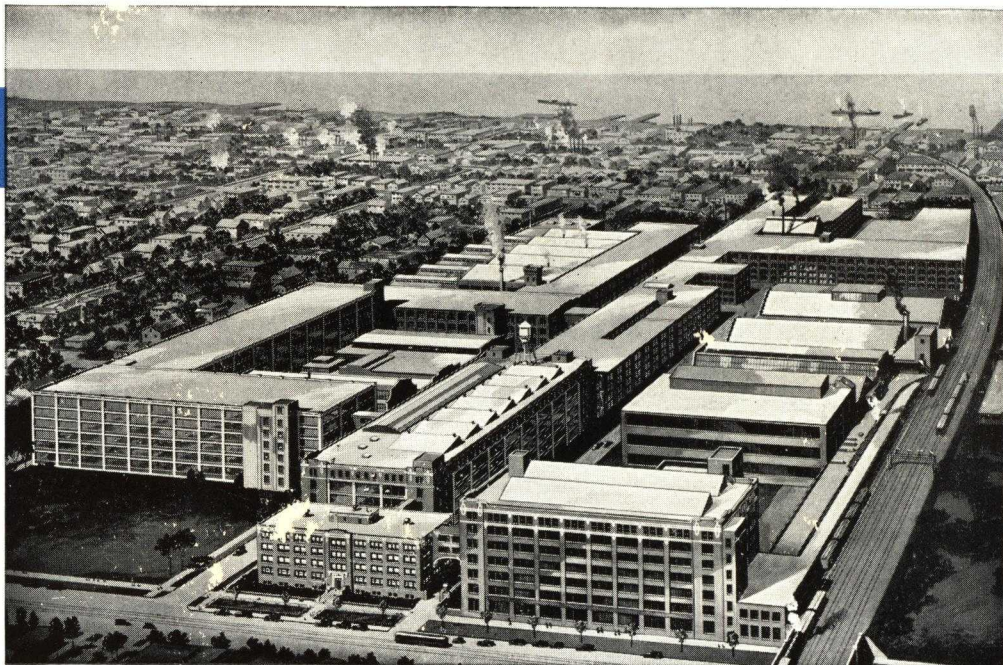
The company's experience in this work dates from the earliest days of the passenger elevator and the facilities developed through these years assure the best of craftsmanship in every operation involved. To the customer, this means unusual values and uniform quality in every part.

Foundries, metal shops, plating and finishing departments and cabinet shops are the most extensive of the kind devoted to this class of work. The craftsmen employed are men of years of experience with the company and are highly skilled in their individual lines.

The company carries this same quality of service into the field in the installation of work — this being of vital importance in producing a satisfactory job. A permanently employed corps of superintendents and erectors handles all construction work.

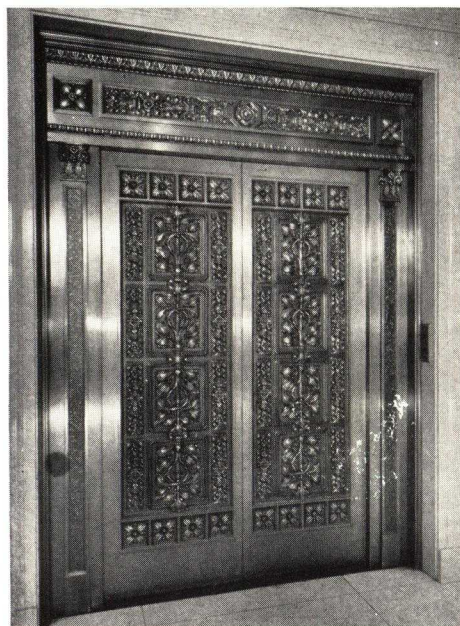
The company's specialty of elevator entrances and cars and general architectural metal work includes all of the usual accessories.

Tyler engineers and designers welcome inquiries for information and assistance in connection with elevator equipment and architectural metal problems.



TYLER ELEVATOR CARS AND ENTRANCES

For Specifications on Elevator Cars and Entrances see page 4



Tyler Elevator Entrance
Carnegie Institute,
Pittsburgh, Pa.

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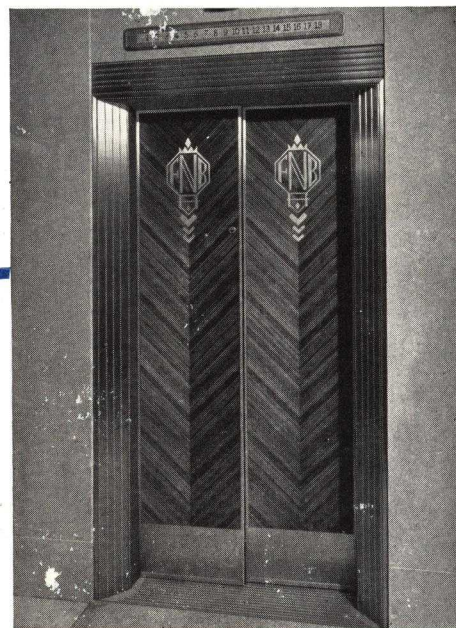
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Tyler Elevator Car
Genesee Bldg.,
Buffalo, N. Y.



Tyler Elevator Car
Fidelity Investment Corp.,
Wheeling, W. Va.



Tyler Elevator Entrance
First National Bank,
Memphis, Tenn.

TYLER ELEVATOR CARS AND ENTRANCES

Tyler Elevator Cars and Entrances are noted for their high standard of quality in both design and workmanship. While serving many of the finest buildings both in this country and abroad, Tyler equipment is equally adaptable to the modest building where the utmost economy must prevail.

Space limits prevent the illustrating of more than a few suggestions. However, an unlimited selection is available. We will be glad to cooperate with architects in working out special designs.

To assist architects and owners in writing a complete elevator entrance and car specification that will assure undivided responsibility, an outline is given below:

ELEVATOR ENTRANCE SPECIFICATION

This form is suggested for typical steel entrances. For other metals specifications will be furnished on request.

SILLS are to be cast iron with safety surface. Grooves planed in the solid casting. Securely fasten to building structure with special steel brackets.

FACIAS of .080" steel, full length of sill, to extend from the top of header to sill of the floor above.

STRUCTURAL SUPPORTS consisting of a 5" x 3" x $\frac{3}{8}$ " steel angle at door closer end and 3" x 3" x $\frac{1}{4}$ " angle at the other end of each entrance are to be fastened to the sill at the bottom and the building beam at the ceiling.

HEADER of 3/16" formed steel plate is to be securely bolted to the structural supports independently of the surrounding wall.

COVER PLATE of .080" steel shall be removable type, constructed in three sections so that the portion over the doorway may be easily removed for access to the hanger mechanism.

JAMBS of .109" steel are to cover the entire thickness of the wall and be fully welded at all corners. They shall be rigidly bolted to the sill and to the header.

TRIM shall be .0625" drawn steel fully welded at all joints and provided with cast plinth blocks.

DOORS are to be built of .0625" sheet steel fully welded to a steel framing. They shall be provided with a sound deadening fireproof filler bonded to both front and rear panels. Reinforcements are to be provided for the attachment of operator mechanisms and hangers.

HARDWARE. The hangers shall have a 3/16" steel plate continuous type housing with ball bearing upper sheaves and ball bearing lower sheaves.

The lower sheaves shall be adjustable for the control of upthrust action.

Bronze handles are to be provided on the hatch side of the door for emergency operation. Escutcheon plates are to be used in connection with the handles to protect the finish.

Adjustable type bumpers made of durable live rubber are to be provided for each entrance. Tyler removable self-adjusting guides are to be furnished on each door. These are to be of a type that will permit the replacement of guides without removing the doors.

FINISH. Sills, structural members, headers and other miscellaneous iron parts of each entrance are to be treated with a rust resisting paint. Jambs, trim, doors, cover plates and facias are to be cleaned of any scale or grease. Then they shall be given a coat of an accepted grade of paint primer, which shall be oven baked. All spot weld marks or other marks resulting from the manufacturing process shall then be filled and baked, after which the materials shall be sanded to a smooth, even surface. The material shall then have two color coats of the best grade of enamel and two protective coats of the best grade of clear varnish. Each separate coat is to be oven baked and rubbed with pumice stone and oil after baking.

GENERAL. All connections and fastenings are to be made invisible from the corridor side. The sheet steel, which takes an enamel finish, is to be cold rolled patent-leveled furniture stock.

ELEVATOR CAR SPECIFICATION

Due to the variation in design and materials it is not possible to present a standard form for elevator specifications.

Where a specific design has not been selected it is customary to include the elevator car under an allowance or appropriation and a form covering this situation is given below.

The elevator contractor will allow and include in his proposal the net sum of \$..... each, f.o.b. the car manufacturer's plant, for the purchase of elevator cars.

Cars are to be of a design to be selected and approved by the architect and owner. The car manufacturer is to be acceptable to the architect and owner.

The elevator car allowance is to include

(Here list the desired car appointments, such as light fixture, hand rail, etc.)

The elevator contractor will accept the cars at the manufacturer's plant and assume complete responsibility for the installation and wiring and will furnish all appointments which are not listed as being part of the car appropriation.

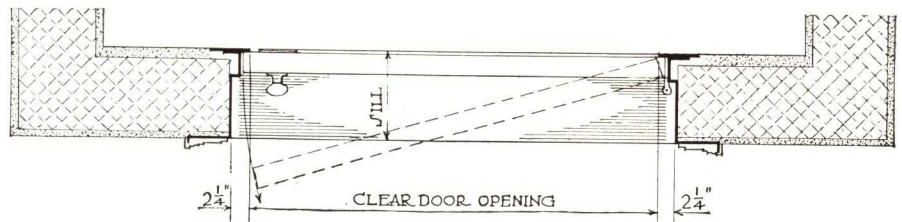
ENTRANCE LAYOUTS

In determining the type or plan of elevator entrance operation, consideration should be given to the nature of the traffic and service desired as well as the space available.

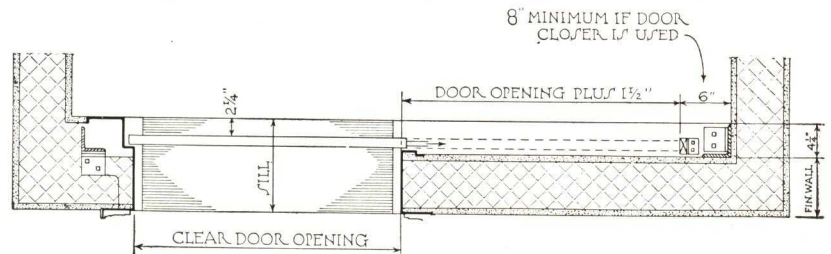
To illustrate, space requirements for center opening doors are twice the door opening plus 12". Two-speed doors require one-half the door opening plus 12".

For identification purposes the word Keyplate is used to mean an elevator entrance plan or layout. Code numbers indicate specific types of Keyplates or plans. Those in more common use are shown on this page.

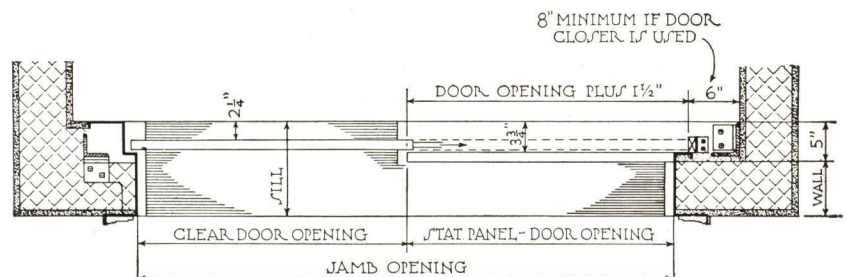
Tyler engineers will be glad to cooperate with architects and building owners in the selection of the type of keyplate best suited to their requirements, or the development of a special one to meet specific needs.



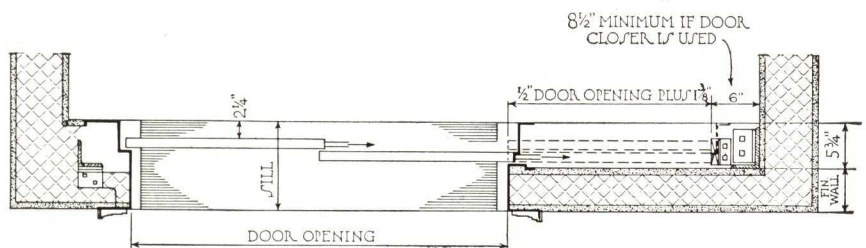
Keyplate K-18 Single Swing Door Flush With Hatch



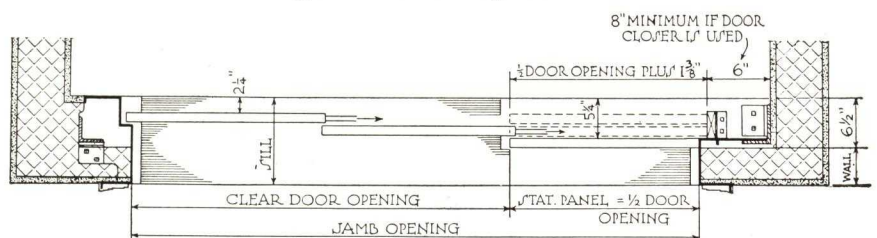
Keyplate K-15 Single Slide Door



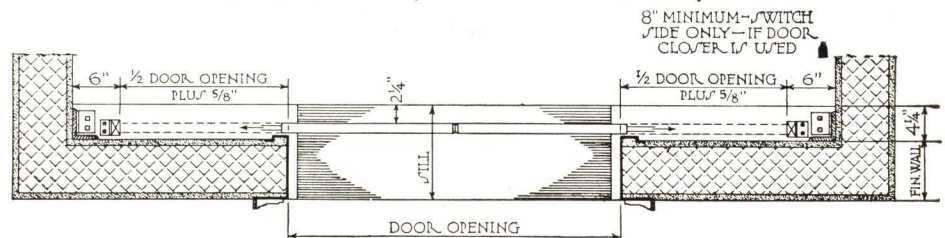
Keyplate K-16 Single Slide Door and Stationary Panel



Keyplate K-19 Two Speed Door



Keyplate K-20 Two Speed Doors and Stationary Panel

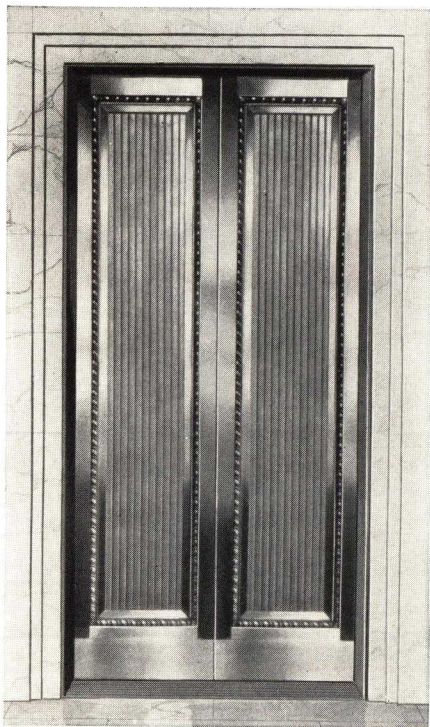


Keyplate K-22 Center Opening Doors

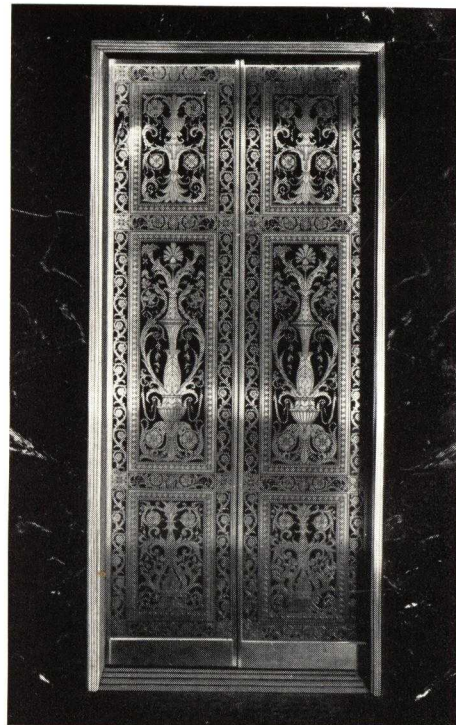
TYLER ELEVATOR ENTRANCES

The Tyler Elevator Entrance designs No. 44, 45, 46, 47, 54, 55 are here shown in enameled steel. There is, however, no limit to the possibilities of combining various metals and materials either in standard or special designs to suit individual requirements.

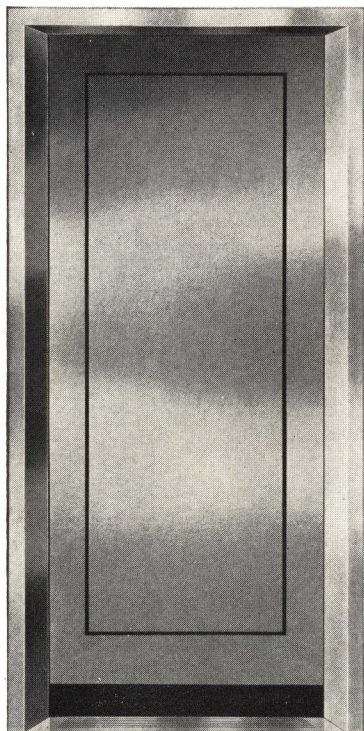
The photographs of installation shown at the top of these pages, indicate the unlimited possibilities in special types of entrances.



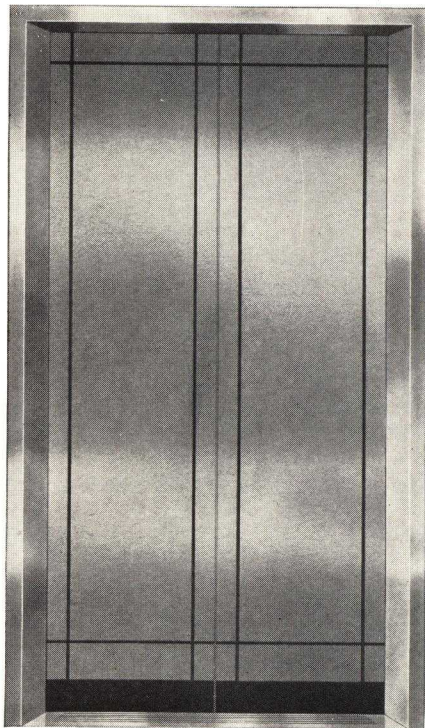
Cast Bronze Elevator Entrance



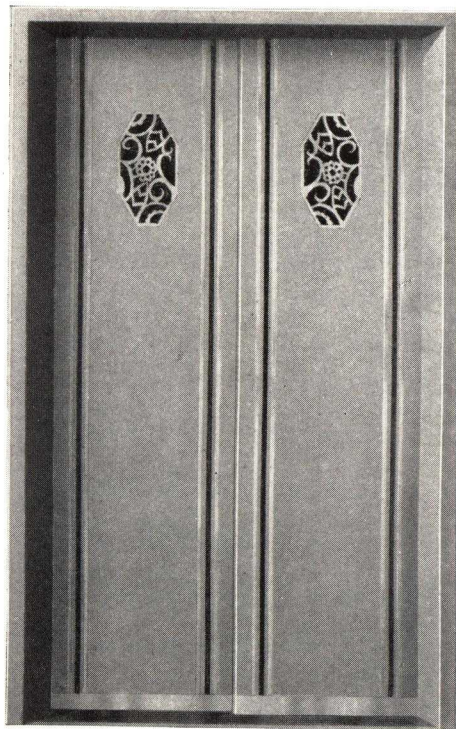
Etched Bronze Elevator Entrance



Design 45

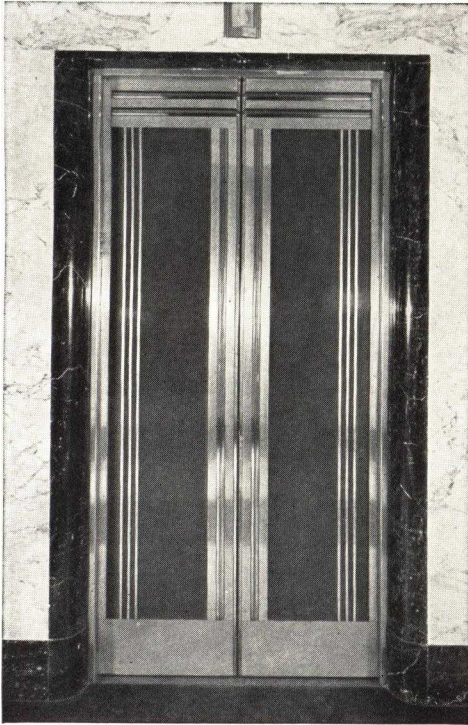


Design 47

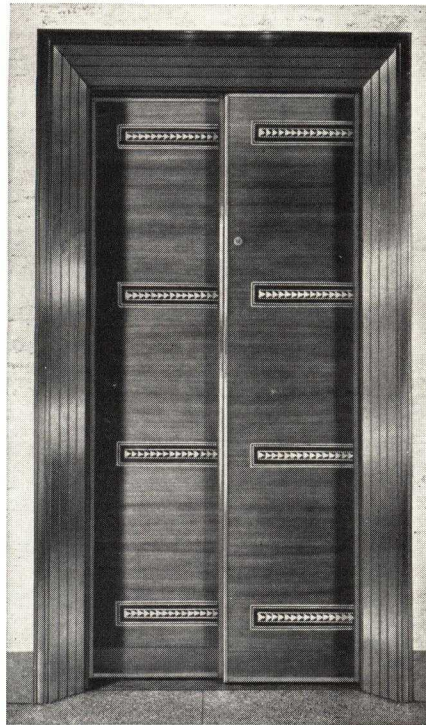


Design 54

TYLER ELEVATOR ENTRANCES



Enameled Steel, Bronze and Nickel

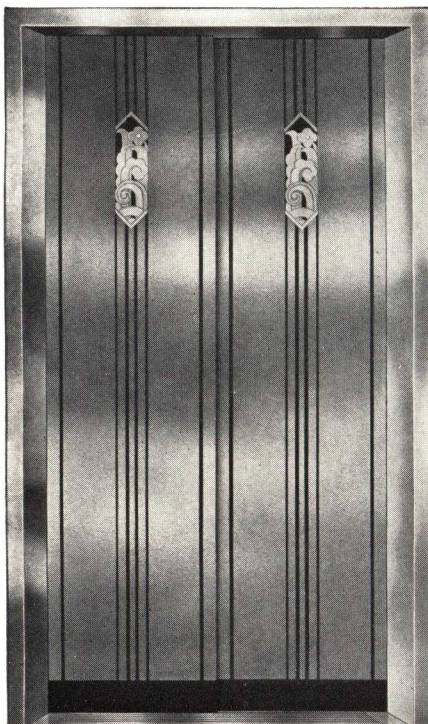


Me-Tyl-Wood Elevator Entrance

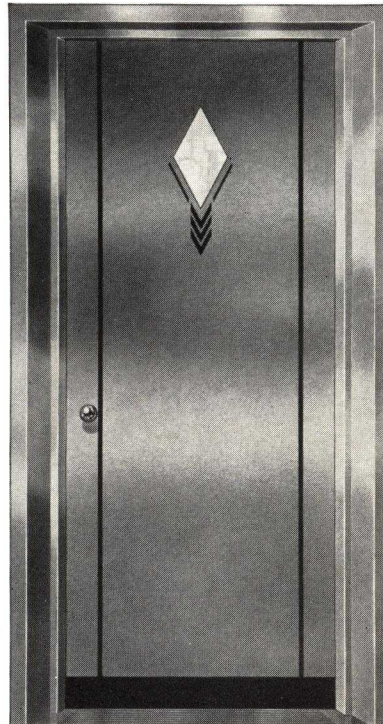
The Tyler designing and engineering staff, with its practical experience in producing special equipment for leading buildings is at the disposal of architects, contractors and building owners.

In many cases this service enables the customer to achieve unusual effects most economically.

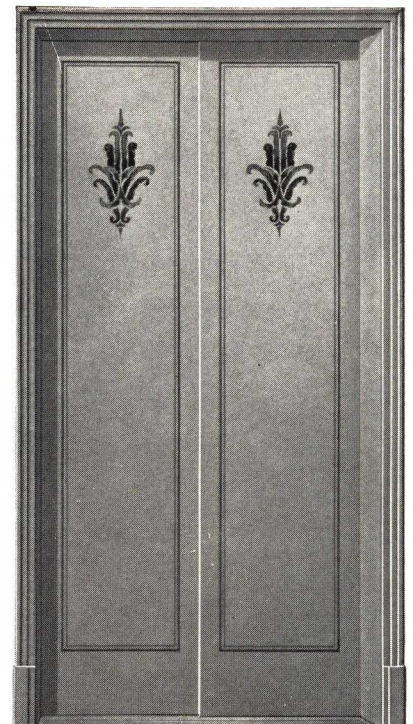
For the various types of elevator door arrangements see key plates on page 5.



Design 46

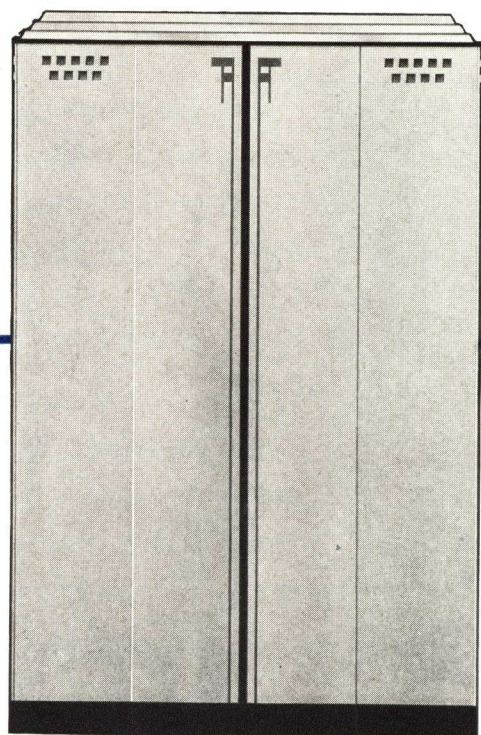


Design 44

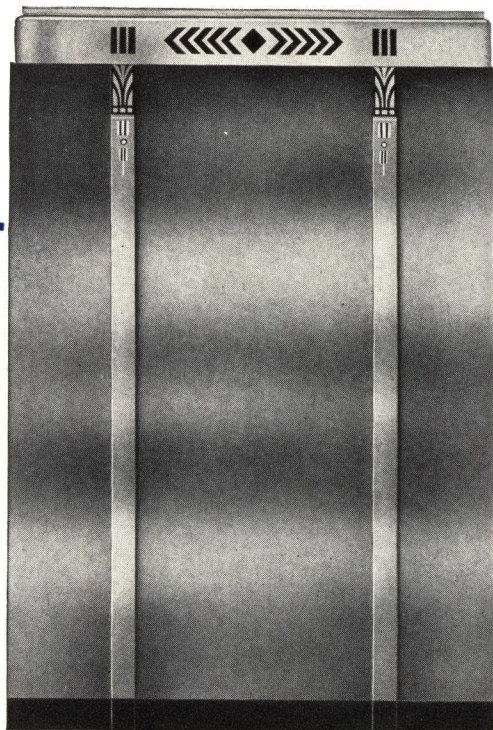


Design 55

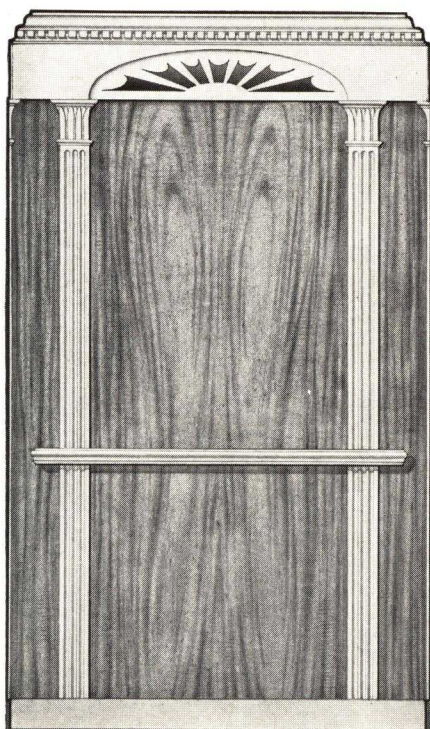
ELEVATOR CARS



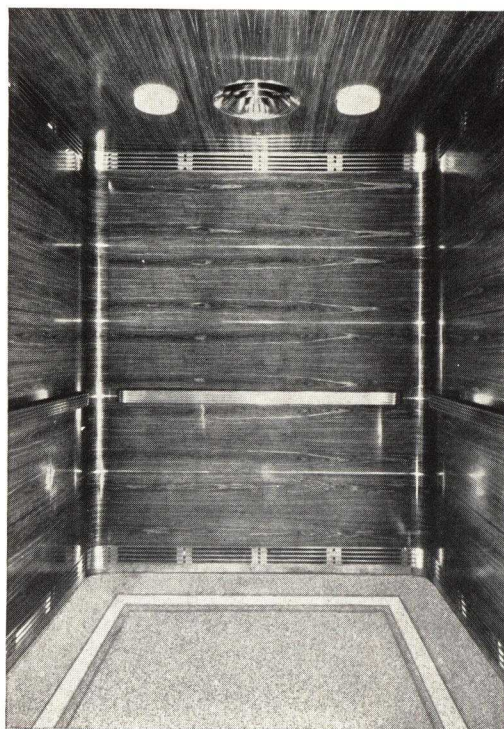
Design C-538



Design C-533



Design 543



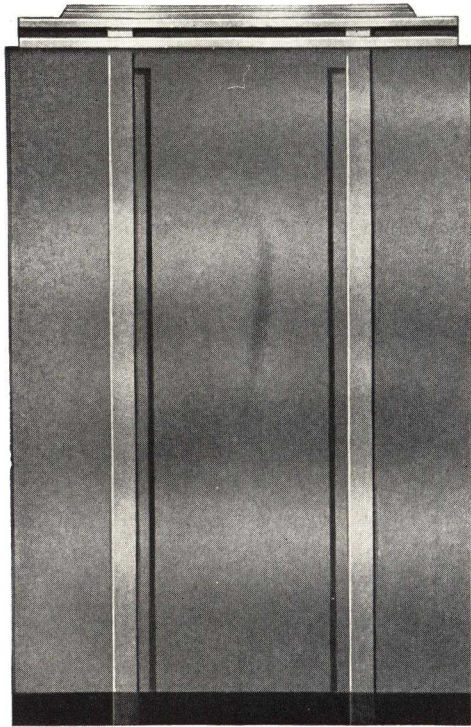
International Building, Rockefeller Center

Most effective results are secured by the combined use of Tyler Elevator Cars and Entrances.

A thoroughly skilled group for every craft involved is available within our own plant, assuring undivided responsibility in producing a perfect installation.

From the very simple and least expensive to the most elaborate designs,

ELEVATOR CARS



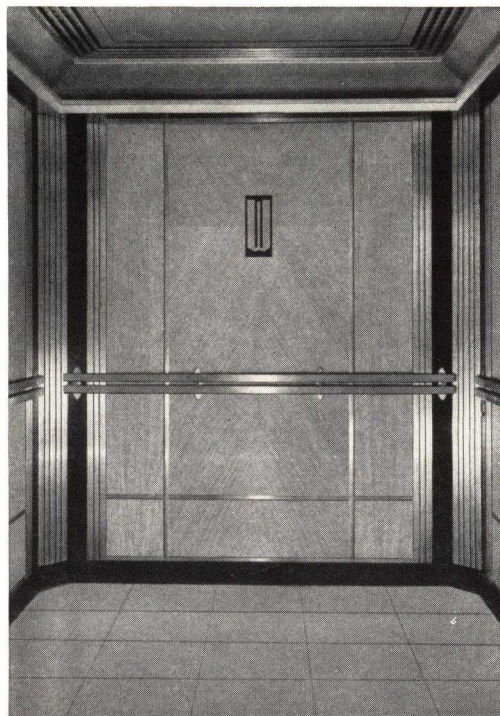
Design 534



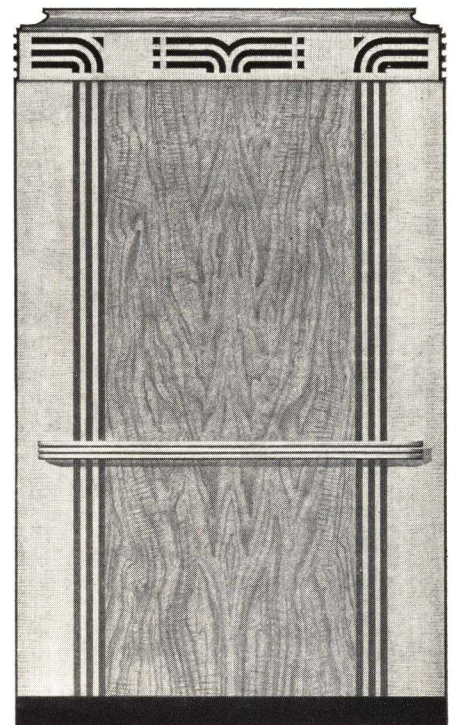
Design C-541

Tyler Elevator Car values are outstanding. This equipment is furnished in all the metals and woods, including Me-Tyl-Wood, and in all combinations of these materials.

Only a few of the many available designs are illustrated. Complete information and additional designs for any purpose will be gladly furnished.

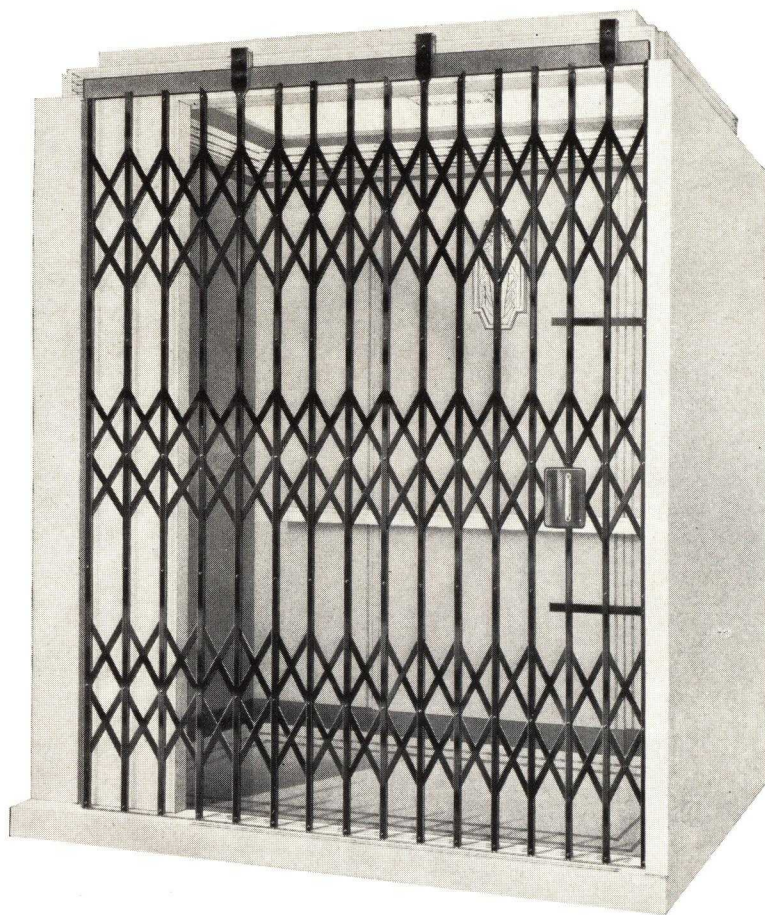


H. P. Wason and Company, Indianapolis, Ind.



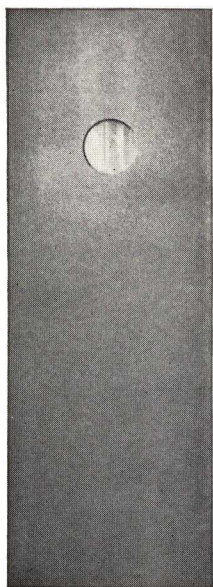
Design C-540

ELEVATOR CAR GATES AND DOORS

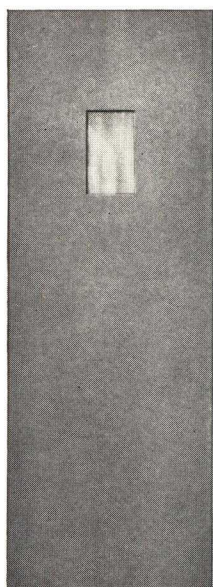


Car Gate
EX-G-4

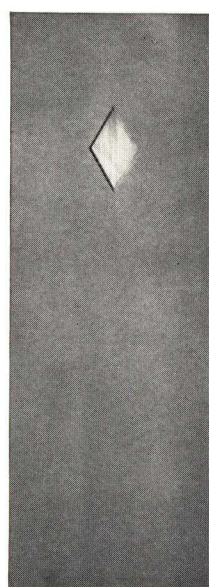
In many localities code requirements call for doors or gates at the car opening. Gates are used in many instances where space available is limited. Doors can be furnished where desired to harmonize with cars and entrances in materials and finishes.



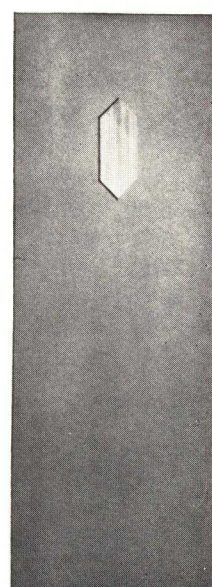
Car Door EX-D-1



Car Door EX-D-2

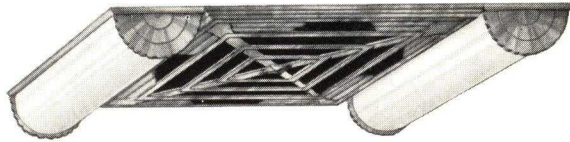


Car Door EX-D-3

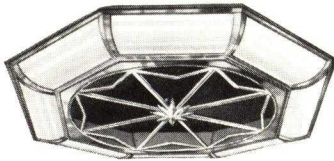


Car Door EX-D-4

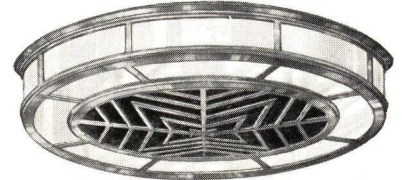
ELEVATOR CAR LIGHTING AND VENTILATING FIXTURES



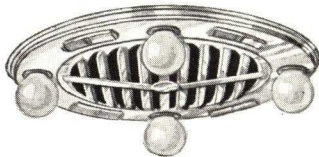
TY-Fandolier EX-TF-8



TY-Fandolier EX-TF-12



TY-Fandolier EX-TF-11



TY-Fandolier EX-TF-1

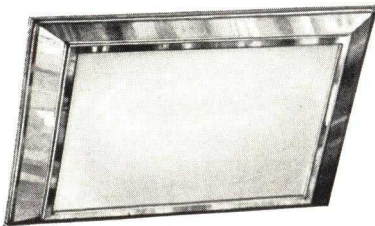


TY-Fandolier EX-TF-2

Proper car lighting and ventilation are most important in considering the comfort and satisfaction of passengers.

The Ty-fandolier, a combination lighting and ventilating unit, is a development to serve these two purposes.

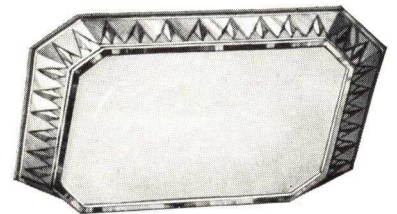
In these fixtures the distribution of air is uniform and in pleasing volume. the lighting is regulated to suit individual car conditions.



Fixture EX-L-6



Fixture EX-L-22



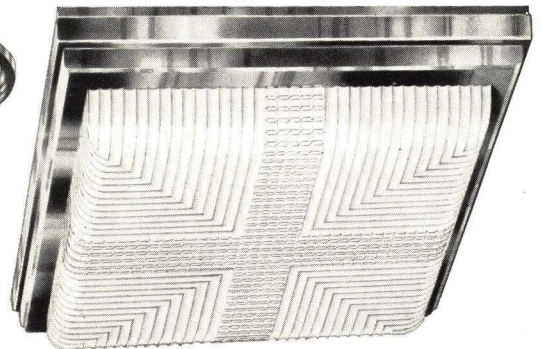
Fixture EX-L-1



Fixture EX-L-14

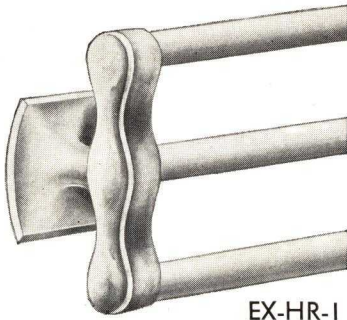


Fixture EX-L-5

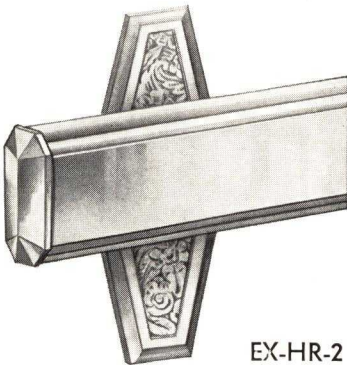


Fixture EX-L-20

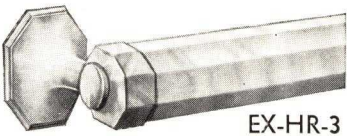
ELEVATOR CAR ACCESSORIES



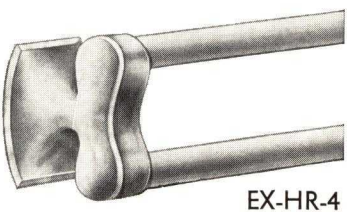
EX-HR-1



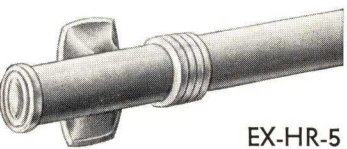
EX-HR-2



EX-HR-3



EX-HR-4



EX-HR-5



EX-HR-6

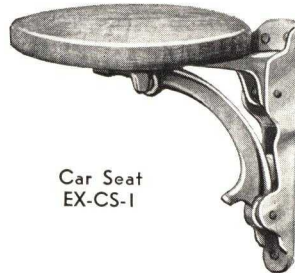
The general effect of the elevator car is materially enhanced through the use of properly designed accessories.

The standard Tyler accessories here illustrated are applicable both to new cars and for the modernization of existing equipment.

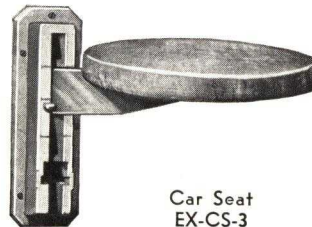
Designs will be gladly submitted to suit your individual requirements.



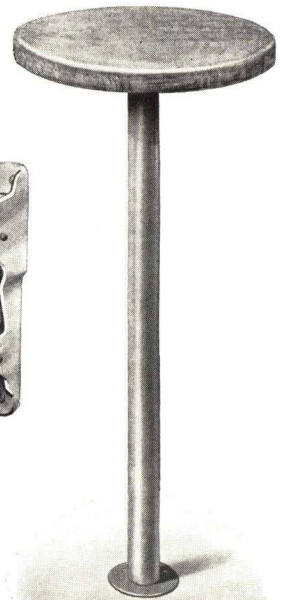
Car Seat EX-CS-2



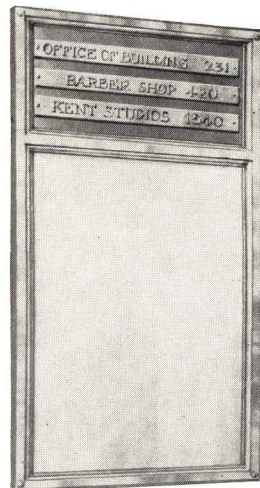
Car Seat
EX-CS-1



Car Seat
EX-CS-3



Car Seat EX-CS-4



Certificate Frame
EX-CF-1



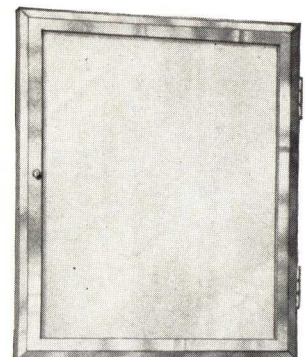
Mirror
EX-VM-6



Mirror
EX-VM-3



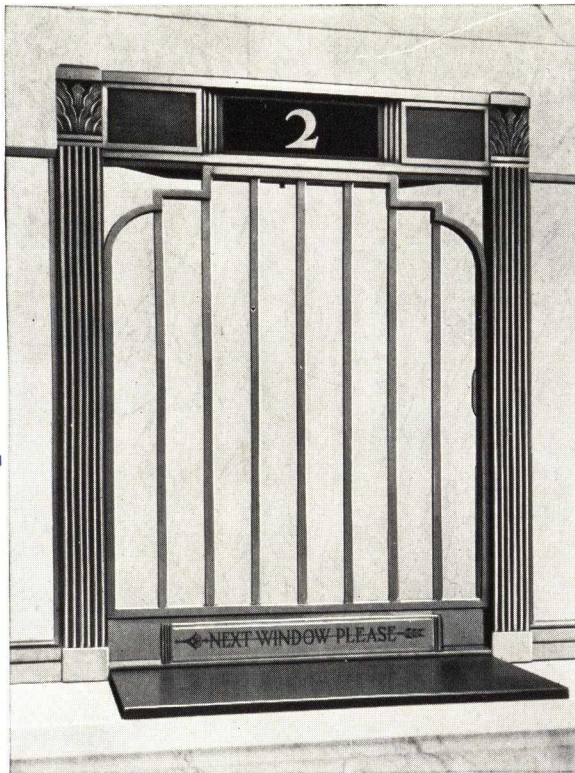
EX-OC-1



Certificate Frame
EX-CF-2

ORNAMENTAL IRON AND BRONZE

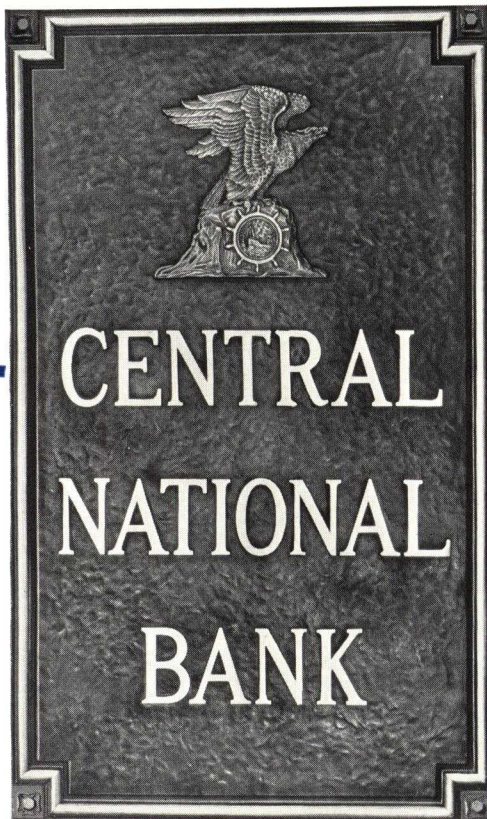
Tyler ornamental iron and bronze products include spandrels, railings, stairways, window frames, name plates and lamp standards in addition to the equipment here briefly illustrated.



Cashier's Wicket

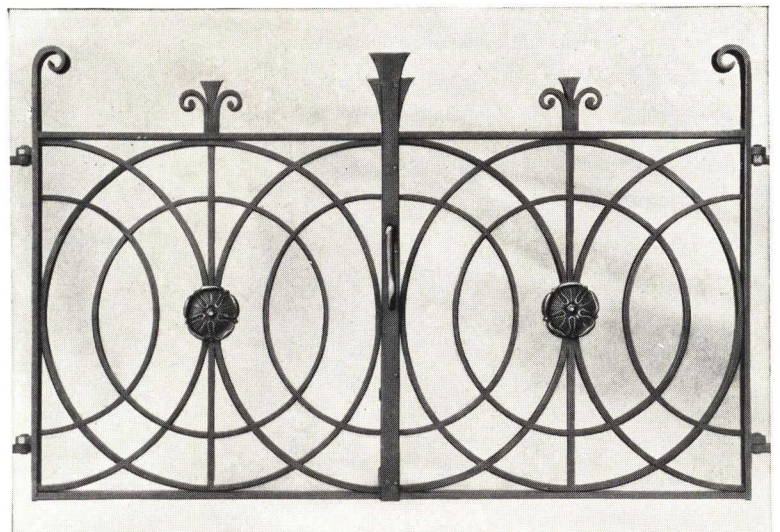


Mail Box Cover, Designed to Match Cast Bronze Elevator Entrances (See Page 6)



Bronze Tablet

Special emphasis is placed on the method of installation so essential to this type of work.



Wrought Metal Gate

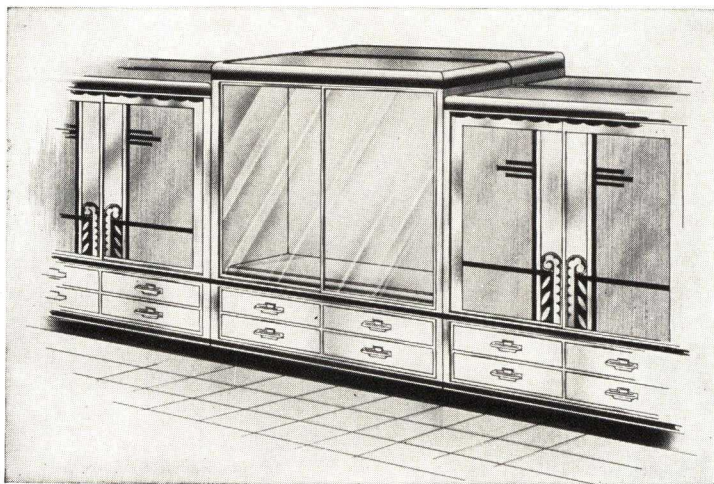


DISPLAY

Tyler display cases add immeasurably to the appeal of merchandise.

They are designed so as to provide a neutral background with maximum visibility and compactness and

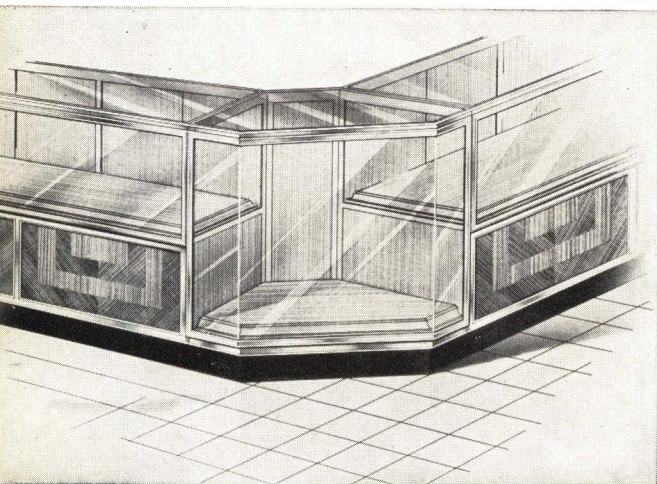
Aluminum and Nickel Display Cases, G. Fox and Co., Hartford, Conn.



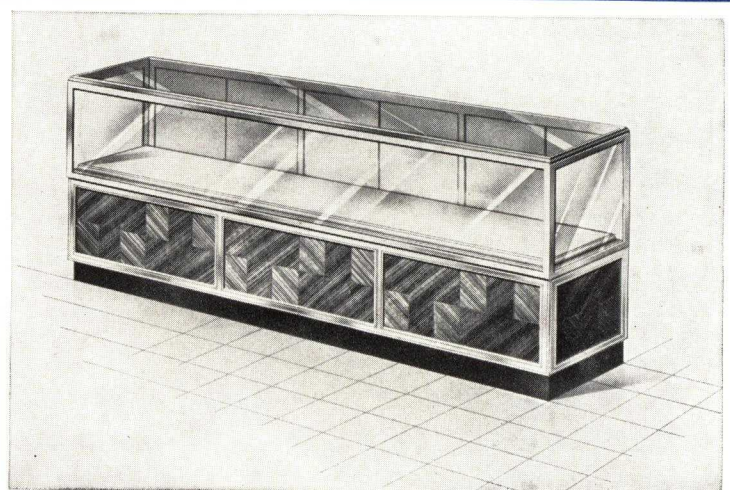
Design SA-105



Aluminum Display Table



Design SB-103



Design SD-102

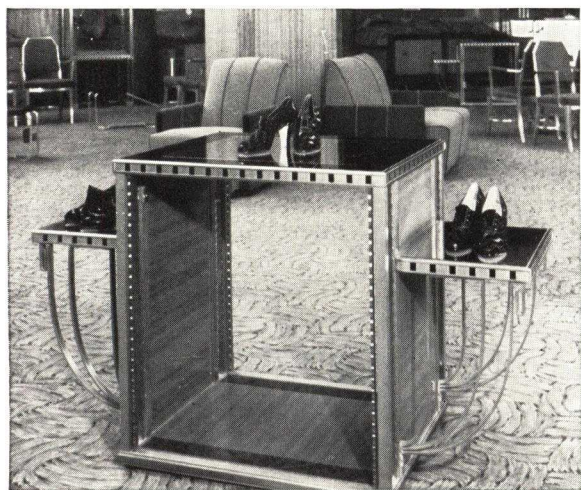
CASES

to focus the attention on the goods themselves.

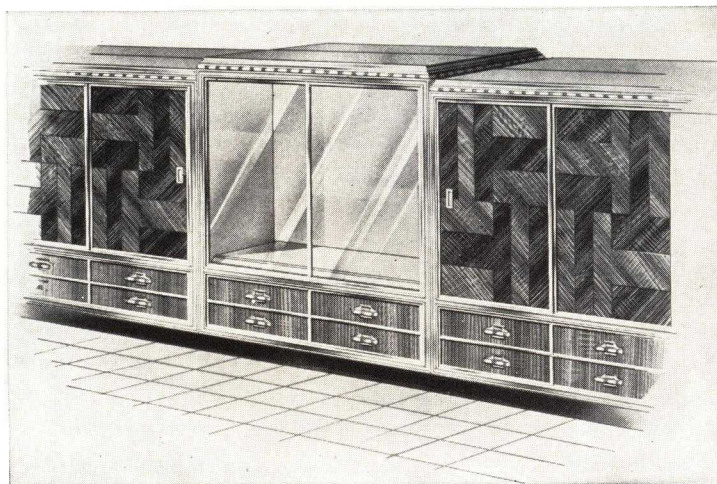
Tyler display cases are available in a wide range of metals and finishes, in woods, combinations of wood and metal, and Me-Tyl-Wood.



Aluminum Display Cases and Fixtures, John Wanamaker Store, Philadelphia

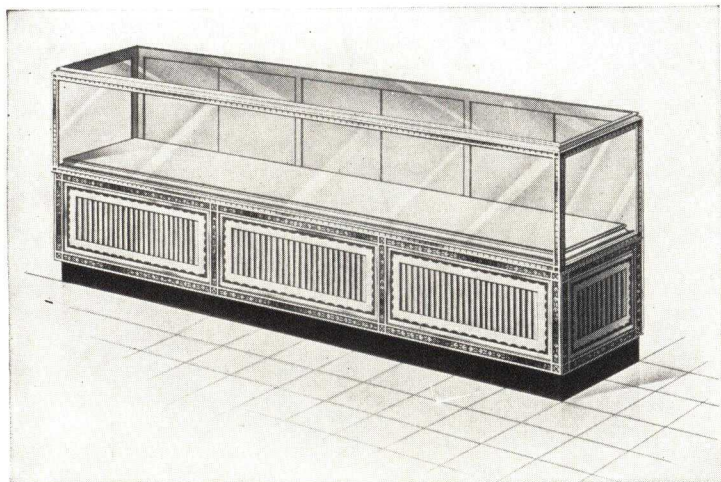


Aluminum and Wood Display Table

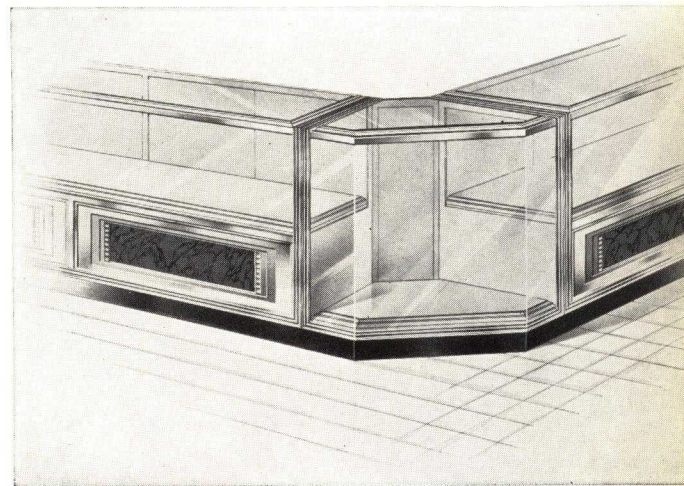


Design SA-101

15



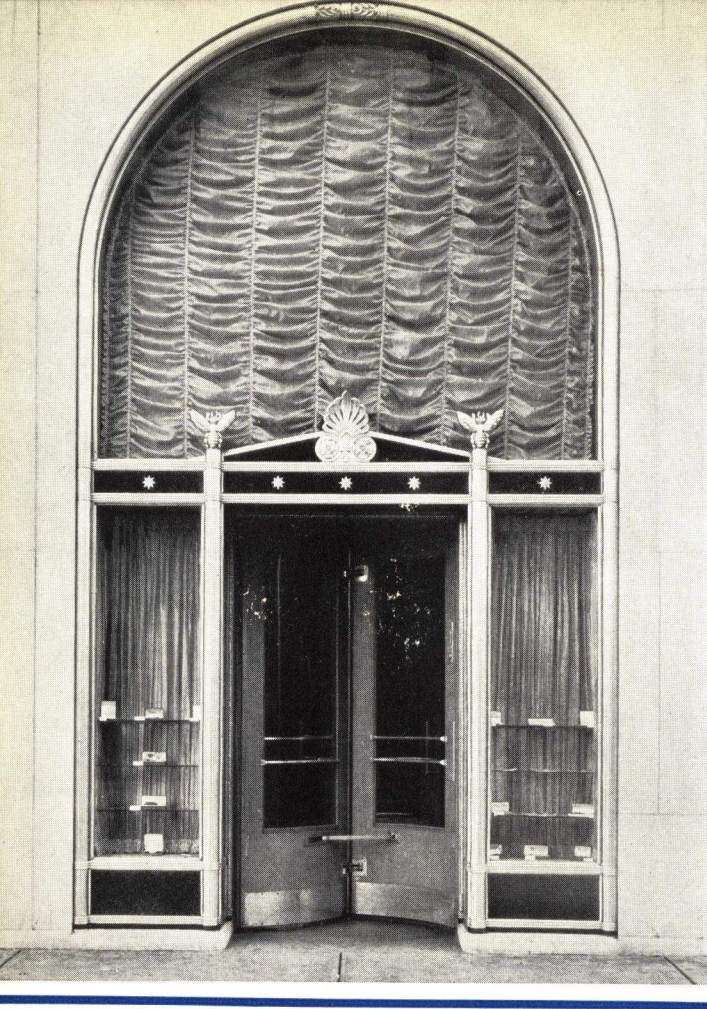
Design SD-105



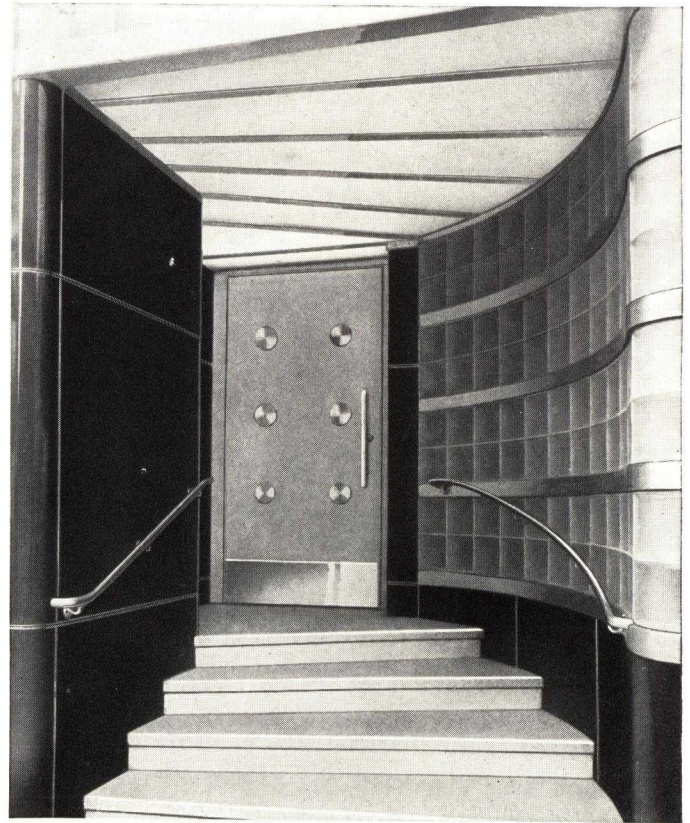
Design SB-104

BUILDING

Most important to every building is its entrance. Tyler entrances are available for every type of building. Treatment in



Store Front Showing Combination of Natural Finished Metals With Colored Background



Grill Entrance Featuring Natural Metals With Glass Brick

Marquise Showing use of Illuminated Name and Special Lighting



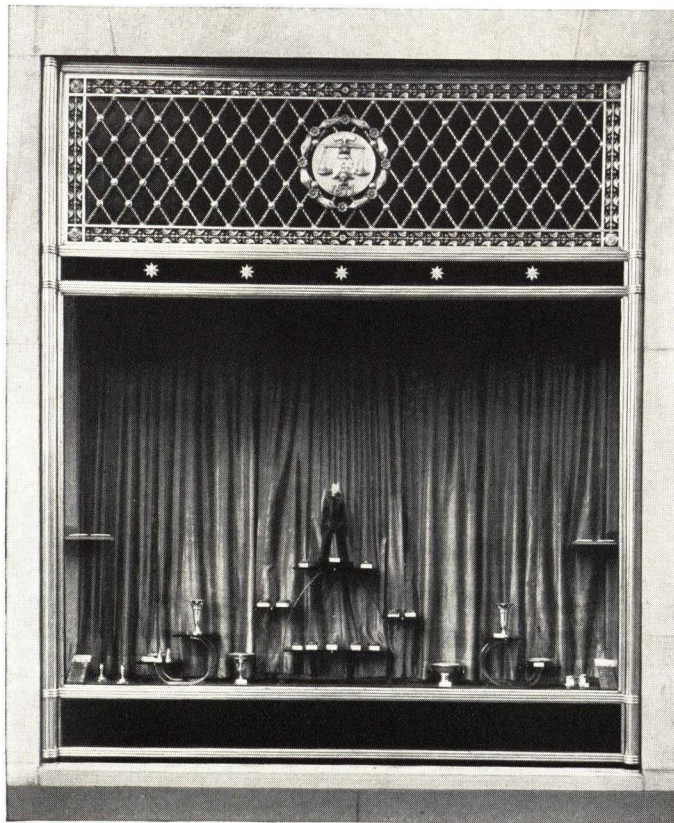
MARQUISES

Tyler marquees are furnished in both conventional and modern designs in metal and combinations of metal and glass with lighting arrangements to suit the type of installation.

Owners of stores, office buildings, hotels, theaters, etc., can greatly increase the drawing power of window displays by installing properly designed marquees. Our designing and engineering department will be glad to cooperate.

ENTRANCES

harmony with the building to suit every condition is obtainable in any of the architectural metals.



Store Front With Ornamental Cast Grill



Building Entrance Featuring a Combination of Cast and Extruded Members With Glass

STORE FRONTS

Many builders have recognized the value of modernizing their store fronts.

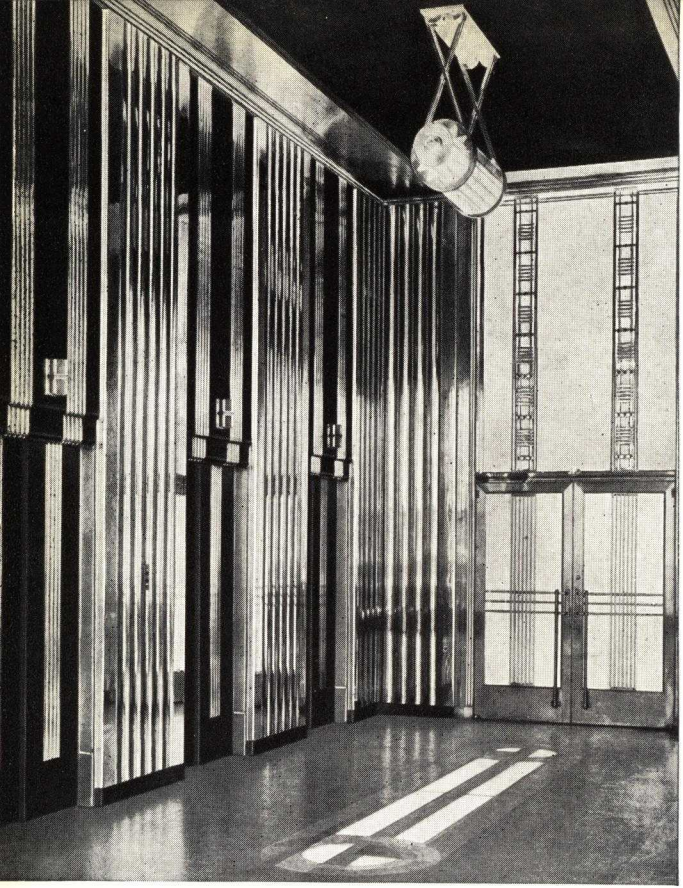
Modernistic or the more conservative treatments can be procured in all of the various metals.

Designs for all types of store fronts or specialty shops are available.

Services of our designing and engineering departments are offered to assist on developing special designs.



Continuous Type Marquise with Special Lighting Effects



Lobby Featuring Metal Work Against Colored Background

ARCHITECTURAL

The use of metals as part of the interior decorative treatment of modern buildings is increasing and the wide variety of special materials available offers an unlimited choice of pleasing combinations.

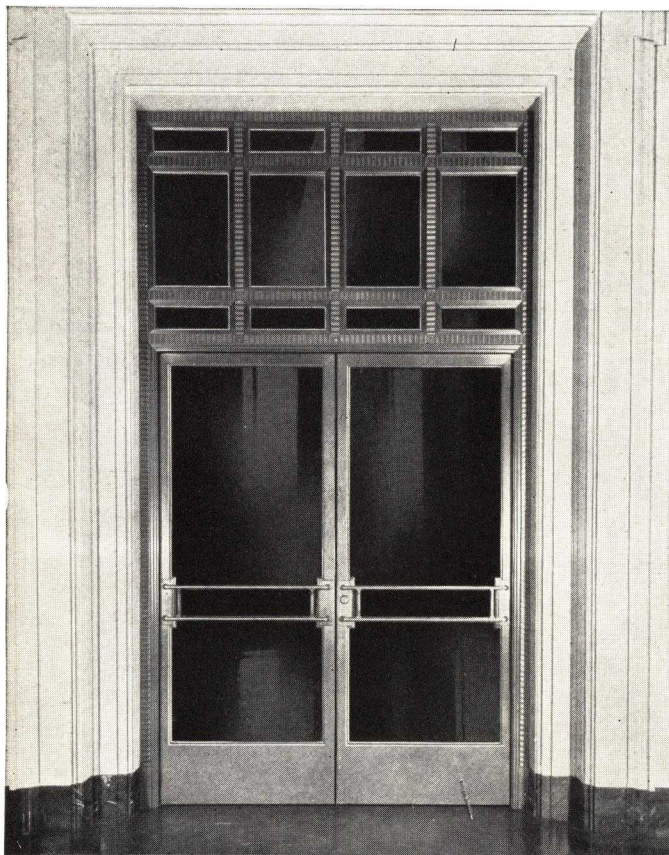
Metal is successfully combined with many



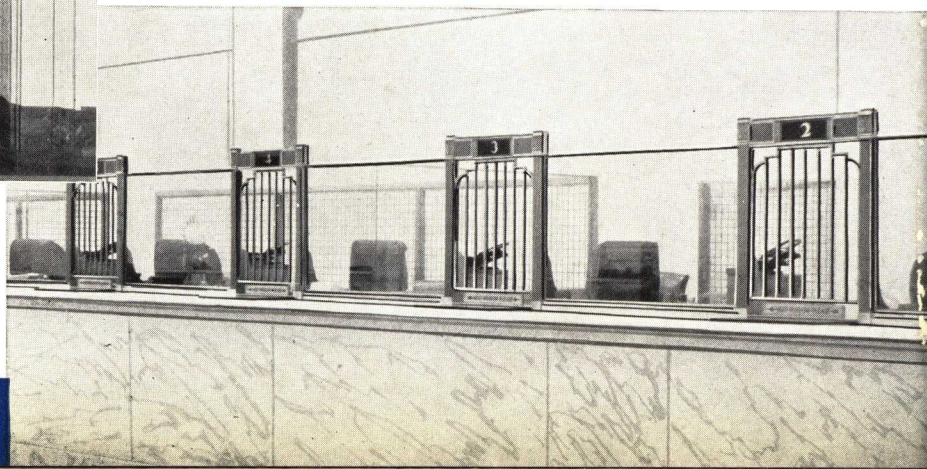
Exhibit Showcases

THE W. S. TYLER COMPANY

Cashier's Wickets



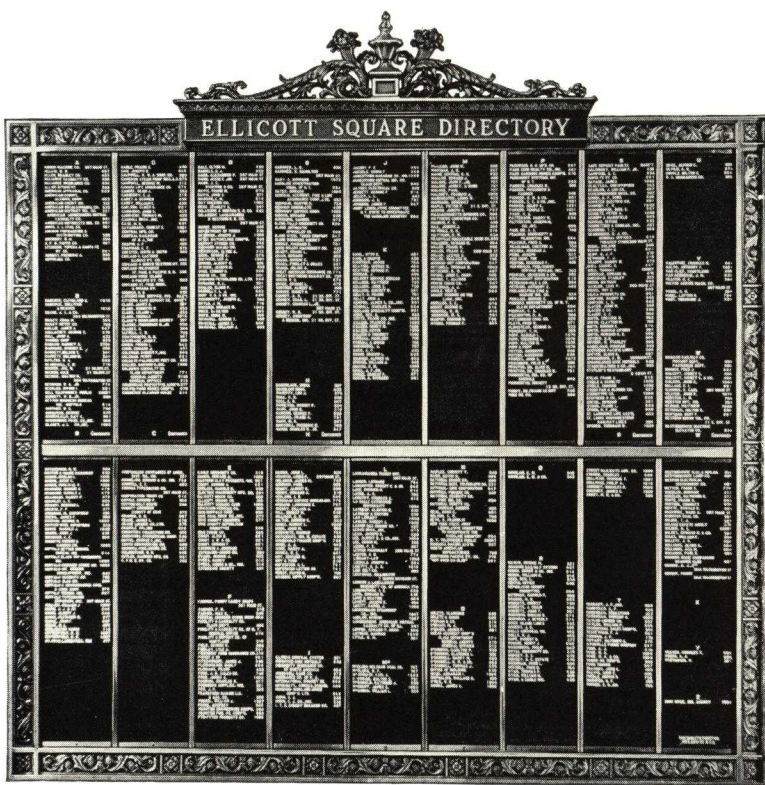
Interior Entrance Door



METAL WORK

other materials such as glass and plastics. Unusual effects may be secured by combining various materials and finishes.

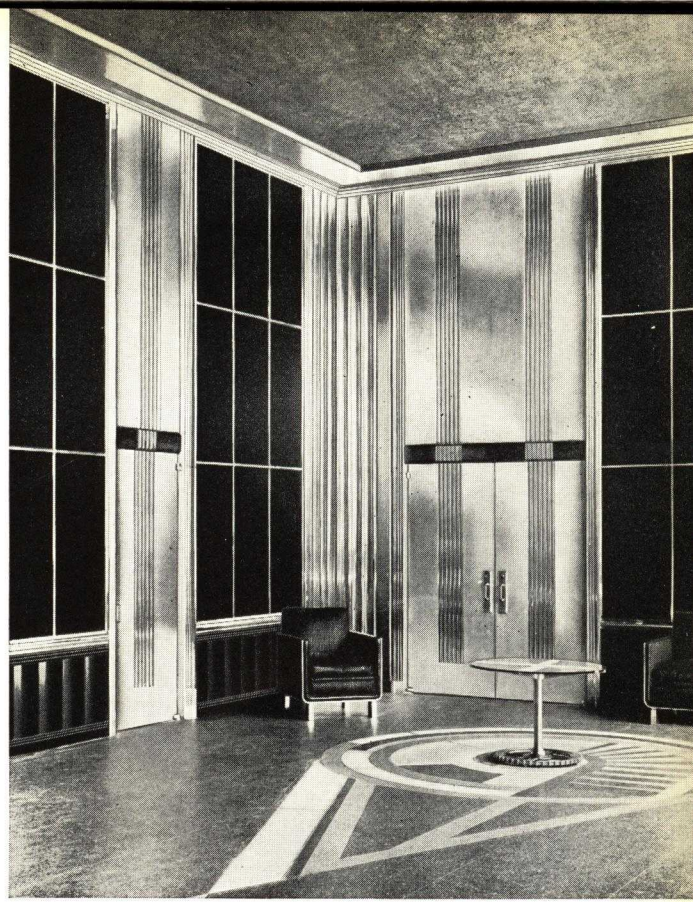
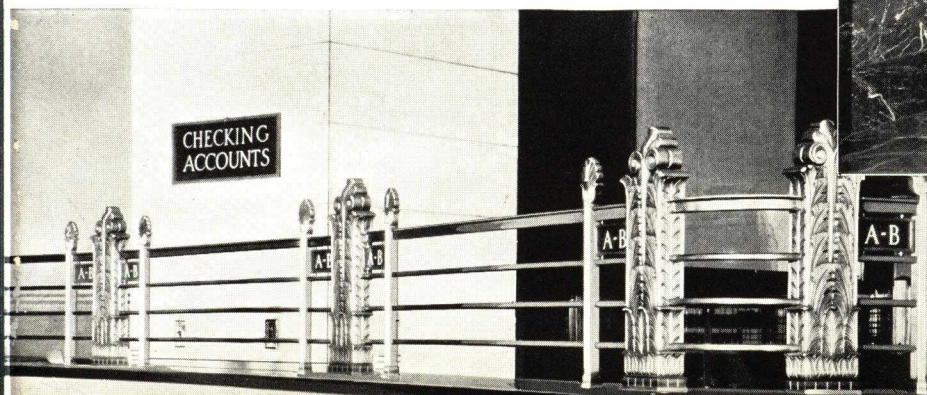
Tyler's field organization takes complete responsibility for the proper installation of this equipment.



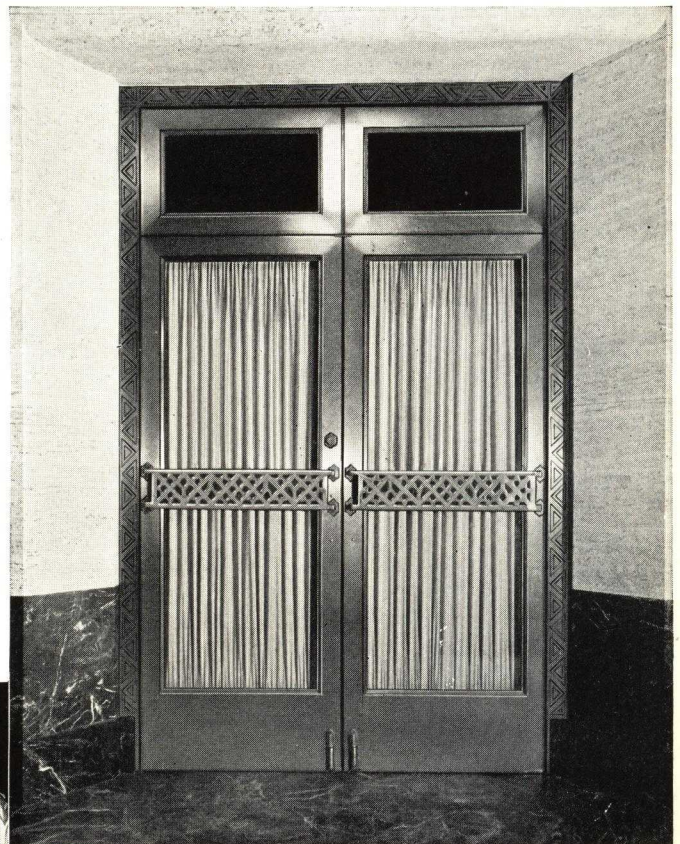
Building Directory

THE W. S. TYLER COMPANY

Bank Counter Screen



Reception Room. Various Metals May Be Combined For This Purpose



Interior Entrance Door

**SALES
OFFICES**

•
BOSTON, MASS.
20 Providence Street

•
CHICAGO, ILL.
310 So. Michigan
Avenue

•
NEW YORK, N. Y.
247 PARK AVENUE

•
PHILADELPHIA, PA.
60 S. Broad Street

•
ST. CATHARINES
Ontario, Canada

•
LONDON, ENG.

TYLER

•
THE W. S. TYLER COMPANY • CLEVELAND, OHIO

TRUSSBILT

DIVISION OF SIEMS BROS., INC.

Manufacturers of Hollow Metal Doors, Frames and Trim

2575 Como Avenue
ST. PAUL, MINN.

3303 Como Avenue, Southeast
MINNEAPOLIS, MINN.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

TRUSSBILT STEEL FLUSH DOORS.
HOLLOW METAL PANEL DOORS.
ELEVATOR DOORS and FRAMES.
HOLLOW METAL BUCKS, FRAMES and TRIM.



centers, both vertically and horizontally over the entire surface on both sides.

The edges of doors are finished flush and the top and bottom of doors have a 16-gauge channel reinforcement welded in place.

All necessary mortises and reinforcements for hardware are provided, and all Trussbilt flush doors are properly sound insulated.

Experience and Service

Trussbilt products represent the latest and best in Hollow Metal construction as developed during our many years of designing and fabricating experience. Our enviable reputation for responsibility, integrity and high quality of materials and workmanship is your guarantee of satisfaction when specifying Trussbilt Products.

Trussbilt facilities and service make possible a satisfactory installation of high grade Hollow Metal.

Flush Doors

The steel flush door construction, as developed by Trussbilt engineers, is an outstanding improvement in the history of Hollow Metal Industry and Trussbilt flush doors give the designer a smooth and unbroken surface for creative design and decoration, which makes Trussbilt flush doors particularly attractive when used in hotels, apartment houses, hospitals, office buildings and schools.

Construction

Trussbilt flush doors consist of an outer shell of 18-gauge steel which is reinforced with a truss-formed inner-core of 28-gauge



steel, which core is spot welded to the outer shell at not more than 3 inches on

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Underwriters' Labels

Trussbilt flush doors, paneled doors, bucks, and frames can be furnished with Underwriters' labels where so required or specified.

Specifications

Flush Doors—All flush doors where shown on plans or schedule shall be Trussbilt flush doors as manufactured by TRUSSBILT, of St. Paul, Minn.

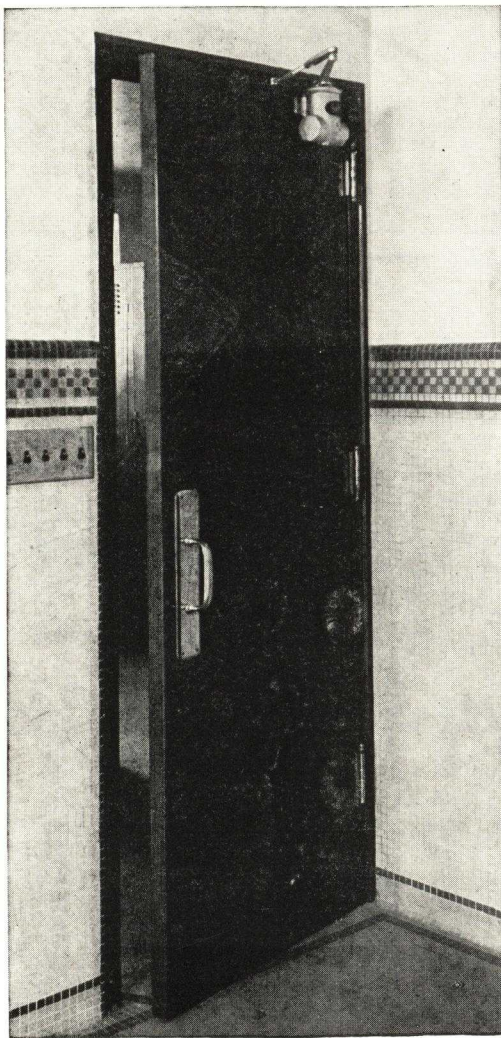
Doors requiring glass panels shall have openings equipped with removable mouldings.

Hardware is to be furnished by others and all mortised hardware will be delivered prepaid to the door manufacturer for application without additional cost, the surface applied hardware, such as checks, holders, etc., to be applied at the building by the erector.

Finish

Before doors are painted they shall be thoroughly cleaned, completely immersed in a rust-inhibiting primer and baked, so the interior as well as the exterior is completely covered; follow with three coats for plain color work and five coats for grained finishes, all to be

baked on. Final coat to be rubbed to an eggshell gloss.



Trussbilt Flush Steel Door Unit

TRUSSBILT

UNITED METAL PRODUCTS DIVISION

DIEBOLD SAFE AND LOCK CO.
CANTON, OHIO
REPRESENTATIVES IN PRINCIPAL CITIES

SPECIFICATIONS FOR U. M. P. STANDARD HOLLOW METAL DOORS AND TRIM

Hollow metal doors are made of No. 18 US gauge steel, patent leveled, full finished sheets. Stiles and rails are formed of one piece of metal and interlocking channel is inserted in the stiles and rails providing reinforcement and also an interlocking member for the panel moulding.

All stiles and rails have cork inserts of suitable size to prevent metallic sound.

Panels—Two sheets of No. 18 US gauge steel with a filler of asbestos inserted in all labeled doors to make over-all panel thickness of 5/16 in. Panels are inserted in a deep groove provided in panel moulding. Panel mouldings are neatly mitered or coped at all corners and intersections are welded. All seams and joints are welded their entire length. All joints are made perfectly level and invisible. Reinforcing bars, drilled and tapped for hinges, and of sufficient length and thickness are welded in hinge stile at all hinge cutouts. Reinforcing plates are spot welded in lock stile to receive locks, and additional reinforcements are placed in door to receive such hardware as is specified.

The construction noted above has been listed by the Underwriters' Laboratories, Inc. and has the Underwriters' approval.

Non-labeled doors are of similar construction without asbestos lining.

Jambs—Are made of the same quality steel as described for doors. No. 18 US gauge steel for walls 7½ in. thick or less and No. 16 US gauge steel for walls more than 7½ in. thick. Jamb are formed to detail and made to fit accurately over bucks, all intersecting members are neatly coped and fitted before shipment.

Casings—Are made from cold rolled strip steel. All casing corners and miters are neatly welded and ground off to insure

invisible joints. Casings are applied to frame with concealed clips.

Transom Sash—Is constructed similar to doors and properly reinforced for hardware.

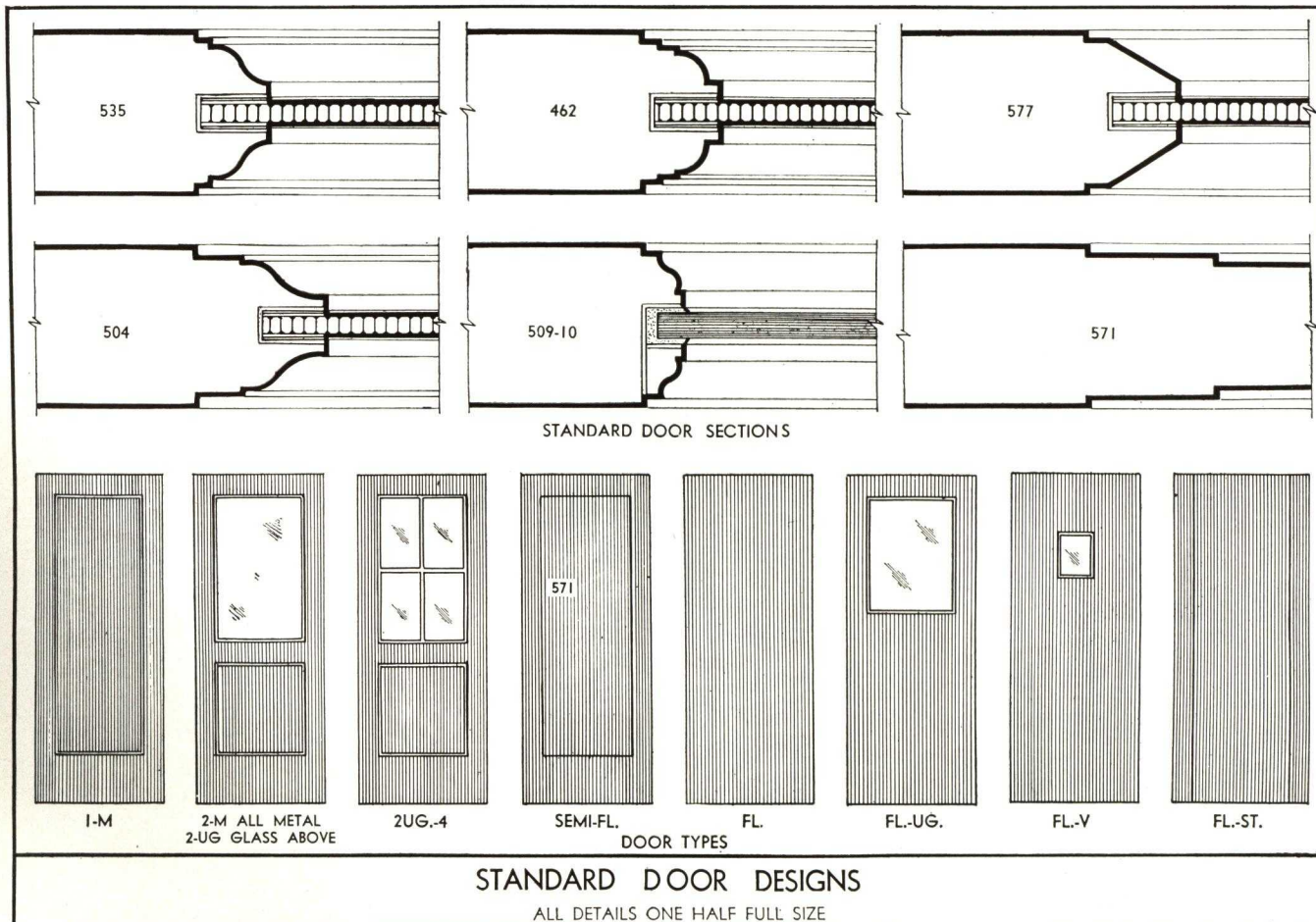
Rough Bucks—Are made from 14 US gauge steel. Intersecting joints are accurately welded, adjustable crimped or corrugated anchors will be provided with rough bucks for building in wall. Bucks will receive dip coat of paint before shipment.

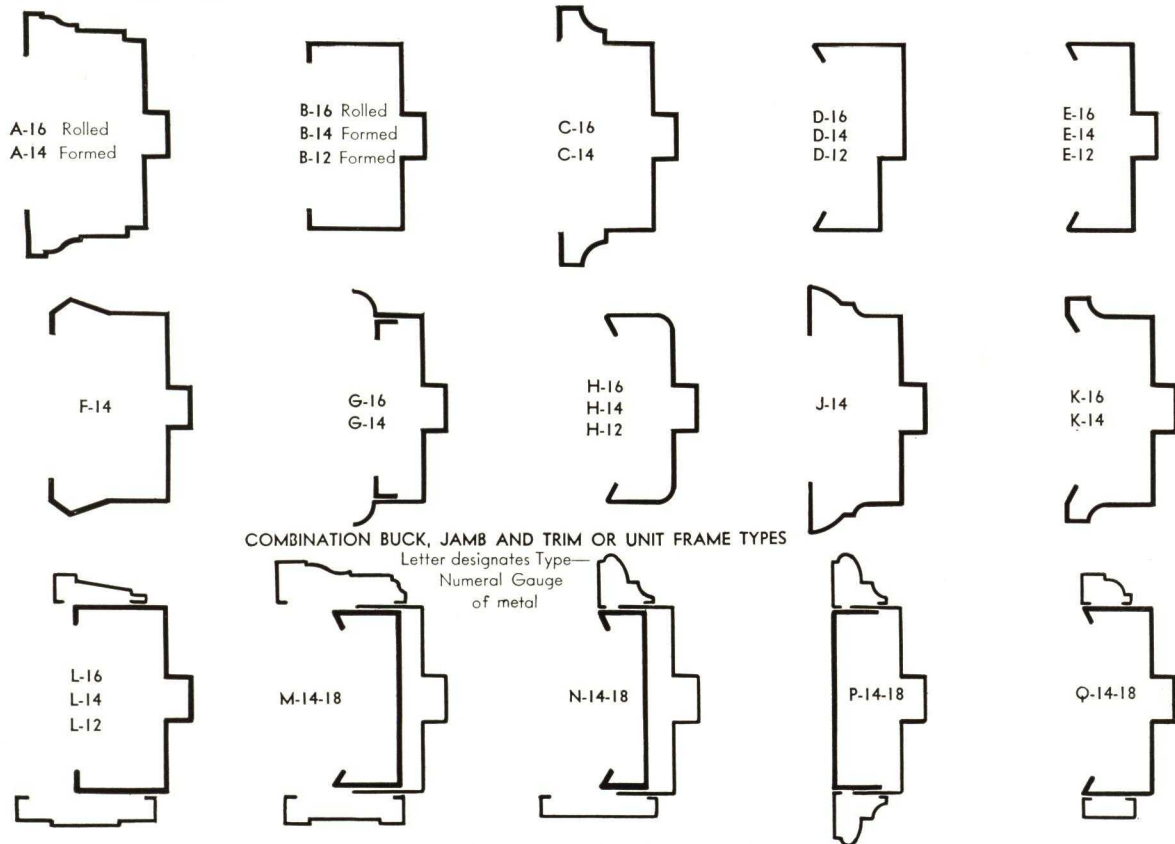
Unit Frame—Combining buck, jamb and trim in one unit is made from No. 12, 14 or 16 gauge steel of the same quality as described for doors. Combination frames are notched and reinforced for hardware. The frames will receive a baked-on prime coat, the finishing coats to be applied at building by painting contractor.

Finish—After fabrication, doors receive a dip coat of rust resisting enamel, the inside of panels are painted before being assembled, the dip coat is baked on and a filler is then applied over all uneven surfaces and baked. The filler coat is ground and sanded perfectly smooth. Two coats of high grade mineral paint are then applied, each baked on separately. All grained finishes receive two coats of best baking varnish—each coat is baked. All finished work is rubbed to an eggshell gloss.

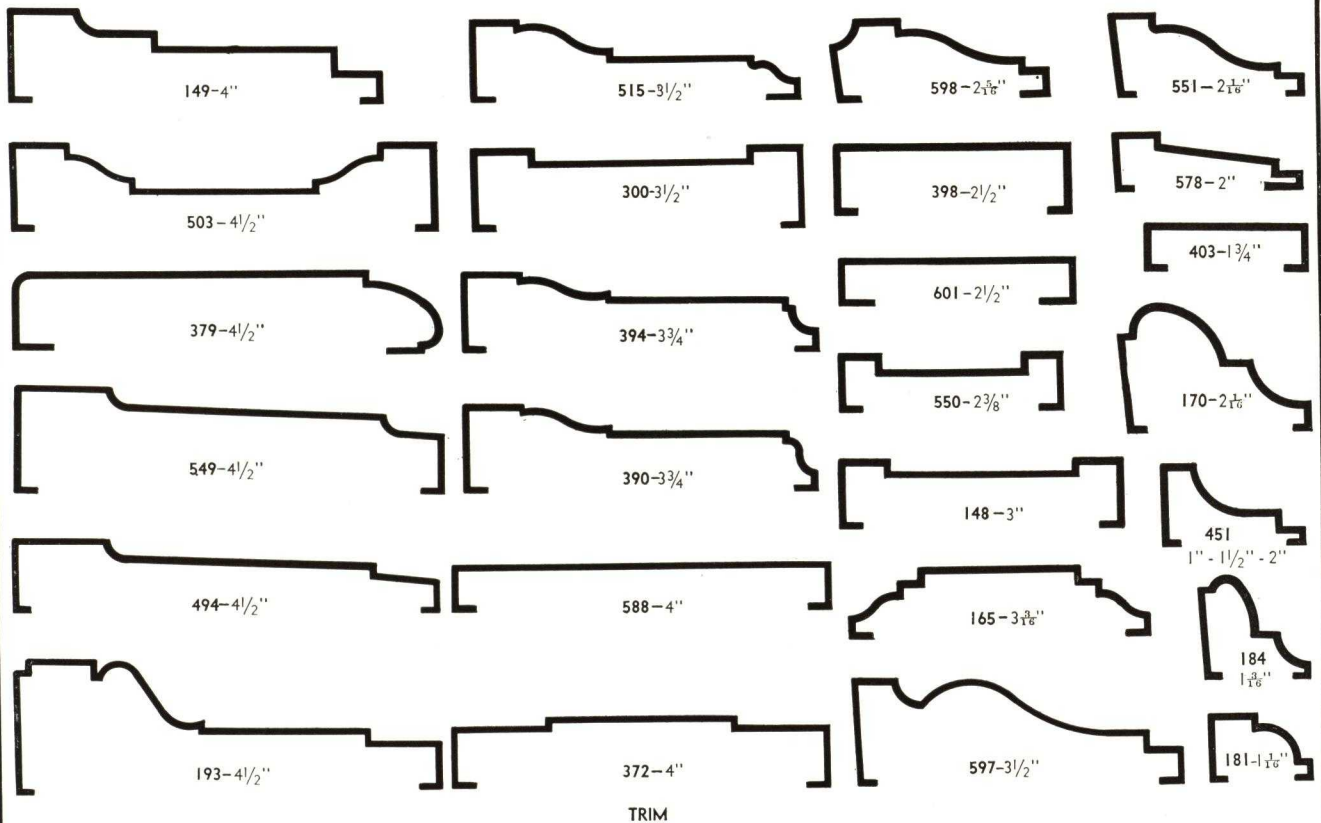
Jamb, casings and mouldings are finished in the same manner as the doors.

Hardware—Applied to doors at factory before shipment, except where crating of materials might be interfered with. Drilling and tapping for such items as door closers and transom operators is done at the building by the erector after materials are installed.





ROUGH BUCK CABINET JAMB AND TRIM.

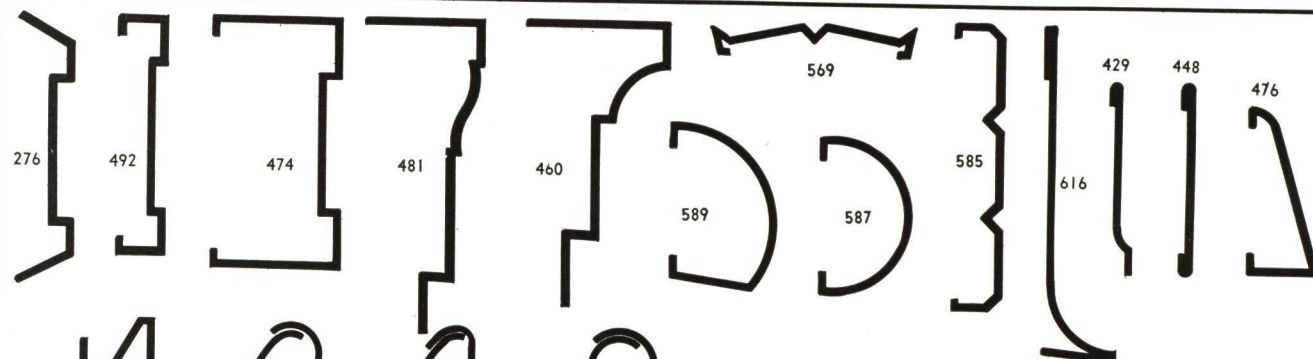


STEEL BUCKS AND METAL TRIM PROFILES

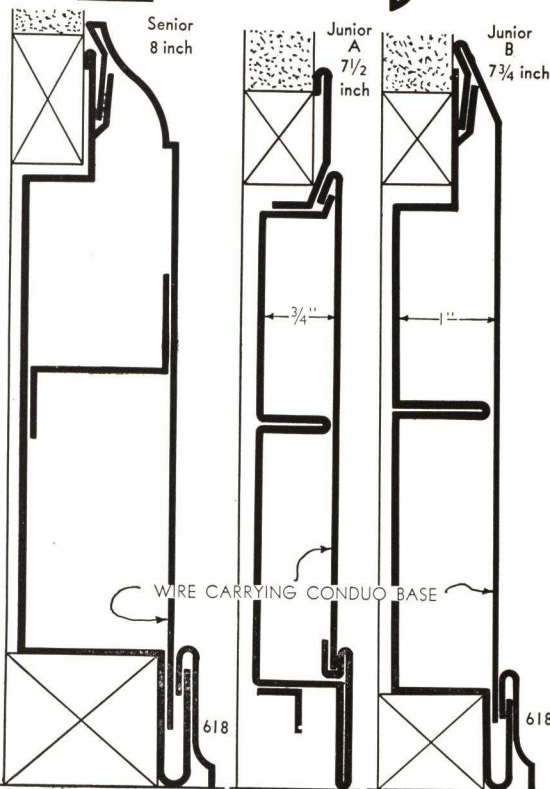
DETAILS UNDERWRITERS' LABELED DOORS

When Underwriters' Labels are specified, doors *must* conform with the following for all classes of labels. Maximum jamb size: Single openings 4 x 8 ft. Pairs of doors 8 x 8 ft. for class "A" label doors.
For all others, Single 4 x 10 ft. Pairs 8 x 10 ft.

	Location	Metal Panel's	Glass Area	Hardware	Frame
Class A	Fire Wall	1 or 2 (Flush panels not approved)	None	3-point Lock Steel BB butts. Checks.	Extra heavy built in
Class B	Stair well Vertical shaft	1 or more (Flush approved)	Vision Light 10" x 10"	Steel butts, ¾-in. throw lock.	No. 16 gauge min. No transom
Class C	Corridor or room partition	Variable	1296 sq. in.	Standard	No special
Class D	Exterior wall (not fire escape)	1 or more	None	Steel butts, ¾-in. throw lock.	Heavy standard
Class E and F	Fire escape	1 or more	720 sq. in.	Steel butts, ¾-in. throw lock. Checks.	Heavy standard

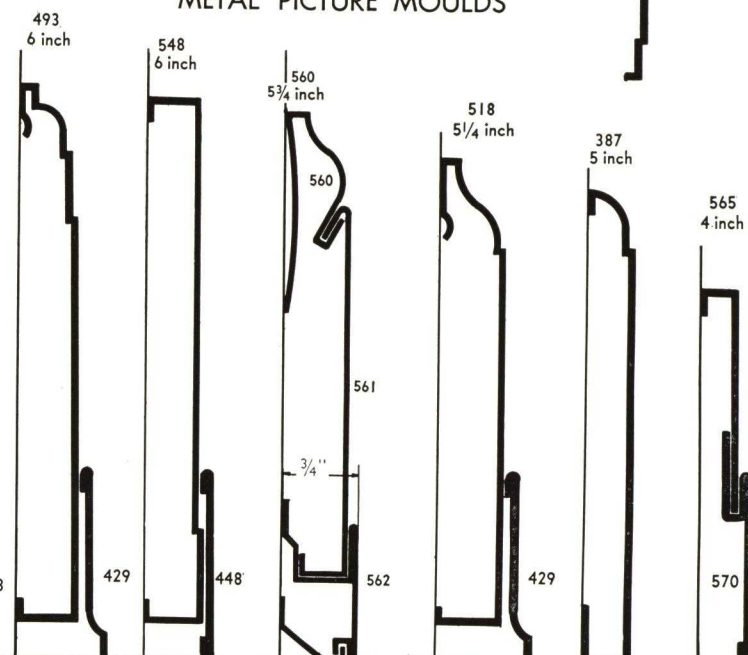


SPECIAL METAL TRIM DESIGNS

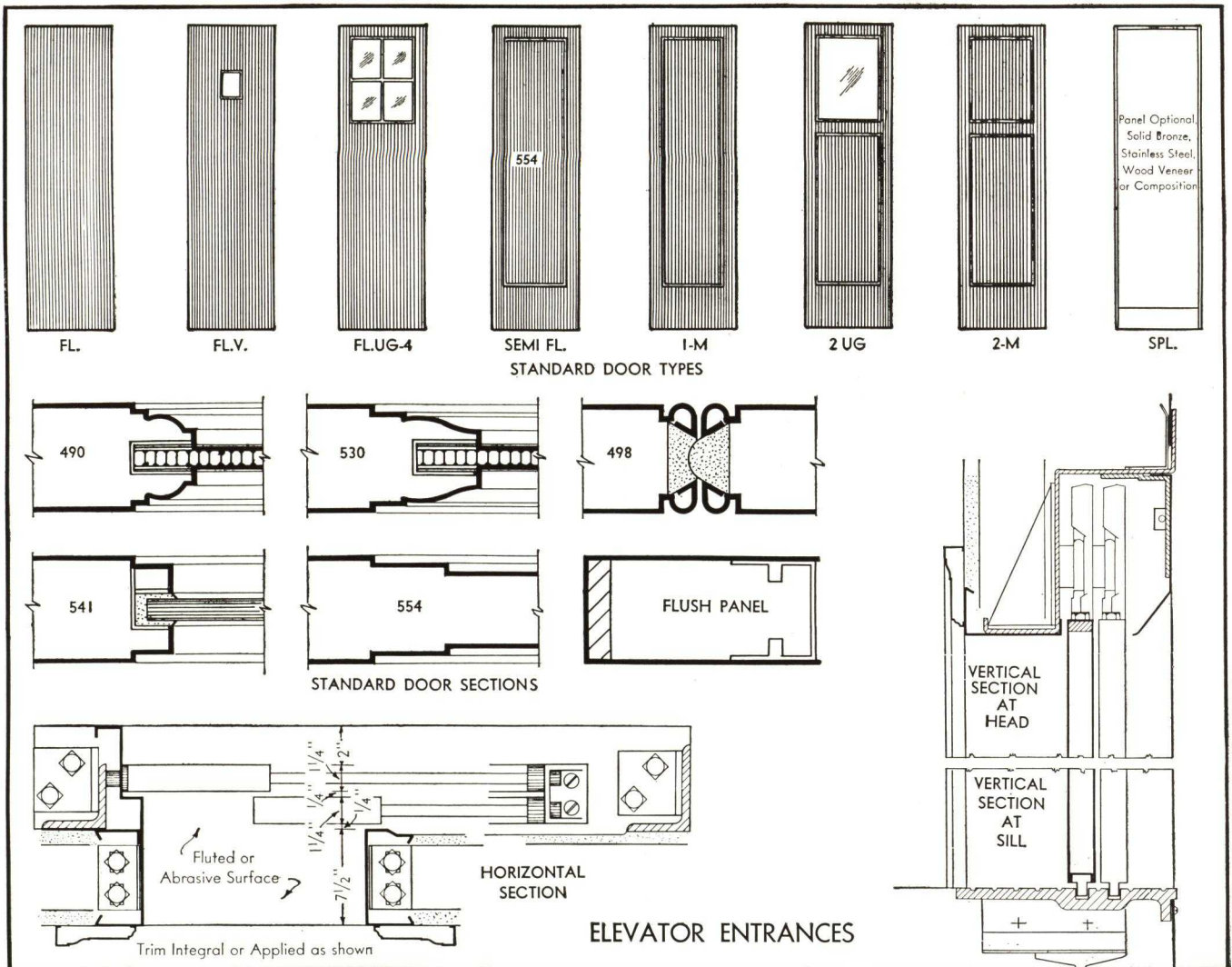


ALL DETAILS
ONE HALF
FULL SIZE

METAL PICTURE MOULDS



STANDARD METAL BASE TYPES



SPECIFICATION STANDARD U.M.P. ELEVATOR ENTRANCES

Elevator entrance doors shall be made of not less than No. 18 gauge sheet steel, patent leveled and full finished. Paneled doors shall be of similar construction to swing doors and Flush type doors shall be rigidly reinforced vertically at not less than 6-in. centers. Sliding doors shall be heavily reinforced across top edge for hanger bolts and at all other locations where operating hardware will be attached. Two guides shall be securely attached to the bottom of each door. (Ironwood with Bronze bushing standard.)

Combination Frames—Shall cover the wall and be made of No. 14 gauge steel with integral trim (applied trim alternate.) Hanger support shall be made of No. 8 gauge steel to extend between and be securely attached to vertical angles.

Coverplates—Shall be No. 18 gauge with removable section at door opening for access to hangers.

Sills—Shall be of cast iron (or bronze) not less than $\frac{1}{2}$ in. thick with abrasive surface and lugs for grouting in or attaching to structural beams.

Facia Plates—Shall be No. 16 gauge steel and extend from the coverplate to the sill above, and be 12 in. wider than the door openings, providing a flush, even finish to the shaft.

Structural Angle Supports—Shall extend from sill to beam or a height of 11 ft., $3 \times 3 \times 5/16$ in. at the closing jamb and $3 \times 5 \times 3/8$ in. at least 7 in. back of the doors when open to support closing device.

All exposed surfaces of doors, frames and trim to be finished in baked enamel similar to specification for swing doors.

INSTALLATIONS

UNITED METAL PRODUCTS DIVISION has furnished hollow metal doors and trim for some of the largest buildings in the United States as is evidenced by the partial list of prominent buildings noted below. "United" also specializes in exterior trim in stainless steel as well as decorative lobby walls and interiors in steel panel work with stainless steel or special metal trim of which

the Empire State Building, McGraw-Hill Building and Insurance Company of North America, in New York City, are representative installations.

The names of prominent Architects and General Contractors identified with the following projects will be furnished on request, for reference purposes.

Irving Trust Bldg., New York, N. Y.
Library, Columbia University, New York, N. Y.
Bowery Savings Bank, New York, N. Y.
515 Madison Ave., New York, N. Y.
444 Madison Ave., New York, N. Y.
Wall and Hanover Bldg., New York, N. Y.
60th and Madison Bldg., New York, N. Y.
Riverside Church, New York, N. Y.
Bank of Manhattan, New York, N. Y.
Chemical National Bank, New York, N. Y.
State Hospital, Rochester, N. Y.
Administration and Laboratory Bldg.,
Saratoga Springs, N. Y.
Drink Hall, Saratoga Springs, N. Y.

Rikers Island Penitentiary, Rikers Island, N. Y.
Grasslands Hospital, Valhalla, N. Y.
University Hospital, Baltimore, Md.
U. S. Post Office Bldg., Columbus, Ohio
Youngstown City Hospital, Youngstown, Ohio
Dr. Cunningham's Health Tanks, Cleveland, Ohio
Chicago Daily News, Chicago, Ill.
Naval Hospital, Philadelphia, Pa.
U. S. Post Office, Cleveland, Ohio
Post Office Department Bldg., Philadelphia, Pa.
Department of Public Works, Boston, Mass.
U. S. Marine Hospital, Chicago, Ill.
Haddon Hall, Atlantic City, N. J.
Fire Association of Philadelphia, Pa.

Fidelity-Philadelphia Trust, Philadelphia, Pa.
Strawbridge-Clothier, Philadelphia, Pa.
Keystone Athletic Club, Pittsburgh, Pa.
Industrial Trust, Providence, R. I.
Miners Bank, Wilkes-Barre, Pa.
St. Louis Civil Courts, St. Louis Mo.
450 Sutter St., San Francisco, Calif.
City National Bank, Bridgeport, Conn.
United Shoe Machinery Co., Boston, Mass.
Court and Remsen Bldg., Brooklyn, N. Y.
O'Neil Store, Akron, Ohio
Cleveland Public Library, Cleveland, Ohio
First National Bank, Canton, Ohio
Ford Museum, Detroit, Mich.

MEMORANDA

LIONEL VALLAS

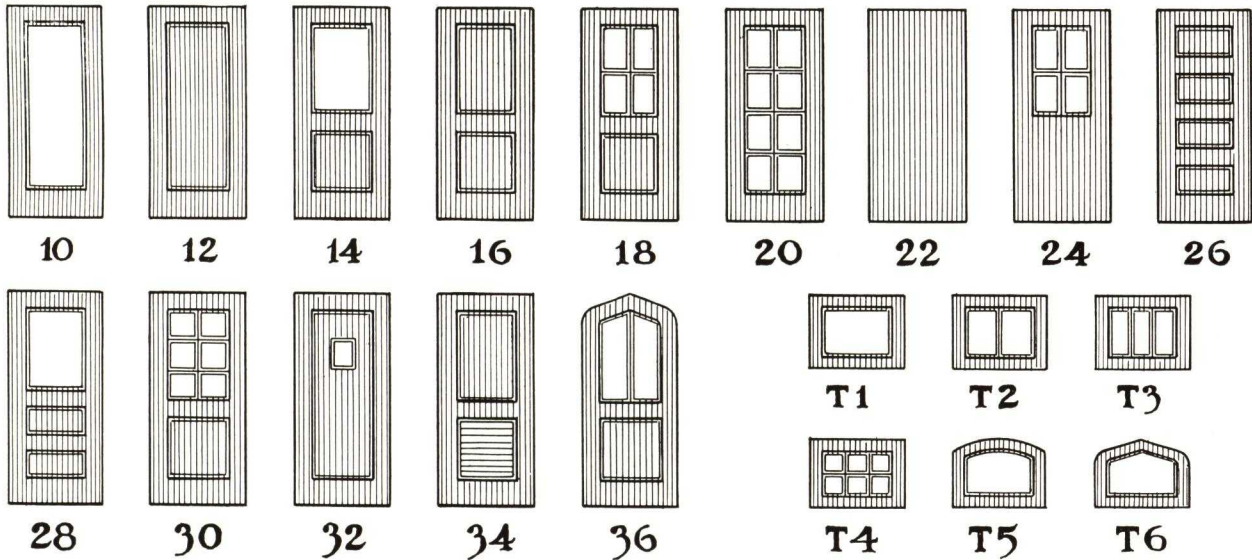
Manufacturers of Hollow Metal Doors

2846-50 West Lake Street
CHICAGO, ILL.

FOR HOLLOW METAL WINDOWS SEE FILE INDEX

LIONEL HOLLOW METAL DOORS, SIDELIGHTS AND TRANSOMS

Lionel



Construction and Materials

Lionel Hollow Metal Doors, Sidelights and Transoms are made in stock and special designs to conform with architectural designs. The stiles, rails, panels and muntins are made of 18 gauge full cold rolled, pickled patent leveled furniture steel or galvanized iron. Mouldings are of 18 and 20 gauge cold rolled steel. Note drawings for keyway and methods of holding glass panels and solid panels in place.

The Streamline Hollow Metal Doors, Sidelights and Transoms are made in 16 or 18 gauge patent leveled furniture steel throughout. Particular attention is called to the fact that the mouldings are impressed in the stiles and rails, making them integral. This design is of especial value for exterior doors, doors to steam rooms, vapor rooms, or wherever excess moisture is encountered.

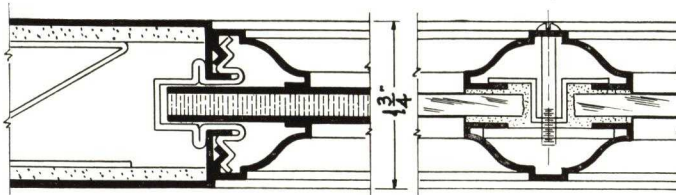
All doors, frames and trim are also made in stainless steel, hand rubbed to a satin finish.

All members are locked and welded. Reinforcements are welded within the door for all hardware. The stiles have cork or asbestos inserts to prevent metallic sound. Solid panels consist of two sheets of 18 gauge steel with 1/4-in. asbestos filler.

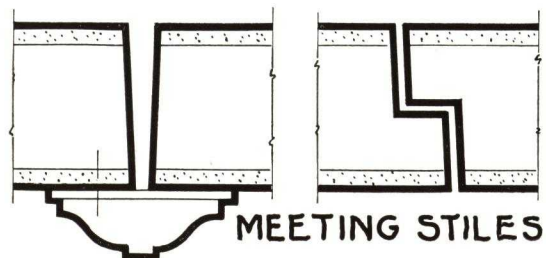
The frames and trim are neatly made with sharp bends. Joints are all thoroughly and neatly welded.

All doors and transoms made in accordance with requirements of Underwriters' Laboratories, Inc., and labels can be furnished if desired.

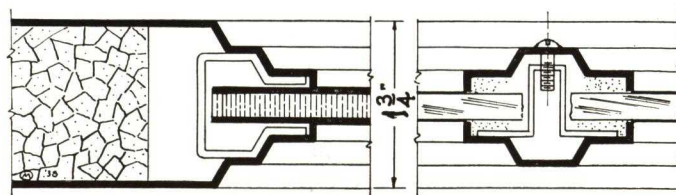
Finishes include baked enamel in solid colors, or grained to match natural wood. Baked on shop priming coat is applied when material is to be finished after installation.



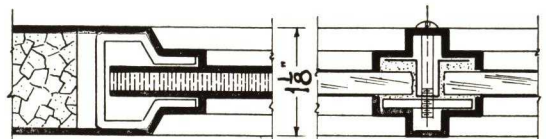
"LIONEL" HOLLOW METAL DOOR



MEETING STILES



"STREAMLINE" HOLLOW METAL DOOR



BYRNE DOORS, INC.

Manufacturer of Airplane Hangars, Hangar Doors, Industrial Doors,
Movable Steel Partitions and Crane Entrance Doors

1150 Griswold Street
DETROIT, MICH.

Products

Airplane Hangars	Hangar Doors—all types
Canopy Doors	Industrial Doors
Crane Entrance Doors	Movable Steel Partitions
Special Enclosures	

Automatic high-speed operation—any width—any height—in sections or single spans.

A complete engineering and advisory service.

Byrne Doors have been adopted by the U. S. Army Air Corps and by leading Air Transport companies.

They are fully patented and can be secured from licensed manufacturers or direct from BYRNE DOORS, INC.

Exclusive Features

Byrne Canopy Doors are recognized standard for crane entrances, hangars and large doorways. Backed by eleven years' engineering research and development, they have lifted the restrictions from door design. Installations are now possible to meet any requirement. We believe there are more large Byrne Type Doors in satisfactory service than all other types combined. Some outstanding advantages are:

Day in and day out trouble-free operation—minimum maintenance—long-life construction.

Automatic self-locking operator provides safety and security.

Compensate for building settlement and temperature changes.

Snug tight—cold air infiltration and heat losses minimized during long periods when door is closed.

High speed operation—counterweighted—minimum power and operating cost.

Occupies minimum space when closed—entirely out of the way when open.

Anti-freeze sill construction—no floor tracks.

Canopy, when open, adds to useful floor space.

Cooler in summer—warmer in winter.

Heating economy and reclaimed floor space will usually save the entire cost of installation.

TYPE K CANOPY DOORS

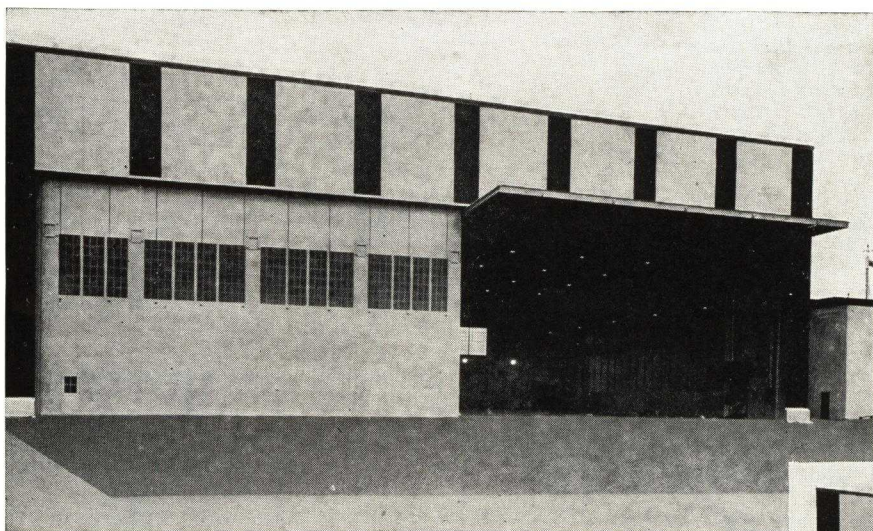
Designed for heights up to 55 feet, Type K doors can be made in sections for any desired width of opening. A movable linkage system supported on the bottom chord framing guides the door section through its cycle of movement and braces it against wind pressures at all positions. Designs are based on the U. S. Army specification for 20 pounds wind load in closed position and 15 pounds in any partially open position.

A study of hangar operations shows that the main doors are kept closed in cold weather for an average minimum of 22 hours in a 24 day. This indicates the

necessity of eliminating all unnecessary joints and cold air infiltration. Unit leaf construction and our exclusive double, balloon type, rubber weathering has, therefore, been adopted as our recommended standard.

Type K doors not only reduce heat losses to the minimum but our weather-tight construction permits restoration of working temperatures in minimum time and at least cost.

Type K doors, however, are available at extra cost with an auxiliary top leaf hinged to the bottom chord of the door truss.



Type K Door 150 Ft. x 40 Ft. Clear Opening

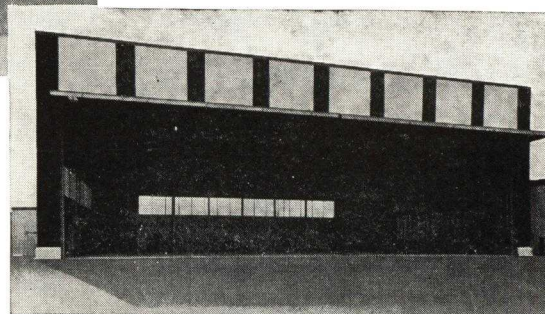
HIGH SPEED OPERATION

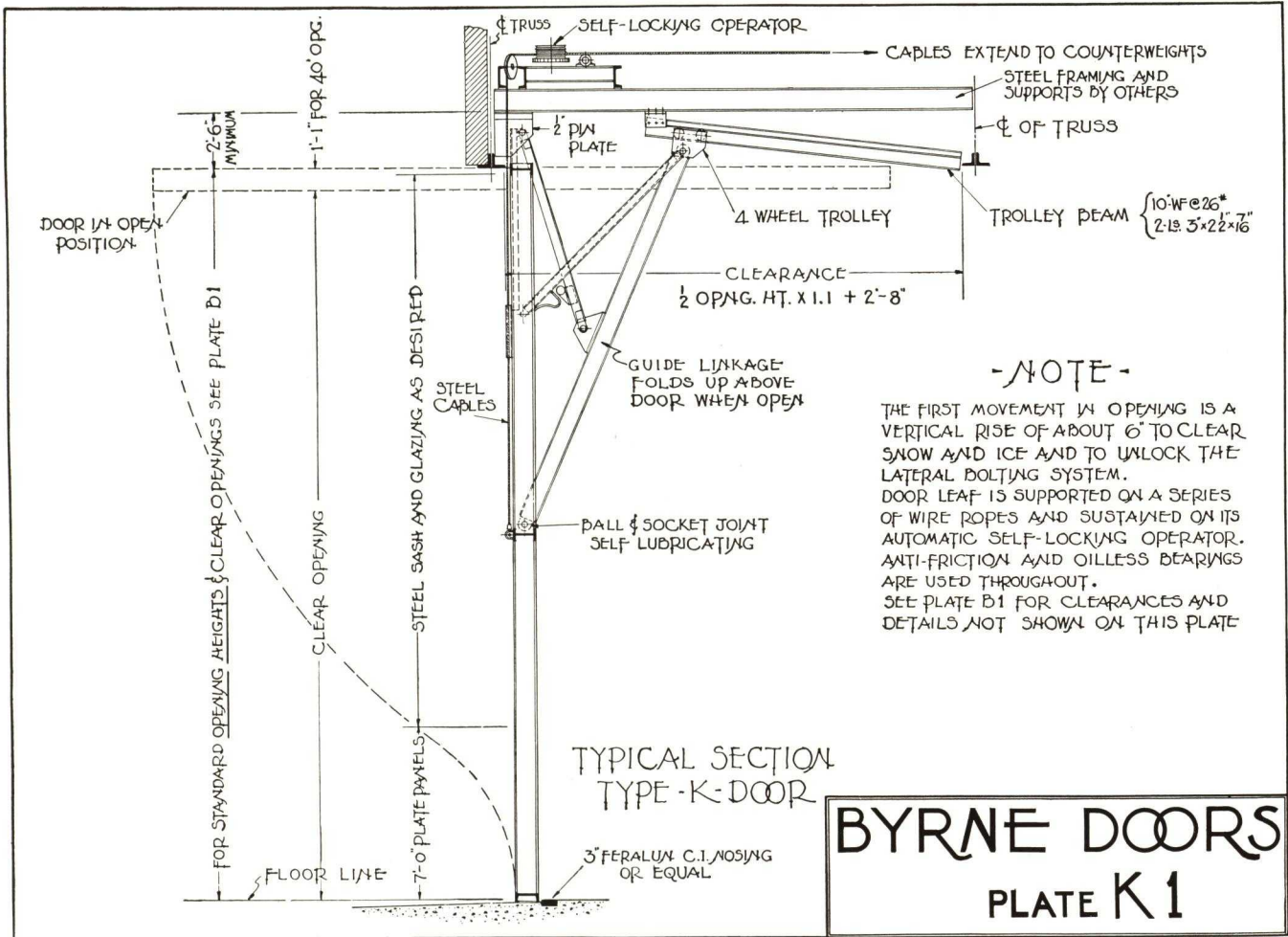
The illustration at right shows door fully opened. Despite the huge dimensions and weight of this door it can be opened or closed in 45 seconds. Operation is by means of a two-speed motor which automatically reduces speed for closing.

Automatically self-locking operators, safely sustain 96,000 pounds vertical wind load at any position of the door leaves.

The first movement in opening is a vertical rise of about 6 in. to clear snow, ice or ground obstructions.

The door is then tilted on its horizontal axis and raised to open position with the lower half projecting outward to form a useful canopy across the entire opening.





A BRIEF SPECIFICATION

Work Included—Main door where shown on plans shall be Type — construction as manufactured by Byrne Doors, Incorporated, Detroit, Michigan, or an approved equal, which shall have been in successful use for a period of five years. Door leaf, counterweights, self-locking operator, motor and controls and all mechanism shall be Door Manufacturer's standard and shall be installed complete by him.

Collateral Materials—Steel framing and supports, door sill nosing, glass, glazing, field painting and electric wiring to door motors and controls shall be furnished by their respective trades and installed according to the Door Manufacturer's details.

Operation—Operation shall be according to the established Byrne principle, employing multiple cable suspension and a vertical tilting motion. The first movement in opening shall be a vertical rise to unlock the lateral bolting system. The door shall then tilt on its own horizontal center and open upward with its lower half projecting outside to form a canopy across doorway.

Design—Door leaf and guide system shall be designed to withstand 20 lb. per sq. ft. horizontal wind in closed position, and 15 lb. per sq. ft. at the 45 degree partially open position. Fibre stresses due to dead load, impact and wind shall be limited to 24,000 lb. per sq. inch. Main members shall be steel

shapes; plate panels shall be 12 gauge, reinforced with angle stiffeners; glazed panels shall be 1 $\frac{3}{8}$ " solid section steel windows for outside putty glazing.

Wire Ropes—Wire ropes shall be improved plow steel quality of sufficient capacity to support the dead weight of door and 25% impact allowance plus the vertical wind component with a minimum safety factor of 5.

Guaranty—Each bidder shall state the type door proposed and the name of manufacturer, and shall submit a list of similar installations and the dates installed. On completion of this installation, he shall furnish the owner with a written guarantee against defective material and workmanship for a period of one (1) year after acceptance.

Important Note

A large mechanically operated door involves the work of several trades. The division of responsibility must be clearly defined to insure economy, a complete installation, reliability and long life.

Byrne Engineers will gladly furnish complete structural layouts for a particular job, and will recommend details for the collateral construction.

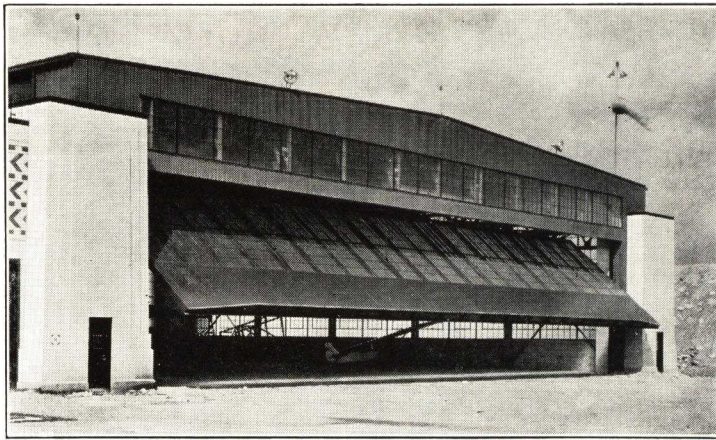
A PARTIAL LIST OF BYRNE DOOR USERS

Albuquerque, N. M.
American Airways, Chicago, Ill.
*Babcock & Wilcox Co., Barberton, Ohio
Beaumont, Tex., Municipal Airport
Billings, Mont., Municipal Airport
Booth-Henning, Inc., Dallas, Tex.
Civil Aeronautics Authority, Indianapolis, Ind.
Denver, Colo., Municipal Airport
Fiat Societa Anonima, Torino, Italy
Fort Worth, Tex., Municipal Airport
Galveston, Tex., Municipal Airport
*Great Lake Steel Co., Detroit, Mich.
Joliet, Ill., Municipal Airport

Metropolitan Water Commission, Boston, Mass.
National Guard, Boston, Mass.
National Guard, Newark, N. J.
National Guard, Philadelphia, Pa.
*Nichols Copper Co., El Paso, Tex.
Palwaukee Airport, Chicago, Ill.
Pittsburgh, Pa., Municipal Airport
Rhode Island State Airport, Providence, R. I.
Rochester, N. Y., Municipal Airport
San Antonio, Tex., Municipal Airport
Transcontinental & Western Air, Kansas City, Mo.
Tyler, Tex., Municipal Airport

U. S. Army, Aberdeen, Md.
U. S. Army, Barksdale Field, La.
U. S. Army, Fort Benning, Ga.
U. S. Army, Fort Bragg, N. C.
U. S. Army, Middletown, Pa.
*U. S. Army, Sacramento, Calif.
U. S. Coast Guard, Miami, Fla.
U. S. Navy, Coco Solo, C. Z.
*U. S. Navy, Norfolk, Va.
Wm. K. Vanderbilt, Miami Beach, Fla.

*Indicates Crane Doors.



Type B Canopy Door—Partially Open

TYPE B CANOPY DOORS

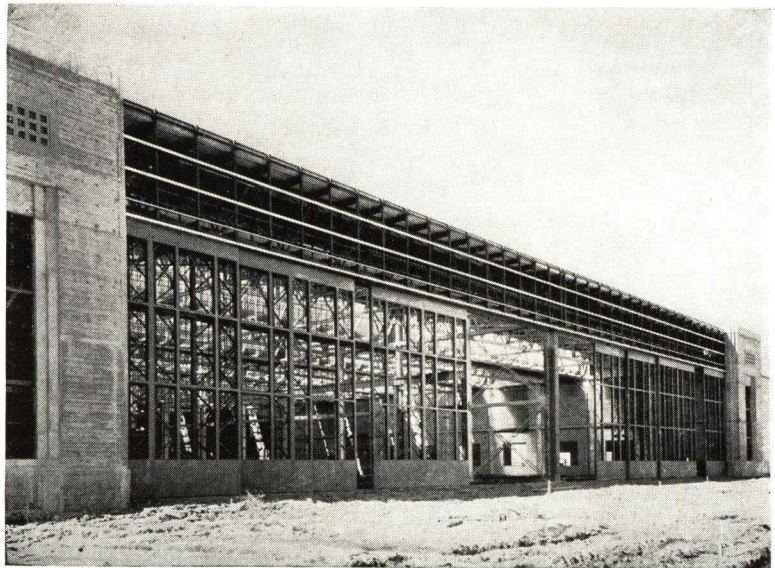
Recommended for openings up to 120 ft. wide by 28 ft. high. Operates as a single leaf unit, full size

BYRNE MULTI-LEAF OPERATOR FOR SLIDE DOORS

For localities where snow, ice and winter conditions are not important factors, a motor-operated, multiple leaf slide door will usually meet normal requirements. The Byrne *Multi-leaf Operator* is a simple, ingenious unit which provides positive traction and differential speed for each door leaf.

This is an exclusive Byrne product, furnished and installed by Byrne *Engineers* complete with door leaves and mechanical equipment under one guarantee.

It is no longer necessary to mobilize a crew for the purpose of opening and closing slide doors. Your present installation may be modernized with Byrne *power* and operations cost reduced.



Two 120 Ft. Openings, 38 Ft., 10 In. High—Motor Operated

STANDARD BYRNE HANGARS

No effort has been spared in making our Standard Hangar the most attractive all-steel job obtainable. Nicely proportioned with curved roof and molded trim

at eaves and gables, it will satisfy the most exacting taste. The sturdy, inherent qualities of steel construction are combined with utility, and a Byrne *Hangar* will add greatly to the appearance of any airport.

Buildings and doors are erected complete by Byrne *Engineers*, insuring minimum cost under an undivided guarantee. Can be furnished any desired length in multiples of 20 feet. Manual or power operated doors may be installed in one or both ends.

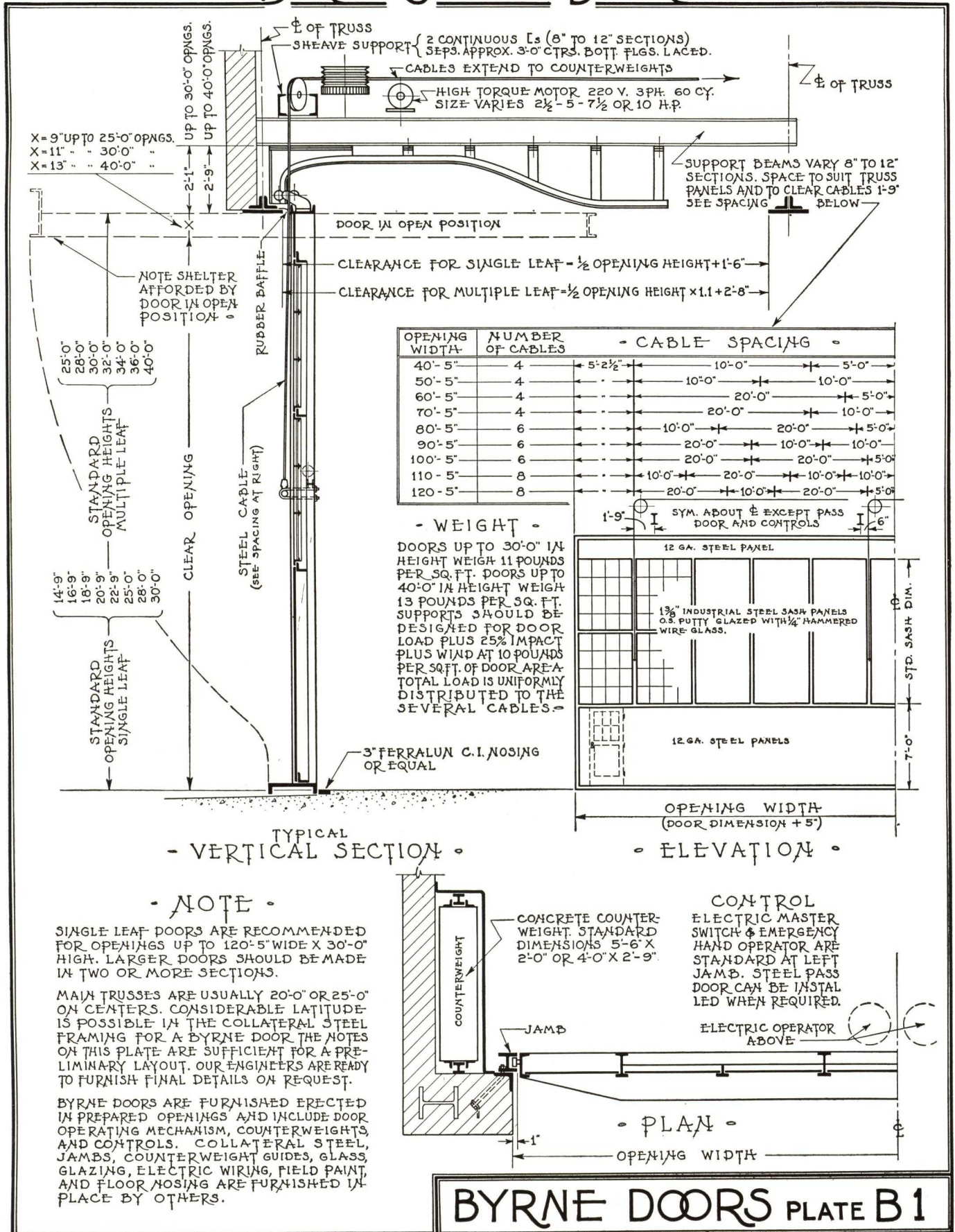
Standard door openings are: 40 ft. x 12 ft.; 50 ft. x 12 ft.; 60 ft. x 14 ft.; 80 ft. x 18 ft.

We also furnish Hangars to special order with our standard steel framing adapted for sidewall construction of tile, brick, or insulated steel, as desired.



Standard Byrne Hangar with Hand Operated Type B Door

BYRNE CANOPY DOORS




MEMORANDA

A thick yellow rectangular border frames the central text.

PEELLE

FREIGHT ELEVATOR • DUMBWAITER • INDUSTRIAL ENTRANCE

A thick black rectangular background frames the word 'DOORS'.

DOORS

THE PEELLE COMPANY • BROOKLYN, N.Y.

More than **30 YEARS** of **DOOR SERVICE**

For more than 30 years the same Peelle management has specialized in the manufacture of quality Peelle Doors.

Changes in building construction, higher speeds and heavier duties for freight elevators, the adoption of Building Codes, and the demands of insurance Underwriters, have presented new problems, and made continuous demands on the ingenuity of the management. THE PELLE COMPANY has contributed its share to industrial building progress, by designing and producing quality door products in step with this progress.

From the hatch covers and Safety Gates in non-fireproof buildings of 40 years ago, THE PELLE COMPANY has developed the modern Peelle Motorized Door that provides safety, fire protection, as well as fast and quiet operation to fit the most modern building and elevator equipment.

Peelle quality reflects the policy of the management which believes in the sound basic principles that have endured in the construction industry—thus Peelle Doors are built for quality buildings, planned by Architects and Engineers for the purpose required, with appropriate materials selected, specified, and used.

Peelle stakes its reputation for producing Quality Doors on their performance in every installation large or small—regardless of length of time in service.

Special Door Problems

THE PELLE COMPANY maintains a file for the use of Architects and Engineers who have special door problems. This file includes the accumulated experience of others in solving difficult door problems. It contains much interesting and informative material and may be consulted at any time without obligation.



MEMBER OF
PRODUCERS
COUNCIL

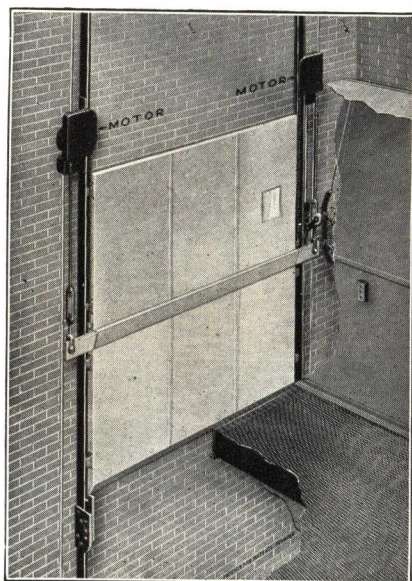
THE PELLE COMPANY

47 Stewart Avenue — Brooklyn, N. Y.

TELEPHONE—STagg 2-0364

FOR DISTRICT OFFICES SEE BACK COVER

PEELLE DOORS *are made* for **THREE CLASSES** *of openings . . .*



PEELLE
MOTORIZED
DOORS
(Patented)

Peelle Motorized Doors are an important factor in the quick and automatic handling of freight in modern, efficiently operated industrial buildings. They increase the efficiency of the entire freight handling organization and personnel, reduce maintenance costs and increase the life of the equipment.

The Peelle Motorized Door is a standard, manually operated door with a motor built into each sheave housing. No auxiliary mechanism is required.

The space required between the elevator car and the shaft wall is the same as for manually operated doors. The doors are controlled from push button stations. Automatic opening, in conjunction with the elevator control is standard on self-leveling elevators.

Manual operation is possible at all times without disconnecting any mechanical or electrical parts.

The Motorized sheaves are standard for all doors, and are the same for either a-c. or d-c. primary current. 220 volts, 3 phase. 60 cycle is preferred.

Low maintenance and operating costs are assured by The Peelle Company's unqualified guarantee which is behind every Motorized installation.

1. Freight Elevator Doors

Peelle Freight Elevator Doors consist of two vertically sliding leaves, one balancing the other. They are installed on the shaft side of the opening. They serve to protect the openings of fireproof freight elevator shafts and are ruggedly built to withstand the constant heavy trucking of freight elevator traffic. Peelle Freight Elevator Doors may be either motorized or arranged for manual operation.

2. Industrial Entrance Doors

Peelle Industrial Entrance Doors are made in four styles—Telco, Four-Fold, Bi-Fold and Horizontal Sliding—for openings in garages, and at platforms or vehicle entrances in commercial or industrial buildings. They are not made in standard stock sizes but are made to order only. Large size doors are provided with remote control and motorized operation.

3. Dumbwaiter Doors

Peelle Dumbwaiter Doors are of the counterbalanced type, mounted in steel guides with a combination pressed metal frame and trim. The upper leaf slides up while the lower leaf slides down. The entire unit is assembled at the factory, ready for building into the masonry wall while the shaft is being built. The standard door is furnished with a flush panel design, but special designs may be made as desired.



See pages 6 and 7
for the advantages of

Peelle
MOTORIZED
Doors

All Peelle Doors are made to order to fit the size of the openings and space requirements of each job. They can be executed in any architectural design and in any of the commercial metals or alloys, in hollow metal, or in sheet metal over wood.

PEELLE FREIGHT ELEVATOR DOORS

(Patented)

Peelle Regular—

Peelle Regular Doors are used wherever spandrel heights above and below the openings in the shaft are of sufficient height to provide unobstructed space for the doors to open fully. The minimum spandrel height must be equal to one-half the opening height plus 6 in.

These doors operate in one vertical plane.

The guides are continuous. The upper leaf of one door operates in the same guide as the lower leaf of the door above, and vice versa. Only one door in a series is open at a time.

Operation—Manual or motorized*.

*See pages 6 and 7 for the advantage of motorized operation.

Peelle Pass—

Peelle Pass Doors may be used where spandrel heights above and below openings are insufficient to take each door leaf when opened, without encroaching on the openings above and below. The minimum spandrel height required is 10 in.

The two leaves of each door operate in separate vertical planes, each leaf having separate guides. This construction permits the lower leaf of one door to pass in front of the upper leaf of the door below, while the upper leaf passes behind the lower leaf of the door above. The space between the upper leaf of each pass type door and the shaft wall at the lintel is closed with a hinged movable lintel.

Operation—Manual or motorized*.

*See pages 6 and 7 for the advantage of motorized operation.

Peelle Self-Sealing—

Peelle Self-Sealing Doors are recommended for use on service elevators in office buildings, hotels, department stores, and hospitals, as well as for general freight elevator use.

Peelle Self-Sealing Doors may be used for any shaft opening where the spandrel height is at least 18 in.

Both leaves of Self-Sealing Doors when closed make actual contact with the frame of the shaft opening at both sides, top, and bottom.

Self-Sealing Doors effectually seal the shaft openings against draughts, sounds, odors, dust, and smoke.

When opening, the leaves have an offsetting motion so that when the spandrel height is less than half the opening height plus 6 in., the doors will overlap the shaft doors above and below on the shaft side.

Operation—Manual or motorized*.

*See pages 6 and 7 for the advantage of motorized operation.

Peelle Elevator Car Gates—

Peelle Elevator Car Gates are made in a single vertically sliding unit and are counterbalanced with weights. The necessary guides are erected on the car platform and these must be the height of the shaft opening plus the height of the gate. Car gates are usually 6 ft. high unless otherwise required by safety codes.

Peelle Car Gates are constructed of 11-gauge wire mesh, set into steel angle frames with vertical and horizontal reinforcements.

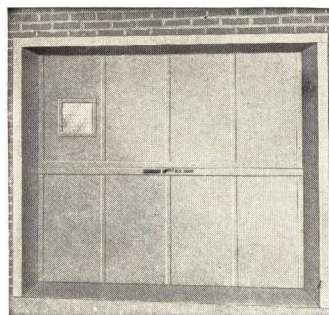
Peelle Car Gates are usually motorized*. When used in conjunction with motorized doors, the gates open and close simultaneously with the doors, and are controlled from the same push buttons.

Car gates, when used in conjunction with manually operated doors, should be motorized so that the elevator operator will not lose the time required to operate the car gates.

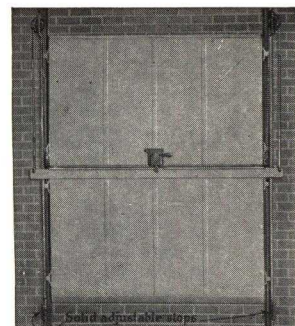
*See pages 6 and 7 for the advantage of motorized operation.

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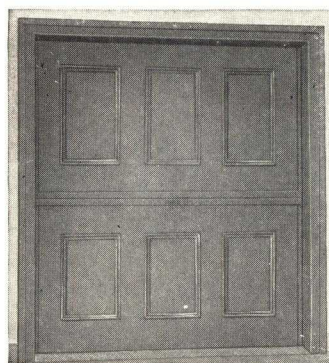


Peelle Regular Doors

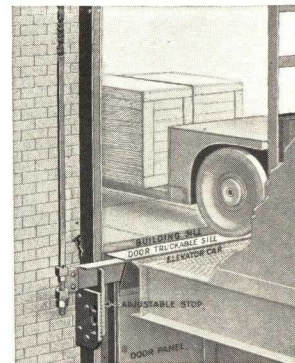


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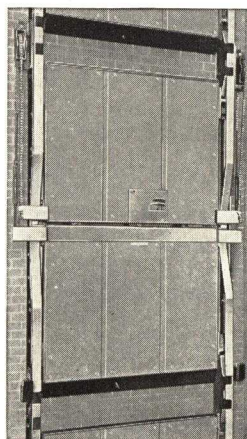


Peelle Pass Doors

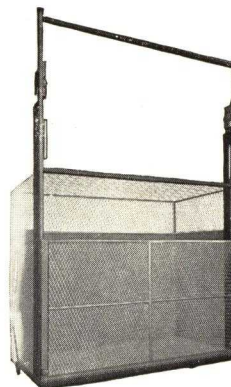
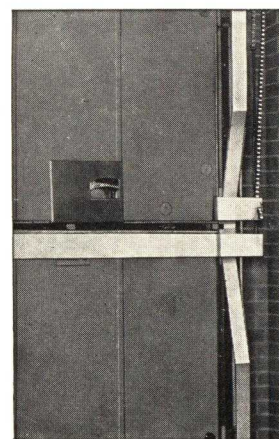


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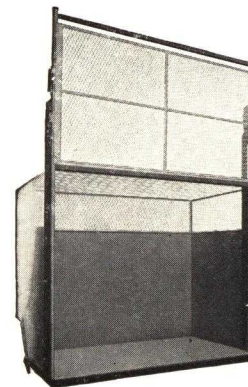
12



Peelle Self-Sealing Doors



Peelle Elevator Car Gates

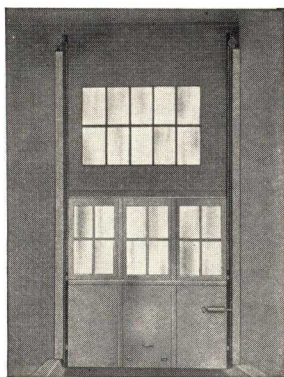


Not covered
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log. Further
information
on request.

A QUALITY DOOR



Peelle Telco Doors



PEELLE DRIVEWAY, PLATFORM AND INDUSTRIAL ENTRANCE DOORS

(Patented)

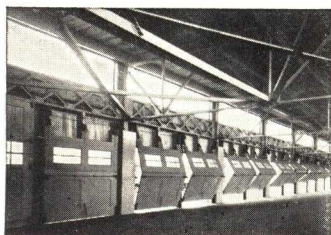
These doors are designed and made to fit each special condition. They are made in any material desired.

Peelle Telco

Peelle Telco Doors are made in two leaves counterbalanced by weights. They slide up at a ratio of 2 to 1. This door is recommended wherever there is sufficient space overhead and at the jambs to permit its installation. Door openings can be any size.

Peelle Telco Doors are usually motorized, but may be made for manual operation.

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18



Peelle Bi-Fold Doors



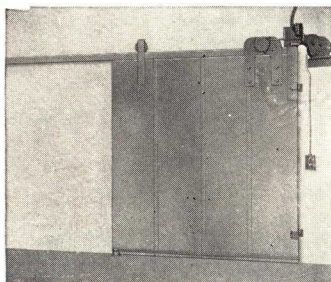
Peelle Four-Fold Door

Peelle Four-Fold

Peelle Four-Fold Doors are made, as the name implies, in four sections which are hinged together to fold vertically. These doors are ideal for use where only a limited space is available and can be made for any size.

Peelle Four-Fold Doors are usually motorized, but can be made for manual operation.

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Peelle Horizontal Sliding Door

Peelle Bi-Fold

Peelle Bi-Fold Doors consist of two leaves horizontally hinged to each other, the upper leaf being also hinged to the head of the opening. The leaves fold together as they swing up while opening. These doors are recommended for the smaller openings and where space limitations prevent the use of either Peelle Telco or Peelle Four-Fold Doors. These doors may be motorized or manually operated.

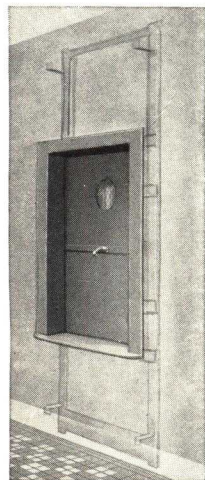
Not covered
in this cata-
log. Further
information
on request.

Peelle Horizontal Sliding

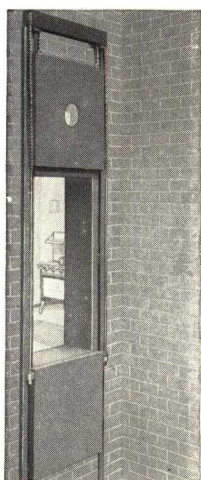
This is the simplest type of entrance door, where the space conditions permit its use. The minimum clear height required over the opening is 13 in., and the horizontal dimension on one side must equal the opening, plus 6 in., and 6 in. is required on the opposite side.

There are practically no limitations to the design of these doors or the material from which the doors are made. The most practical and economical construction, however, is wood.

Not covered
in this cata-
log. Further
information
on request.



Peelle
Dumbwaiter
Doors



PEELLE DUMBWAITER DOORS

(Patented)

The Peelle Dumbwaiter Door unit is a counterbalanced door mounted in steel guides with a combination pressed metal frame and rim. The entire unit is assembled in the factory, ready for building into the masonry wall while the shaft is being built.

The door operates on the inside of the shaft, and takes up no floor space in opening or closing. It may be adapted to any floor plan without conflict. Each door has a 3-in. observation light so that the dumbwaiter is visible with the door closed.

The doors are insulated to eliminate noise. The standard door is furnished with a flush panel design and bears the label of Underwriters' Laboratories, Inc.

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Note

Standard specifications and construction details for all of the gates and doors described on these pages may be obtained from any district office or the home office.

PEELLE

Motorized DOORS

(Patented)

SPEED TRAFFIC

Peelle Motorized Freight Elevator Doors operate from two to four times faster than manually operated doors. Motorized doors open automatically upon arrival of the elevator thus preventing congestion around door openings which cause loss of time, loss of man power and greatly reduce the usefulness of mechanized freight handling apparatus.

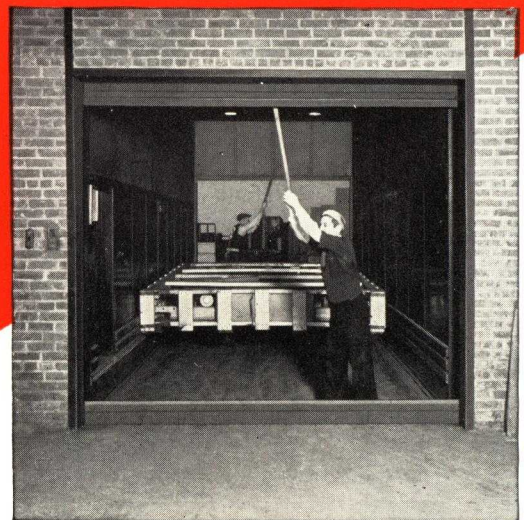
With Motorized Doors uniform efficiency is maintained throughout the working day whereas manually operated doors depend for their efficiency upon the physical condition of the operator. *Peelle Motorized Doors always operate at the same speed—Peelle Motorized operators never grow tired.* In industries where production is dependent upon continuous and uniform flow of supplies from one floor to another, Peelle Motorized Doors help to maintain production schedules by expediting movement of materials. The use of Peelle Motorized Doors is justified, therefore, not only because of the elevator time saved but also because the time saved at that point is reflected by increased efficiency throughout other departments.

INCREASE VOLUME HANDLED

Peelle Motorized Doors permit loading the elevator to its full area capacity. In a fully loaded elevator the latch of a manual door is often difficult to reach—the Peelle Motorized Door opens and closes automatically while the operator remains at the control station.



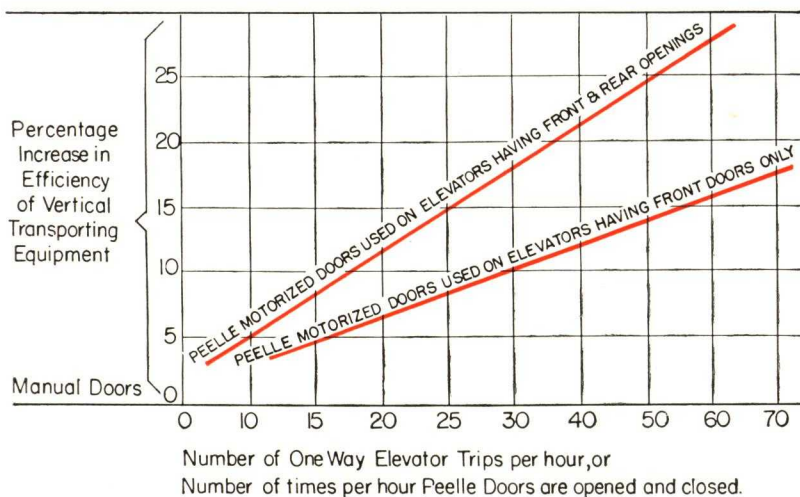
ONE MAN DOES THE WORK OF TWO MEN



Rear doors, at the opposite end of the elevator, may be opened and closed without the operator moving from his station—no time lost in climbing over or working around the freight to operate the rear doors; nor does the operator require an assistant for this purpose—once the car is loaded, a touch on the push button control and he is on his way.

SPEED TRAFFIC **INCREASE VOLUME HANDLED** **LOWER OPERATING COSTS**

**PEELLE MOTORIZED DOOR
Efficiency Curve**



LOWER OPERATING COSTS

—and Increase Efficiency

Peelle Motorized Doors lower operating costs and increase the efficiency of the elevator in direct proportion to (1) the number of one-way trips, either up or down, the elevator makes per hour; (2) the number of times the doors are opened and closed, and (3) whether Motorized Doors are used on both front and rear openings or on front openings only.

We have developed an interesting formula for computing the savings and increased efficiency resulting from the use of Peelle Motorized Doors. Present your problems to the nearest Peelle office. We will apply the formula and develop a Peelle Motorized Door Efficiency Curve Chart covering your particular case.

Use PEELLE MOTORIZED DOORS for

- (1) All automatic leveling elevators.
- (2) Elevators having front and rear doors.
- (3) Heavy duty freight elevators.
- (4) All elevators used for transporting freight that completely fills the car platform.
- (5) Freight elevators in industrial plants where production schedules must be maintained and costly delays avoided.

and to assure

ECONOMY SAFETY EFFICIENCY

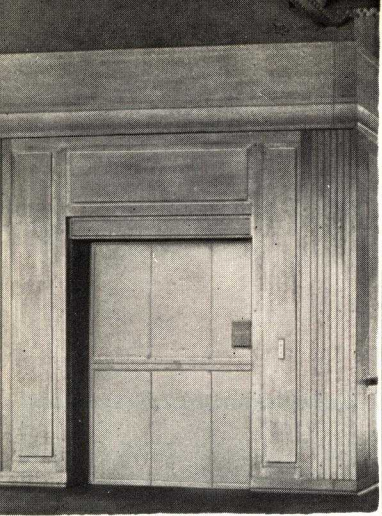
A Few Prominent Users of PEELLE MOTORIZED DOORS

United States Users

American Can Co.
 American Railway Express Agency
 American Rolling Mill
 American Safety Razor Corp.
 American Window Glass Co.
 A.P.W. Paper Co.
 Bakelite Corp.
 Beech-Nut Packing Co.
 Bliss, E. W. & Co.
 Borden Farm Products Co.
 Coca Cola Co.
 Colgate Palmolive Peet Co.
 Congoleum-Nairn, Inc.
 Continental Can Co.
 Dick, A. B. Co.
 Eastman Kodak Co.
 Fisher Body Corp.
 Ford Motor Car Co.
 Fox Film Building
 General Aniline Works, Inc.
 General Dyestuff Corp.
 General Electric Co.
 General Motors Bldg.
 Hershey Chocolate Corp.
 Higbee Department Store
 Kelvinator Corp.
 Kent Automatic Garages
 Kraft-Phenix Cheese Corp.
 Kress, S. H. & Co.
 Lehigh Valley R. R.
 Louisville Gas & Electric Co.
 Mead Johnson & Co.
 Montgomery Ward & Co.
 National Biscuit Co.
 New York Central R. R. Co.
 New York Telephone Co.
 Owens Illinois Can Co.
 Pennsylvania Railroad Co.
 Phoenix Metal Cap Co.
 Public Service (Elec. & Gas Co.) of N. J.
 Sears Roebuck & Co.
 Simmons Co.
 Singer Manufacturing Co.
 Standard Oil Co. of N. J.
 U. S. Rubber Co.
 U. S. Tobacco Co.
 Walker, Hiram & Sons, Inc.
 Wanamaker, John
 Western Electric Co.
 Wright Aeronautical Corp.

Foreign Users

Hamilton, Ont.—Hamilton Post Office
 Honolulu, T. H.—Honolulu Con. & Dray. Co.
 Honolulu, T. H.—Love's Bakery
 Montreal, Quebec, Can.—Post Office
 Toronto, Ont.—Lever Bros. Ltd.
 Toronto, Ont., Can.—Robert Simpson



PEELLE REGULAR FREIGHT ELEVATOR DOORS

(Patented)

Motorized* or Manual
FOR USE WHERE THE MINIMUM SPANDREL HEIGHT
ABOVE AND BELOW OPENING EQUALS HALF THE
HEIGHT OF OPENING PLUS 6 INCHES

SPECIFICATIONS

(1) Scope of Work

Where indicated on the plans, and in strict accordance with the following specifications, furnish, deliver, and erect in complete working order, Peelle "Regular" Counterbalanced Freight Elevator Doors and appurtenances, as manufactured by THE PEELLE COMPANY, 47 Stewart Avenue, Brooklyn, N. Y.

(2) Work by Others

(2a) Door Opening Frames and Sills—(Specify under "Miscellaneous or "Ornamental" iron work). (See page 15 for details and specifications).

(2b) Finish Painting—(Specify under "Painting."):

Note

Peelle door guides, hardware and angle frames around door sections are given a priming coat of aluminum paint at the factory. For industrial use no field or finish coat is necessary. Where finish painting is required, it should be included in the same specification under "Painting" with the trim and surrounding surfaces. Where special finishes, such as baked-on enamel, bronze, aluminum, etc., are required, they should be applied at the factory and specified accordingly.

(2c) Power Supply for Motorized Doors — (Specify under "Electrical Work"): The electrical contractor shall furnish in the elevator penthouse, for the use of the PEELLE COMPANY, a 220-volt, 3-phase, 60 cycle a-c. supply with a 30-ampere fused safety switch and shall include the necessary conduit and wiring to carry this supply to the Peelle Control Board.

(2d) Miscellaneous Requirements—(To be furnished by elevator contractor. Specification to be included under "Elevator Work"): The elevator contractor shall make provision on his car for mounting Peelle door cams, push buttons, emergency release switches and car gates; and on his control board shall provide terminals for Peelle cams, interlocks and shall provide selector relays but wiring shall be done by Peelle.

(If Push Button Elevator is specified, add):

The elevator contractor shall furnish car and hall door-operating push buttons but wiring will be done by Peelle.

(3) Doors

(3a) Construction — Doors shall be constructed of two-ply selected white pine, nailed, and covered with stretcher leveled copper bearing steel, galvanized sheets, design (select design from page 14). Doors shall be bolted into steel angle frames, astragals, shoe bars, and malleable iron milled groove shoes. Upper edge of each lower door shall have a T-bar truckable sill, capable of supporting a trucking load equal to capacity of elevator. When door is open, truckable sill shall rest on malleable iron, adjustable stops. Doors shall be run in steel guides and each pair connected with $\frac{5}{8}$ in. square rolled steel rod with special micro adjuster, and No. 6 rust-resisting flexible cable chain, running over double race ball bearing sheaves having machined grooves.

(3b) Operation—

Motorized—Each door shall be equipped with Peelle Motorized

electric operation, having individual motors for each door, and shall be entirely within shaft. Operators shall drive both sheaves of each door. Provision for emergency manual operation, and emergency exit from shaft, accessible from elevator, shall be made.

Manual—Doors shall be manually operated, and equipped with web strap closers which shall reach to within 6 ft. 0 in. of floor, when door is open.

(3c) Control—(For Motorized Doors)—A push button station for each line of doors marked "Open," "Close," and "Stop," shall be placed on elevator within easy reach of elevator operator. Doors shall be arranged to open automatically as elevator arrives at a landing. Momentary pressure of "Open" button shall open a door that has been closed without elevator having been moved. Momentary pressure of "Stop" button shall stop the doors in any position. Constant pressure of the "Close" button shall close doors. Limit switches shall terminate the opening and closing the doors. Note: Similar push button stations shall be furnished on the room side of each door for push button controlled elevators.

(4) Interlocks

All doors shall be equipped with the proper electric interlock equipment to prevent operation of elevator unless all of the doors are closed and locked, and to prevent the opening of doors excepting the one at which the elevator is at rest. An emergency release switch shall be placed on elevator car to make the interlocking systems inoperative in case of emergency.

The mechanical latching equipment shall be so designed that the top section of the door automatically locks the lower section of the door when closed, and prevents the raising of the upper leaf from the outside.

(5) Car Gates

(5a) Construction—Vertical sliding steel gates shall be installed at open end of each elevator car. Car gates shall be constructed of No. 11 gauge, $1\frac{1}{2}$ -in. diamond wire mesh, having channel and angle iron frames, and equipped with malleable iron, milled groove shoes. Gates shall be of regulation height, and shall run in steel guides, connected to counterweights with No. 6 rustproof cable chain, running over malleable iron, turned groove sheaves. Counterweights shall run in steel guides, fully enclosed.

(5b) Operation—

Motorized—Car gates shall be equipped with individual electric operators similar in design and construction to those specified for freight elevator doors.

Manual—Car gates shall be manually operated, and equipped with web strap closers which shall reach to within 6 ft. 0 in. of floor, when gate is open.

(5c) Control—Motorized car gates shall operate simultaneously with the doors, and shall be controlled automatically from door control stations.

*See pages 6 and 7 for the Advantages of Peelle Motorized Doors

(6) Wiring

This specification includes all of the wiring to door appurtenances to make a complete installation.

(7) Painting Included

All material, except metal covering on doors, shall have one shop coat of aluminum primer.

(8) Co-operation with Other Trades

Freight elevator door contractor shall co-operate with other trades to obtain the most practical working conditions.

(9) Shop Drawings

Complete shop drawings shall be submitted for approval before manufacturing.

(10) Approval

Entire installation shall meet the approval of The Underwriters' Laboratories, Inc., State and Municipal Codes having jurisdiction.

(11) Guarantee

Entire installation shall be guaranteed by the manufacturer for a period of two years against defects in workmanship and materials.

CONSTRUCTION DETAILS

Details show construction of doors and spaces required in elevator shaft for installation of Pelle Regular Doors.

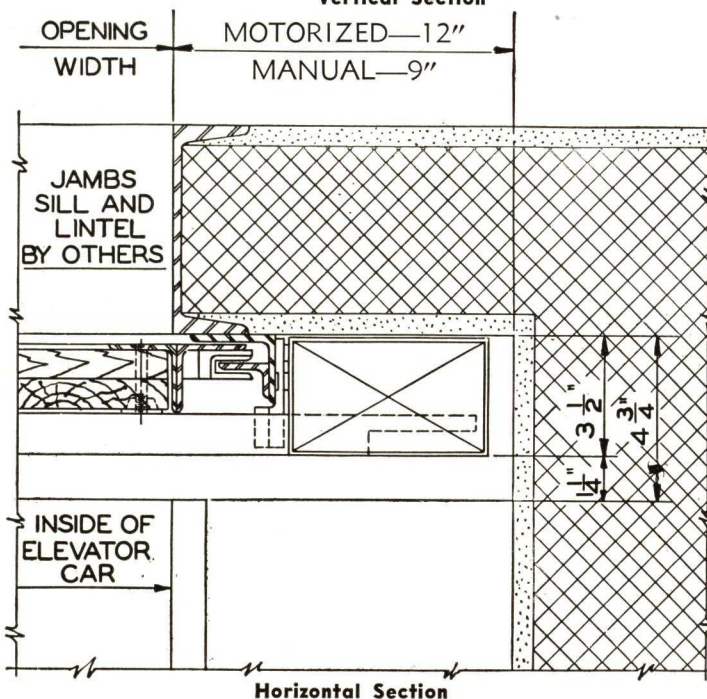
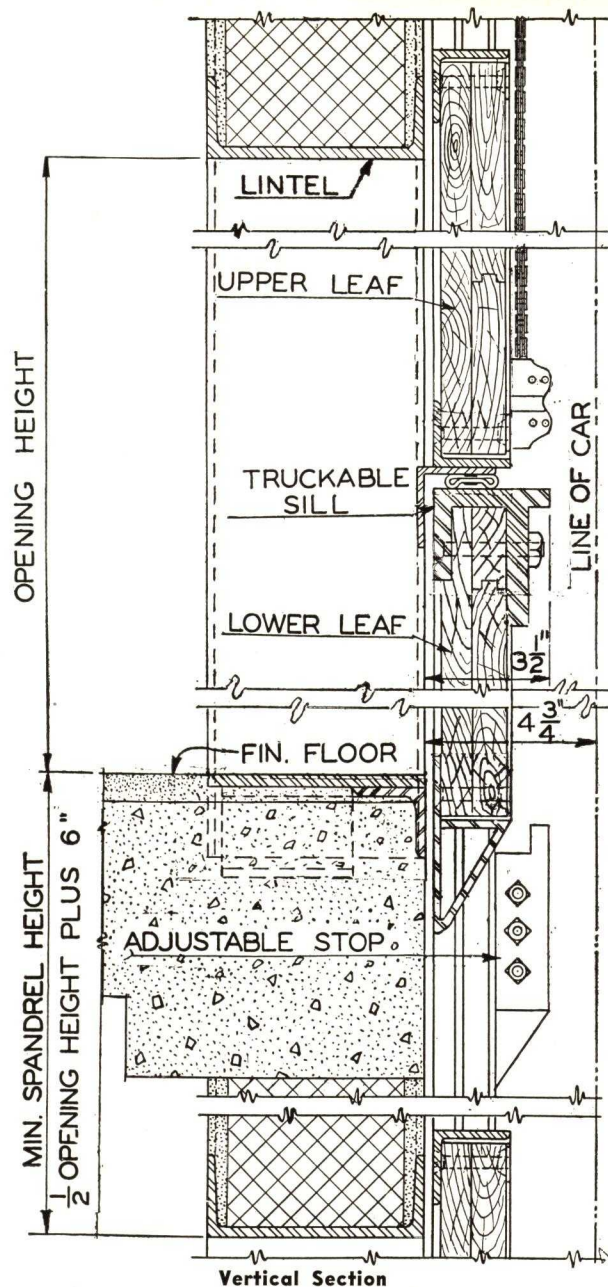
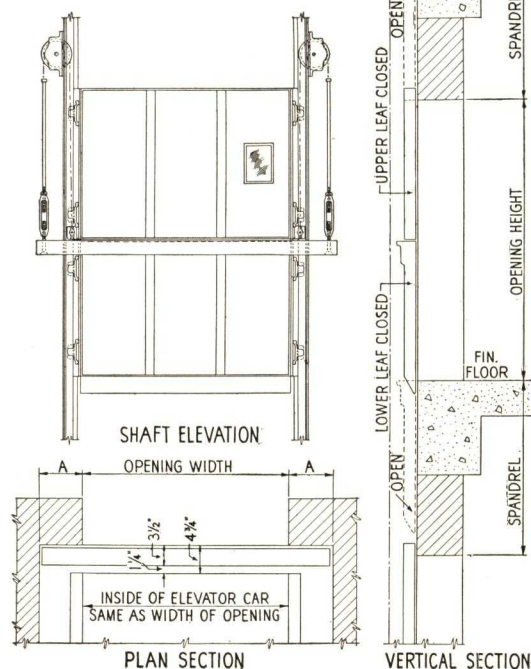
Minimum Spandrel Height—Is one half the opening height plus 6 ins. for either motorized, or manually operated doors. Where Regular Doors are used, the spandrel height at one floor limits the height of opening at that floor, and also height of opening at floor immediately above.

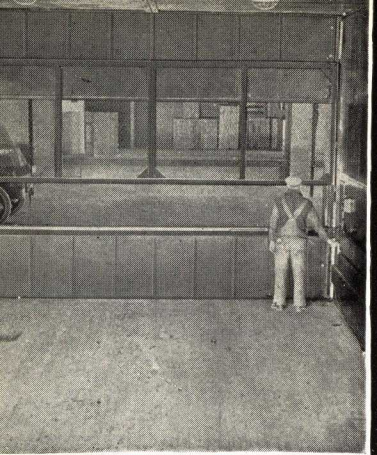
Minimum Jamb Return Space—Is measured horizontally on inside of shaft, from jamb of opening to return wall or nearest obstruction. For manually operated Regular Doors the minimum return should be 9 ins., and for Motorized Doors 12 ins. Where these return dimensions are not available Standard Pelle equipment can usually be modified to meet conditions.

Car Clearance—From flush shaft wall to edge of elevator platform is $4\frac{3}{4}$ ins. total for Regular Doors, $3\frac{1}{2}$ ins. for the truckable sill of the door, plus $1\frac{1}{4}$ ins. running clearance for the elevator. Running clearance of elevator may, in case of emergency, be reduced to $\frac{3}{4}$ ins., giving total clearance of $4\frac{1}{4}$ ins. For normal tolerances in shaft construction, $4\frac{3}{4}$ ins. total clearance should be allowed in all cases wherever possible.

Minimum Pit Depth—Is one-half the opening height of bottom landing shaft opening, plus 3 ins.

For design of doors, see page 14.
For shaft opening frame details, see page 15.





PEELLE PASS FREIGHT ELEVATOR DOORS

(Patented)

Motorized* or Manual

FOR USE WHERE THE MINIMUM SPANDREL
HEIGHT IS 10 INCHES

SPECIFICATIONS

(1) Scope of Work

Where indicated on the plans, and in strict accordance with the following specifications, furnish, deliver, and erect in complete working order, Peelle "Pass" Freight Elevator Doors and appurtenances, as manufactured by THE PEELLE COMPANY, 47 Stewart Avenue, Brooklyn, N. Y.

(2) Work by Others

(2a) Door Opening Frames and Sills—(Specify under "Miscellaneous" or "Ornamental" iron work.). (See page 15 for details and specifications).

(2b) Finish Painting—(Specify under "Painting."):

Note

Peelle door guides, hardware and angle frames around door sections are given a priming coat of aluminum paint at the factory. For industrial use no field or finish coat is necessary. Where finish painting is required, it should be included in the same specification under "Painting" with the trim and surrounding surfaces. Where special finishes, such as baked-on enamel, bronze, aluminum, etc., are required, they should be applied at the factory and specified accordingly.

(2c) Power Supply for Motorized Doors — (Specify under "Electrical Work"): The electrical contractor shall furnish in the elevator penthouse, for the use of the PEELLE COMPANY, a 220-volt, 3-phase, 60 cycle a-c. supply with a 30-ampere fused safety switch and shall include the necessary conduit and wiring to carry this supply to the Peelle Control Board.

(2d) Miscellaneous Requirements—(To be furnished by elevator contractor. Specification to be included under "Elevator Work"): The elevator contractor shall make provision on his car for mounting Peelle door cams, push buttons, emergency release switches and car gates; and on his control board shall provide terminals for Peelle cams, interlocks and shall provide selector relays but wiring shall be done by Peelle.

(If Push Button Elevator is specified, add):

The elevator contractor shall furnish car and hall door-operating push buttons but wiring will be done by Peelle.

(3) Doors

(3a) Construction — Doors shall be constructed of two-ply selected white pine, nailed, and covered with stretcher leveled copper bearing steel, galvanized sheets, design (select design from page 14). Doors shall be bolted into steel angle frames, astragals, shoe bars, and malleable iron milled groove shoes. Doors shall have movable lintels, where required. Upper edge of each lower door shall have a T-bar truckable sill, capable of supporting a trucking load equal to capacity of elevator. When door is open, truckable sill shall rest on malleable iron, adjustable stops. Doors shall be run in steel guides and each pair connected with $\frac{5}{8}$ in. square rolled steel rod with special micro adjuster, and No. 6 rust-resisting flexible cable chain, running over double race ball bearing sheaves having machined grooves.

(3b) Operation—

Motorized—Each door shall be equipped with Peelle Motorized electric operation, having individual motors for each door, and shall be entirely within shaft. Operators shall drive both sheaves of each door. Provision for emergency manual operation, and emergency exit from shaft, accessible from elevator, shall be made.

Manual—Doors shall be manually operated, and equipped with web strap closers which shall reach to within 6 ft. 0 in. of floor, when door is open.

(3c) Control—(For Motorized Doors)—A push button station for each line of doors marked "open," "close," and "stop," shall be placed on elevator within easy reach of elevator operator. Doors shall be arranged to open automatically as elevator arrives at a landing. Momentary pressure of "open" button shall open a door that has been closed without elevator having been moved. Momentary pressure of "stop" button shall stop the doors in any position. Constant pressure of the "close" button shall close doors. Limit switches shall terminate the opening and closing the doors. Note: Similar push button stations shall be furnished on the room side of each door for push button controlled elevators.

(4) Interlocks

All doors shall be equipped with the proper electric interlock equipment to prevent operation of elevator unless all of the doors are closed and locked, and to prevent the opening of doors excepting the one at which the elevator is at rest. An emergency release switch shall be placed on elevator car to make the interlocking systems inoperative in case of emergency.

The mechanical latching equipment shall be so designed that the top section of the door automatically locks the lower section of the door when closed, and prevents the raising of the upper leaf from the outside.

(5) Car Gates

(5a) Construction—Vertical sliding steel gates shall be installed at open end of each elevator car. Car gates shall be constructed of No. 11 gauge, $1\frac{1}{2}$ -in. diamond wire mesh, having channel and angle iron frames, and equipped with malleable iron, milled groove shoes. Gates shall be of regulation height, and shall run in steel guides, connected to counterweights with No. 6 rustproof cable chain, running over malleable iron, turned groove sheaves. Counterweights shall run in steel guides, fully enclosed.

(5b) Operation—

Motorized—Car gates shall be equipped with individual electric operators similar in design and construction to those specified for freight elevator doors.

Manual—Car gates shall be manually operated, and equipped with web strap closers which shall reach to within 6 ft. 0 in. of floor, when gate is open.

(5c) Control—Motorized car gates shall operate simultaneously with the doors, and shall be controlled automatically from door control stations.

(6) Wiring

This specification includes all of the wiring to door appurtenances to make a complete installation.

(7) Painting Included

All material, except metal covering on doors, shall have one shop coat of aluminum primer.

(8) Co-operation with Other Trades

Freight elevator door contractor shall co-operate with other trades to obtain the most practical working conditions.

*See pages 6 and 7 for the Advantages of Peelle Motorized Doors

(9) Shop Drawings

Complete shop drawings shall be submitted for approval before manufacturing.

(10) Approval

Entire installation shall meet the approval of The Underwriters' Laboratories, Inc., State and Municipal Codes having jurisdiction.

(11) Guarantee

Entire installation shall be guaranteed by the manufacturer for a period of two years against defects in workmanship and materials.

CONSTRUCTION DETAILS

Details show construction of doors and spaces required in elevator shaft for installation of Peele Pass Doors.

Minimum Spandrel Height—Is 10 ins. for either motorized, or manually operated doors. Where variation in spandrel heights for same line of shaft doors requires Pass Doors at some floors, and Regular Doors at other floors, regular door truckable sills are extended to take up same space in shaft as Pass Type Doors. All shaft walls shall be flush the full height of shaft. Regular Doors with extended sills are shown in vertical section.

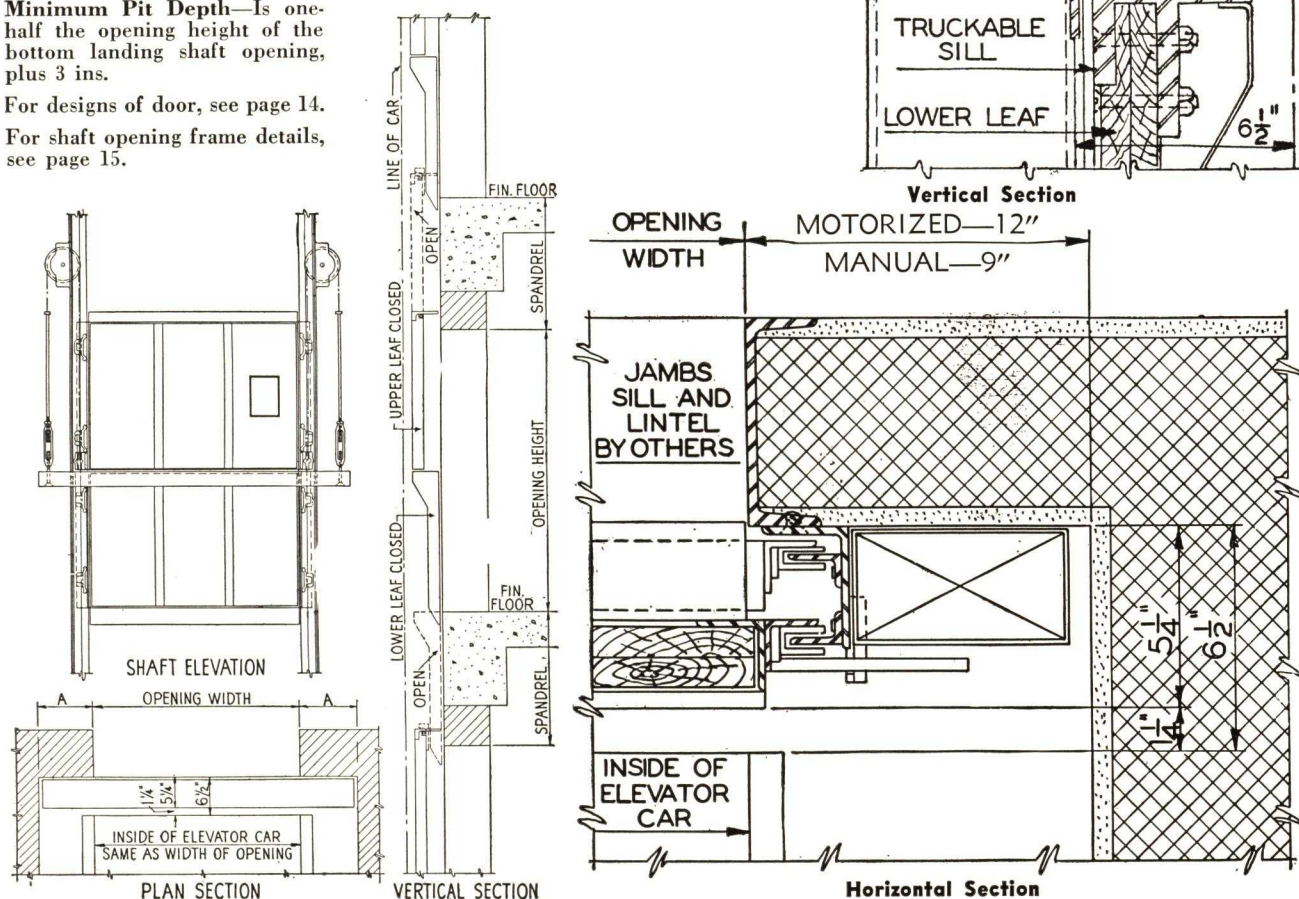
Minimum Jamb Return—Is measured horizontally on inside of shaft, from jamb of opening to side wall of shaft or nearest obstruction. For manually operated Pass Doors the minimum return space should be 9 ins. and for Motorized Doors 12 ins. Where these return spaces are not available Standard Peele equipment can usually be modified to meet conditions.

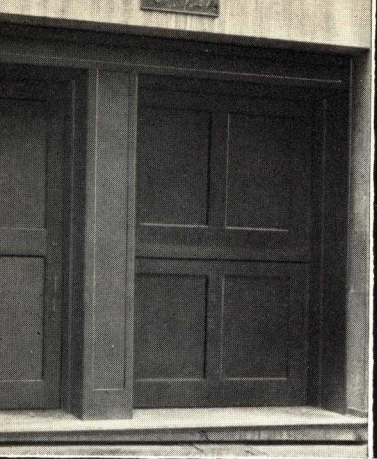
Car Clearance—From flush shaft wall to edge of elevator platform is $6\frac{1}{2}$ ins. total for Pass Doors, $5\frac{1}{4}$ ins. for truckable sill of door, plus $1\frac{1}{4}$ ins. running clearance for elevator. Running clearance for elevator may, in cases of emergency, be reduced to $\frac{3}{4}$ in., in which case total clearance would be 6 ins. For normal tolerances in shaft construction, $6\frac{1}{2}$ ins. total car clearance should be allowed in all cases wherever possible.

Minimum Pit Depth—Is one-half the opening height of the bottom landing shaft opening, plus 3 ins.

For designs of door, see page 14.

For shaft opening frame details, see page 15.





PEELLE SELF-SEALING FREIGHT ELEVATOR DOORS

(Patented)

Motorized* or Manual

FOR USE IN OFFICE BUILDINGS, HOTELS, DEPARTMENT STORES,
HOSPITALS, AS WELL AS FOR GENERAL USE.

Seal Shaft Openings Against Smoke, Odors, Dust, Sound,
Drafts and Light.

Advantages

Self Sealing Doors have special advantages of performance and safety not available in freight elevator doors constructed with conventional methods.

Self Sealing Doors operate vertically in inclined steel guides which carry the door sections away from the wall when opening, and seal the door sections against the wall when closing. This advantage has many applications where it is necessary to eliminate dust, sound, odors, heat or cold.

Cold Storage Buildings

Peelle Self Sealing Doors eliminate drafts and prevent loss of refrigerated air—temperature may be more easily maintained at a constant level where self-sealing doors are used.

Air Conditioning

Where temperature and humidity are controlled Self Sealing Doors eliminate vertical shaft drafts thereby making the control more effective.

Safety

The special guide construction of Peelle Self Sealing Doors permits their use irrespective of the spandrel distance; they are constructed the same regardless of whether "Pass" or "Regular" conditions exist.

The conventional "Pass" door when installed in buildings with low floor heights presents the hazard that might result in a person being struck on the head by the bottom edge of the lower section when the door at the floor above is opening. This hazard is especially dangerous on Push Button Elevators where workers are required to observe the position of the elevator through vision panels.

Since both sections of Self Sealing Doors seal against the wall when closed, this hazard is eliminated by the use of Peelle Self Sealing Doors.

SPECIFICATIONS

(1) Scope of Work

Where indicated on the plans, and in strict accordance with the following specifications, furnish, deliver, and erect in complete working order, Peelle Self-Sealing Freight Elevator Doors and appurtenances, as manufactured by THE PEELLE COMPANY, 47 Stewart Avenue, Brooklyn, N. Y. They shall be designed so that both leaves of each door when closed shall make contact with the shaft opening frame at both jambs, lintel, and sill.

(2) Work by Others

[Same as for Peelle "Regular" Doors—see page 8.]

(3) Doors

[Same as for Peelle "Regular" Doors—see page 8.]

(4) Interlocks

[Same as for Peelle "Regular" Doors—see page 8.]

(5) Car Gates

[Same as for Peelle "Regular" Doors—see page 8.]

(6) Wiring

This specification includes all of the wiring to door appurtenances to make a complete installation.

(7) Painting Included

All material, except metal covering on doors, shall have one shop coat of aluminum primer.

(8) Co-operation with Other Trades

Freight elevator door contractor shall co-operate with other trades to obtain the most practical working conditions.

(9) Shop Drawings

Complete shop drawings shall be submitted for approval before manufacturing.

(10) Approval

Entire installation shall meet the approval of The Underwriters' Laboratories, Inc., State and Municipal Codes having jurisdiction.

(11) Guarantee

Entire installation shall be guaranteed by the manufacturer for a period of two years against defects in workmanship and materials.

*See pages 6 and 7 for the Advantages of Peelle Motorized Doors

CONSTRUCTION DETAILS

Details show construction details and spaces required in shaft for installation of Pelle Self-Sealing Doors.

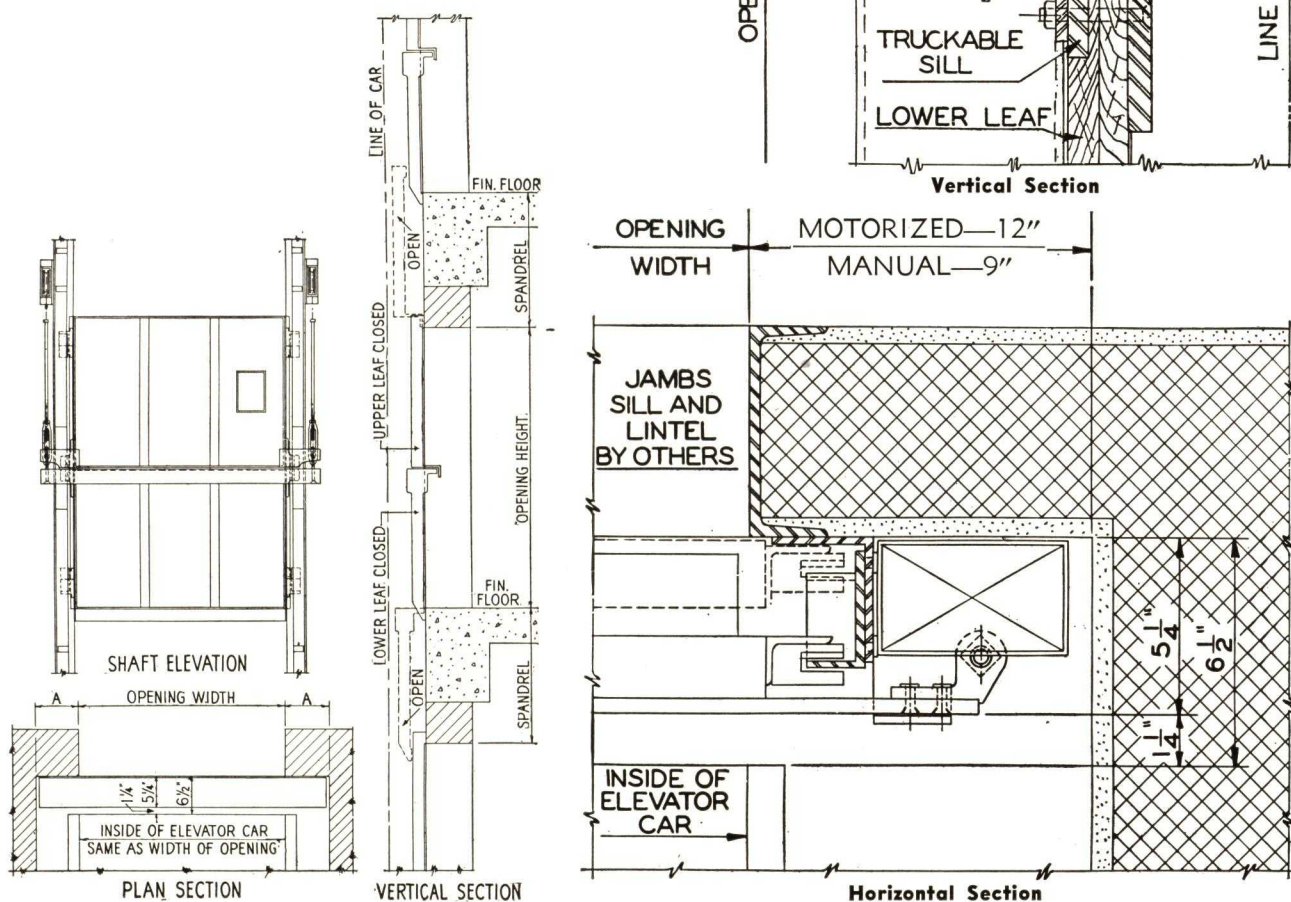
Minimum Spandrel Height—Is 18 ins. for either motorized or manually operated doors.

Minimum Jamb Return—Is measured horizontally on inside of shaft, from jamb of opening to side wall, or nearest obstruction. For manually operated Self-Sealing Doors the minimum return space should be 9 ins. and for Motorized Doors 12 ins. Where these return spaces are not available standard Pelle equipment can usually be modified to meet conditions.

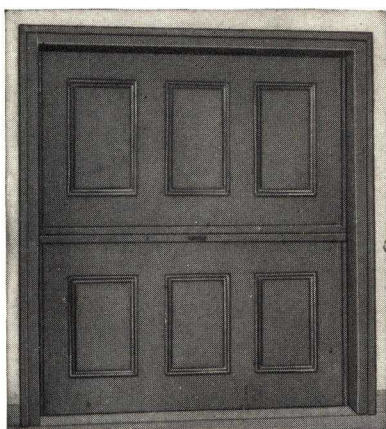
Car Clearance—From flush shaft wall, in which openings occur, to edge of elevator platform is $6\frac{1}{2}$ ins. total for Self-Sealing Doors, $5\frac{1}{4}$ ins. for the truckable sill of door plus $1\frac{1}{4}$ ins. running clearance for elevator. Running clearance for elevator may, in case of emergency, be reduced to $\frac{3}{4}$ in. in which case the total clearance would be 6 ins. To allow for normal tolerances in shaft construction, $6\frac{1}{2}$ ins. total clearance should be allowed in all cases wherever possible.

Minimum Pit Depth—Is one half of bottom landing shaft opening height plus 3 ins.

For design of doors, see page 14. For shaft opening frame details, see page 15.



PEELLE FREIGHT ELEVATOR DOOR DESIGNS



K-3 Kalamein Panelled Door, Three Solid Panels in Each Half

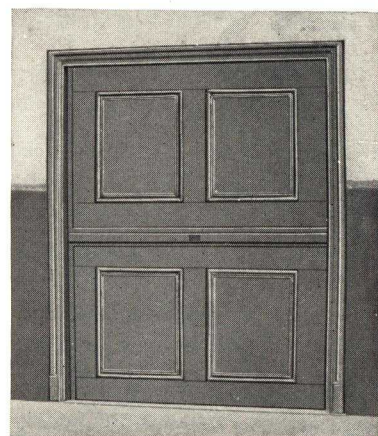
Standard Designs

Peelle Freight Elevator Doors can be made to any desired architectural design.

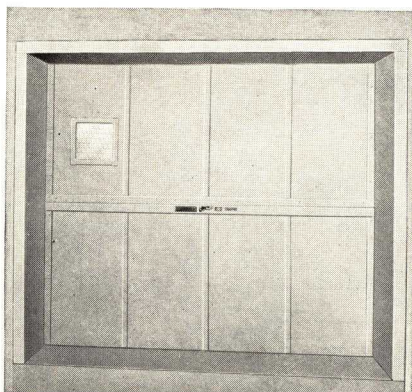
Designs R-9, or R-10, are standard for use in industrial buildings, where fine finish is not a consideration. The other designs show panelled doors which have been used where doors face public spaces, in corridors of commercial and institutional buildings, in sales spaces of department stores, etc.

All standard designs apply equally to all Peelle Freight Elevator Doors.

Peelle Doors for service and freight elevators in office buildings, hotels, department stores, hospitals, sanitariums, museums, etc., may be built to architectural designs to harmonize with the surrounding decorations.



K-1 Kalamein Panelled Door, Two Solid Panels in Each Half



R-10 Galvanized Metal Covered Door, with Flush Panels

R-9 without observation light

R-11 with two observation lights

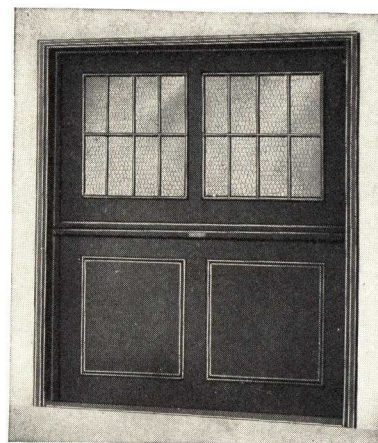
General Features

Glass—The legal maximum glass surface in any one door is 144 sq. in. except for exterior doors which may have larger glass area.

All doors having observation lights are furnished including the glass. Doors having glass of a larger area than observation light are not furnished with the glass.

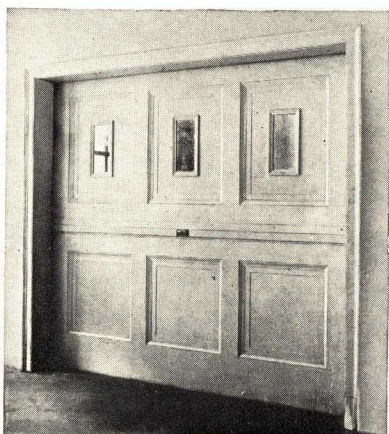
Underwriters' Label—The label of the Underwriters' Laboratories can be furnished on all Peelle Freight Elevator Doors. In such doors one 8 in. x 10 in. clear wire glass panel is standard, or two glass panels, the total area not exceeding 144 sq. in.

Painting—All standard metal doors and hardware, except the galvanized covering, receive one shop coat of aluminum primer. Special painting, enamel or grained finish will be done when so specified.



O-9 Kalamein Panelled Door, with Standard Size Steel Sash in the Upper Half

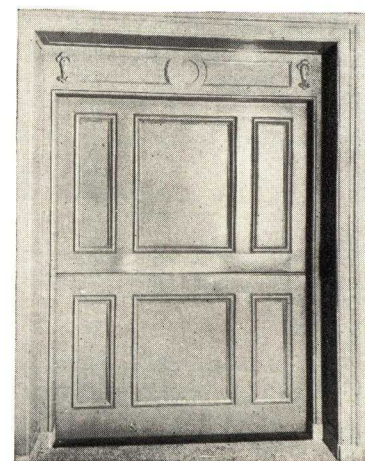
Because of the large glass area, this design can be used only on exterior wall openings



Special Designs

We desire to emphasize that there is no need for the architect, because of any esthetic reason, to hesitate using Peelle Freight Elevator Doors. We are prepared to execute designs in bronze, rust resisting steel alloys or any other metal, plain or ornamental, in accordance with the best standards of craftsmanship in use in the metal covered, hollow metal or ornamental metal trades.

Any desired finish whether to specifications or to sample may be obtained, including any kind of paint, enamel, baked enamel, imitation wood grained or special metal finish.



SHAFT OPENING FRAMES REQUIRED FOR PEELE DOORS

Typical Details

Although the shaft opening frames for Peele Doors are usually furnished by the miscellaneous iron contractor, this sheet of details is submitted to help the architect design the shaft opening to obtain the best practical result.

Steel frames in the shaft openings not only provide a substantial fastening for the door guides, but also provide an accurate base, or datum from which the door manufacturer may work. Steel frames also protect the masonry from damage by heavily loaded trucks.

Shaft Side Elevation—The upper left hand corner "shaft side elevation" shows a typical frame. Shaft opening frames are usually constructed of channels 1 in. deeper than the thickness of the masonry wall. This allows for plastering if required.

Freight elevator shafts are seldom plastered on the shaft side, and only occasionally on the room side. Where the outside of the shaft wall is not plastered, it should be specified that the masonry contractor should point up between the leg of the channel and the wall around the opening.

Frames may, if desired, be exactly the same depth as the masonry, but this construction requires considerable labor to cut the masonry to fit the channels. Whether the frames are constructed of channels 1 in. deeper than the masonry wall, or the same depth, the finished shaft is measured from shaft side face of the channel leg.

Vertical Section—"Vertical Section" shows a frame where it is not intended to plaster the room side of the shaft.

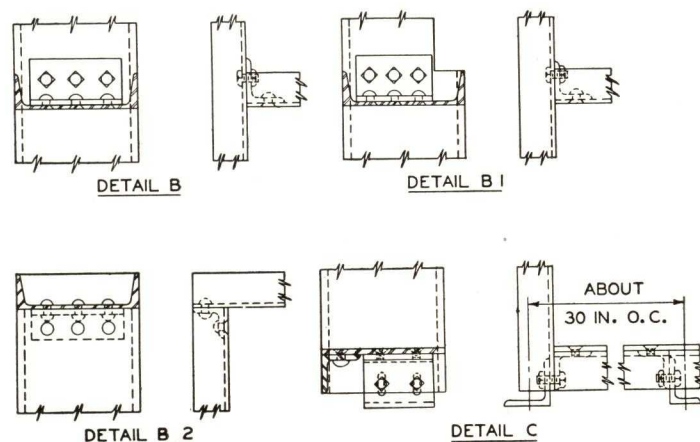
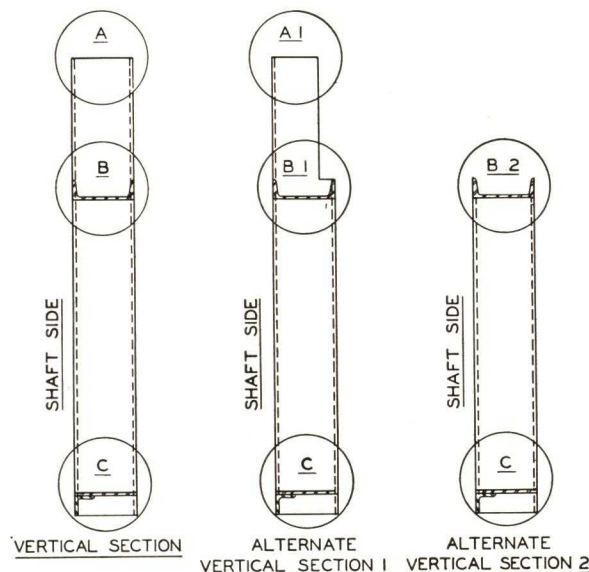
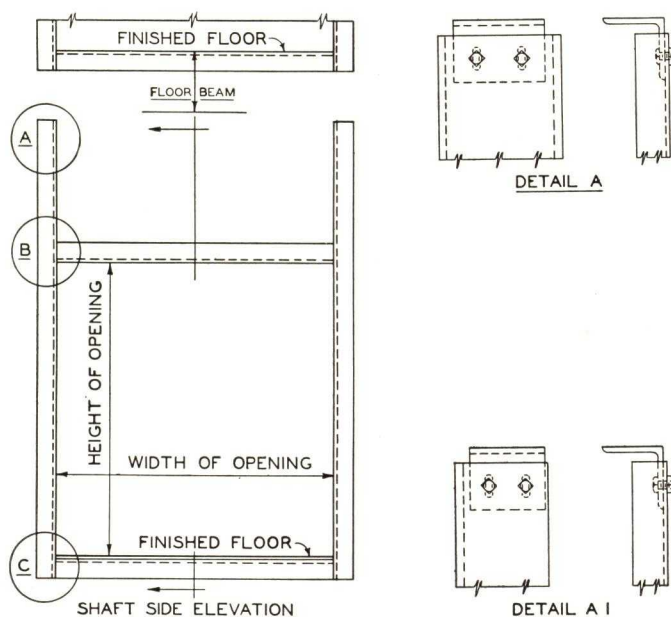
Alternate Vertical Sections 1 and 2—"Alternate Vertical Section 1" shows a frame where it is intended to plaster the room side of the shaft. Note the room side leg of the channel is cut out above the lintel. This construction reveals the frame only around the opening on the room side. The "Alternate Vertical Section 2" shows a frame where the vertical, or jamb members extend to the lintel only. This construction is permissible where the shaft is constructed of at least 8-in. brick, or 8-in. concrete.

Details A, A1, B, B1, B2 and C—Details A, A1, B, B1, B2 and C suggest methods of construction. These details may be modified to suit the standard practice of the fabricator.

Specifications

(To be included under "Miscellaneous" or "Ornamental" iron work)

The iron contractor shall furnish and install steel frames and sills for the Peele door openings as shown on the plans. These steel frames and sills shall be set with their jambs flush with the shaft wall and in vertical alignment, and sills perfectly level. These frames and sills shall be located in accordance with the final drawings of the elevator contractor and the Peele Company.

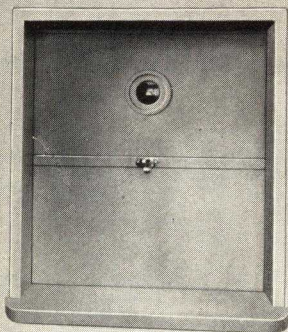


PEELLE DUMBWAITER DOORS

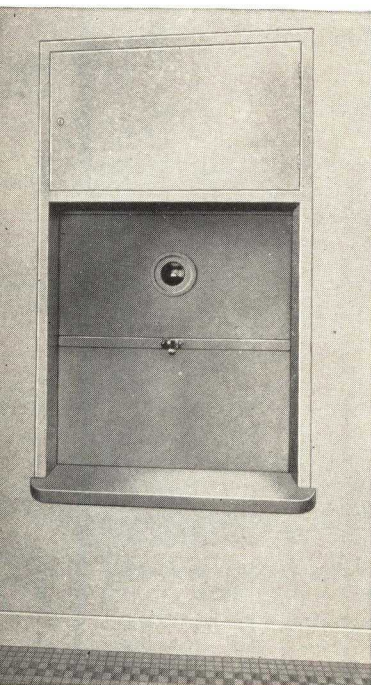
(Patented)

FACTORY-ASSEMBLED DUMBWAITER DOOR UNITS READY FOR SETTING INTO MASONRY WALL DURING CONSTRUCTION.

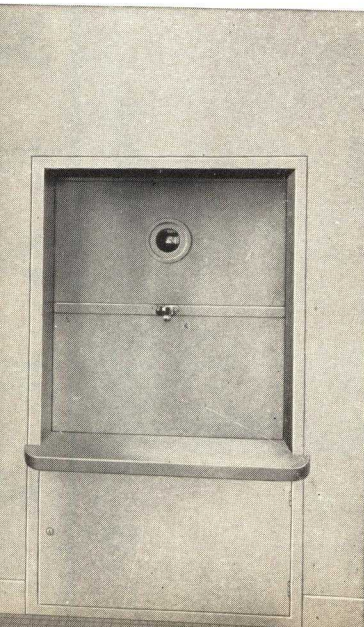
FOR USE WITH ELECTRIC OR HAND-POWER DUMBWAITERS; ALSO WITH SUBVEYORS AND CONVEYORS, TRAYVEYORS and RUBBISH CHUTES.



DW1
Peelle Standard Counterbalanced DW
Door Unit



DW1A
Standard Peelle Counterbalanced DW
Door with Swing Access Door Above



DW1B
Standard Peelle Counterbalanced DW
Door with Swing Access Door Below

General Description

Peelle Dumbwaiter Door Units are all steel, factory-fabricated Units. They are quiet and easy to operate and are designed to give satisfactory and maintenance-free service.

The units are mounted in steel guides with combination pressed metal frame, trim, and shelf. The entire unit is assembled in the factory, ready for setting into the masonry wall during construction. The door sections are constructed of two steel sheets and filled with a fire-proof acoustical filler.

Underwriters' Label

Peelle Dumbwaiter Door Units bear the label of the Underwriters' Laboratories, Inc.

Uses

Peelle Dumbwaiter Doors are used with electric or hand power dumbwaiters, subveyors, conveyors or trayveyors in hospitals, hotels, clubs, and office buildings. Doors of a similar construction, or doors that slide in on one section are used with laundry and package chutes.

Convenience

The door operates on the inside of the shaft, and takes up no floor space in opening or closing. It is adaptable to any plan arrangement. Each door has a 3 in. observation light so that the dumbwaiter is visible with the door closed.

Durability

Unit is built of steel throughout. There are no parts to wear out, or weights to drop off. A heavy flat link chain connects the two door sections. Sheaves are double duty ball bearing type.

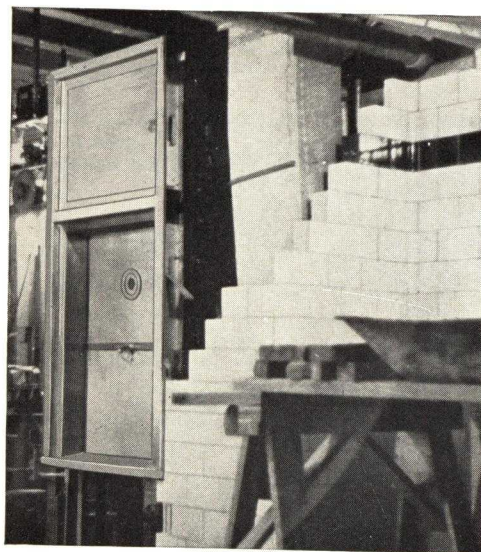
Operation

The two halves of each door are perfectly balanced, and have malleable shoes to eliminate friction. This construction, in conjunction with ball bearing sheaves, provides easy and swift opening and closing.

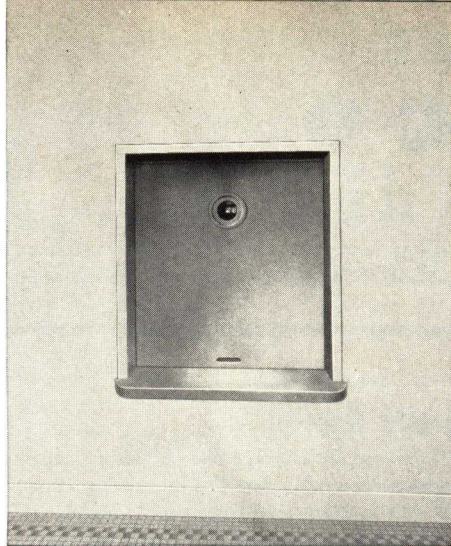
Safety

Each unit, for electric dumbwaiters, is provided with an electric interlock to prevent the operation of the dumbwaiter except when all doors in the shaft are closed.

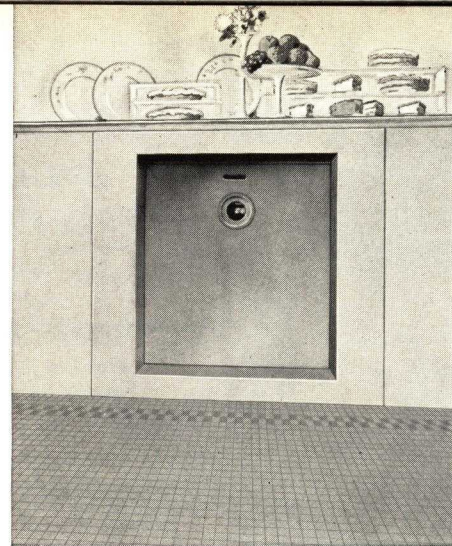
Each door is also equipped with an automatic lock that prevents the door being opened except when the dumbwaiter is at the landing.



Peelle Dumbwaiter Unit Being Installed



DW1U
(Left) — Peelle One-piece
Vertical Slide Up Dumb-
waiter Door Unit



DW1D
(Right) — Peelle One-piece
Vertical Slide Down Dumb-
waiter Door Unit (Under
Counter)

Erection

The doors, frames, guides and hardware are assembled in the factory to make a complete working unit. No field erection is required. The unit is built into the masonry wall like a window frame.

Economy

The first cost is the last cost. This unit saves maintenance and upkeep, saves floor space, saves time in opening and closing, and saves field erection.

Finishes

The frame is of pressed metal, with sanitary trim, mitered and welded at the corners. The unit as a whole is designed to present a pleasing architectural appearance. Standard units are furnished in steel

with one prime coat of paint. When specified, the doors can be furnished in stainless steel, aluminum or bronze.

Where painted decorative effects are desired, it is preferable to have the work done by the painting contractor rather than at the factory. As the units are installed before plastering is completed the finish is apt to be damaged while construction is being carried on.

SPACE REQUIREMENTS

Between the dumbwaiter car and sill of door opening 3 in. are required. Minimum return spaces for electric dumbwaiters are $4\frac{1}{2}$ in. on the interlock side and $2\frac{1}{4}$ in. on the opposite side. For hand power dumbwaiters, the minimum returns are $2\frac{1}{4}$ in. on each side.

SPECIFICATIONS

Dumbwaiter Doors

The openings to the dumbwaiter shall be provided with Peelle Standard Dumbwaiter Unit No. manufactured by THE PEELLE COMPANY, 47 Stewart Avenue, Brooklyn, N. Y.

The Peelle Dumbwaiter Unit shall be completely assembled with steel guides, integral frame and trim, ready for setting into the masonry wall by the general contractors.

The door sections shall be constructed of two thicknesses of 16 gauge flat steel sheets reinforced at all edges with channels. Door sections shall be 1 inch thick and filled with fire-proof acoustical filler. The door sections shall be connected to each other with flat link cable chain running over malleable iron, double race ball bearing, turned groove sheaves.

Each door shall be equipped with a 3-in. observation light. Each door shall bear the label of the Underwriters' Laboratories, Inc.

The integral frame and trim units shall be made to fit a masonry wall of (4 in.) (5 in.) (6 in.) thick, with an allowance for plaster on (one or both) sides.

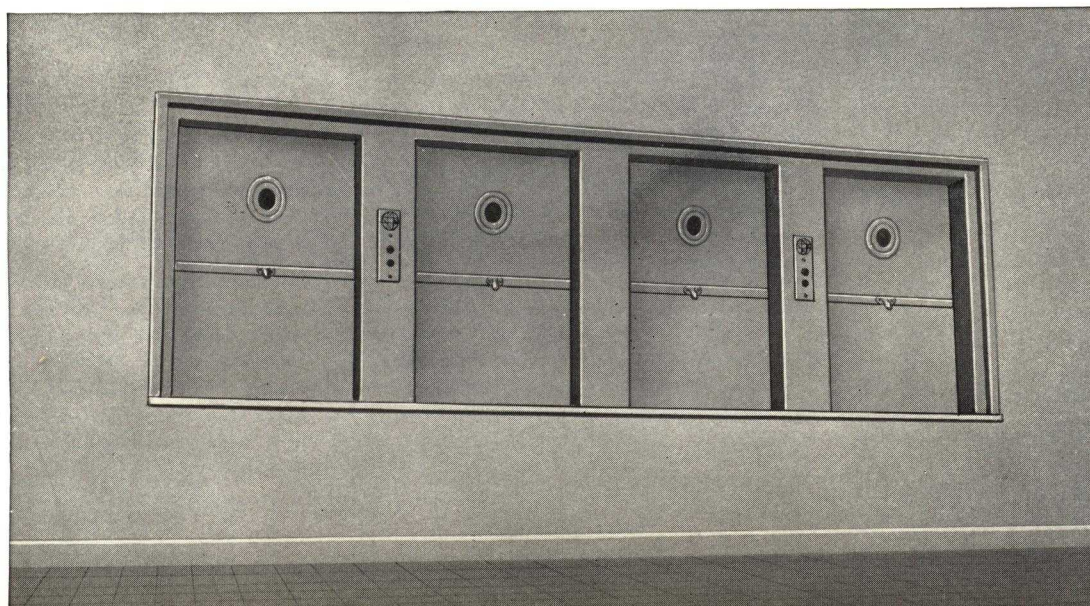
The assembled units shall have one prime coat of paint before shipment, to be finished by others on the job.

The doors shall be guaranteed for two years against defects in workmanship and materials by the manufacturer.

Dumbwaiter Door Locks

(For Electric Dumbwaiter)

Each of the Peelle Dumbwaiter Door Units shall be equipped with the Peelle combination interlock and automatic lock. The wiring of the interlock and installation of the cam for operating the automatic locks shall be done by the dumbwaiter manufacturer.

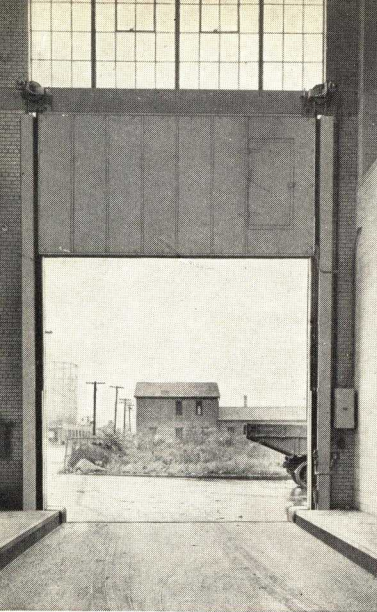


DW4
Peelle DW Doors
may be made in
banks of two or
more Units

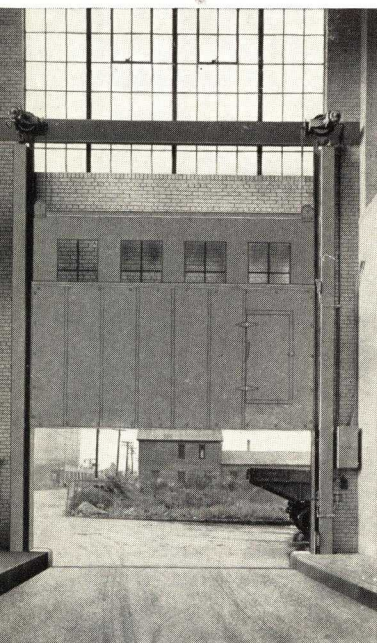
PEELLE TELCO ENTRANCE DOORS

(Patented)

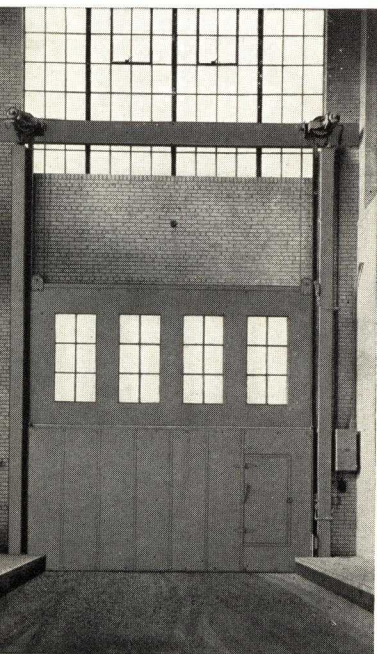
Motorized or Manual



Telco Door Open



Telco Door Half Closed



Telco Door Closed

Description

The Peelle Telco Door is a two-section, vertical sliding telescopic door. Both halves travel up simultaneously, the lower half traveling at twice the speed of the upper section.

Advantages

The Peelle Telco Door when open is completely out the way of vehicular traffic passing through the door opening. There are no obstructions at either side of the driveway.

Space Requirements

Minimum return space required at each jamb is 16 in. for motorized doors. For manual doors 21 in. is required on one side and 6 in. at the other. Headroom needed is one half the opening height plus 2 ft. 6 in.

Motorized Control

For the operation of Motorized Peelle Telco Doors the same system that has been so successful with Peelle Motorized Elevator Doors is employed. Because of its extreme simplicity this system can be relied upon for efficient trouble-free operation. In case of power failure, the doors can be operated manually without disconnecting any mechanical or electrical part. One or more push button stations may be used.

Construction

Peelle Telco Door sections are usually constructed of metal clad wood with steel angle framing. Sections may, however, be all-steel, bronze or aluminum. For ordinary use, wood (metal clad) is recommended because of the inherent rigidity of the laminated wood core. This construction will withstand the impact of moderate collisions without requiring expensive straightening and repairs.

Door guides, hardware, operating mechanism, etc., are the same for all doors regardless of the material used in their construction.

SPECIFICATIONS

Furnish, deliver and erect in complete working order, two-speed vertical sliding Motorized Telco Doors as shown on the plans. This equipment shall be furnished and installed by The Peelle Company, 47 Stewart Avenue, Brooklyn, New York, in strict accordance with the plans and following specifications, subject to the approval of the Architects and Engineers. The entire installation shall be of a type that has been in satisfactory commercial operation for at least five years.

Frame and Sill—The sill and the framing for the opening is specified elsewhere.

Painting—The finished painting of this equipment is specified elsewhere.

Electric Service Supply—220 Volt, 3 Phase, 60 Cycle current for the use of the door contractor shall be supplied at the door, as specified under the electrical specifications.

Door Sections—Shall be wood (metal clad) with steel angle iron frame, etc. in accordance with the manufacturer's standard practice. (If glass is used, glass and glazing should be specified under "Glazing" and be done by the glazing contractor.)

Door and Counterweight Guides—The door guides shall consist of a heavy wall angle to which the door guide angles are securely riveted. The door guides shall be secured to the steel framing and the jambs with machine screws, drilled and tapped in the field and set plumb at the proper gauge to provide a minimum clearance. The counterweight shall run in a steel guide consisting of four corner angles fastened to each other with rectangular braces spaced not more than 30 in. on center. The weight box shall be enclosed the full run of the counterweights with the front cover removable. Sheet metal cover for the weight guides shall be not less than 16 gauge.

Sheaves and Chains—The door shall be balanced with counterweights running in the steel enclosed guides as specified above. The door shall be connected to the counterweights with a heavy flat link flexible cable chain.

Electric Operation—The Motorized Sheave shall operate the door. The motor shall be of ample size and duty to operate the door smoothly without stalling or hesitating. The chains described above shall run over the Motorized Sheave which shall be of malleable iron construction with turned grooves. The

SPECIFICATIONS • PELLE TELCO DOORS • CONTINUED

sheave shall be set in malleable iron housing, and shall be equipped with highest grade roller bearings, having inner and outer ground sleeves. The operator shall be so designed that the door may be operated manually at any time without disconnecting any of the electrical or mechanical parts.

Electric Control—The control panel shall be of the enclosed type, and shall have mounted on the panel board, automatic reversing contactors, fused knife switch, and suitable thermal relays to protect the motor. The controlling apparatus shall include suitable limit switches and push buttons placed where indicated on the plans. Push button station shall consist of three buttons mounted in one box plainly marked "Open," "Close," and "Stop." The momentary pressing of the "Open" button will allow

the door to open to its full limit of travel. The momentary pressing of the "Stop" button will stop the door at any position in its travel. The continuous pressing of the "Close" button shall close the door.

Electric Wiring—The electric wiring is specified elsewhere, and shall be done in accordance with the wiring diagrams supplied by the door manufacturer.

Guarantee and Shop Drawings—This manufacturer shall furnish complete shop drawings for approval before proceeding with the manufacture of this equipment. The entire installation shall be guaranteed for a period of not less than two years, to the extent that all defective or worn parts will be replaced free of charge.

PELLE FOUR FOLD ENTRANCE DOORS

(Patented)

Motorized or Manual

Description

The Pelle Four Fold Door is composed of four vertical sections, the leaves or sections being hinged together in pairs and each pair folding toward the jamb to which it is hinged.

The hardware is especially designed and of extra heavy construction throughout to prevent sagging and to assure satisfactory and maintenance-free service. Ball bearings are used in the hinges which are equipped with grease gun fittings to facilitate lubrication and to assure easy operation.

Advantages

The Pelle Four Fold Door is an exceedingly rugged door for large openings for use where only minimum return spaces at the jambs and overhead are available.

Space Requirements

Minimum return space required at each jamb is 12 in.; overhead, 19 in.

Motorized Control

The electric operator is especially designed for the Pelle Four Fold Door, providing slow start and stop with fast operation but without slamming. An automatic release is provided so that the doors may be manually operated in case of power failure. One or more push button stations may be employed according to requirements.

Construction

The sections of the Pelle Four Fold Door are usually constructed of $2\frac{3}{4}$ in. thick white pine and this is the recommended construction. Sections, however, may be all-steel, bronze or aluminum if desired.

SPECIFICATIONS

Doors to be furnished and erected under this specification shall be Pelle Four Fold Doors as manufactured by the Pelle Company, 47 Stewart Avenue, Brooklyn, New York, at locations shown on plans.

Door Sections—Door sections shall be of elevation shown on plans, stiles and rails being $2\frac{3}{4}$ in. thick two-ply White Pine glued and blind screwed together.

Hinges—Hinges shall be malleable iron and steel, full ball bearing, spring cushioned with vertical screw adjustment, grease gun lubricated and weatherproof.

Astragals—Astragals of rubberized fabric and 5 in. wide strap steel shall be supplied for all doors.

Miscellaneous—The iron contractor shall provide iron plates securely welded to his iron opening frames wherever shown and shall perform such drilling and tapping in same or in other iron faces of jambs or heads of openings

as is shown on plans or required by this door contractor.

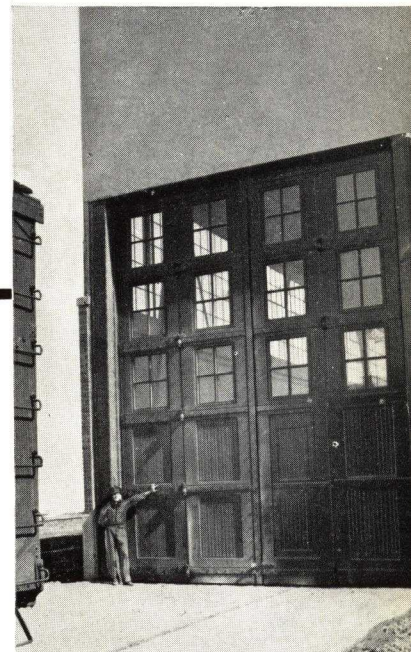
Control of door leaves in their swing-fold motion shall be effected through control rods as furnished and installed by this contractor.

Door leaves and hardware shall be furnished with prime coat of paint. Door panels shall be treated with No-D-K, a termite proof appliance before priming. All finished painting is to be performed under the painting contract and all glass and glazing under the glazing contract.

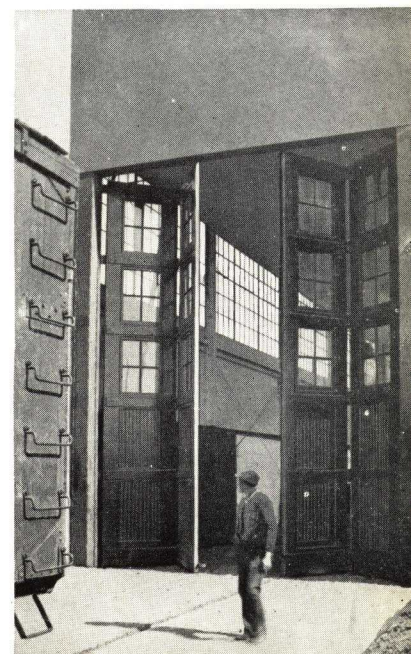
Electric Operation—The door shall be equipped with a Pelle Four Fold electric operator, with all necessary motor, brake, limit switches, push buttons, controller and manual release.

All wiring including hook up of motor shall be performed, in accordance with wiring diagrams of the Pelle Company, by the electrician who shall also furnish knife or cut-out switches as required by municipal ordinance.

Guarantee—Entire installation shall be guaranteed for a period of two years by the manufacturer.



Four Fold Door Closed



Four Fold Door Partly Open

THE PEELLE COMPANY

BROOKLYN, N. Y.

DISTRICT OFFICES

Address	Telephone
ATLANTA, GA., 212 Red Rock Bldg.....	Jackson 2284
BALTIMORE, MD., 1101 Architects Bldg., Philadelphia.....	Rittenhouse 2274
BOSTON, MASS., 57 Bartlett St.....	Everett 3042
BUFFALO, N. Y., 259 Delaware Ave.....	Cleveland 3566
CHICAGO, ILL., 130 North Wells St.....	Central 6475
CINCINNATI, OHIO, 626 Broadway.....	Cherry 2440
CLEVELAND, OHIO, 405 Caxton Bldg.....	Main 4053
COLUMBUS, OHIO, 50 East Broad St.	Adams 7923
DALLAS, TEX., 2227 Burt Building.....	2-3902
DAYTON, OHIO, Gas & Electric Bldg. (P. O. Box 495).....	Adams 6338
DENVER, COLO., 1411-13 Court Place.....	Taber 5244
DETROIT, MICH., 1240 Buhl Bldg.....	Cadillac 1925
HOUSTON, TEX., 523 First Nat. Bank Bldg.....	Preston 6885
KANSAS CITY, MO., 602 New England Bldg.....	Main 0766
LOS ANGELES, CAL., 1046 South Olive St.....	Prospect 0776
LOUISVILLE, KY., 1702 Bardstown Road.....	Highland 0164-J
MEMPHIS, TENN., 1639 Vance Ave.....	Memphis 2-4582
MILWAUKEE, WIS., 1013 W. Atkinson Ave.....	Concord 8300
MINNEAPOLIS, MINN., 1000 East 51st St.....	Regent 9477
NEW HAVEN, CONN., 295 Sherman Ave.....	5-6495
NEW ORLEANS, LA., 823 Perdido St.....	Raymond 4189
OKLAHOMA CITY, OKLA., 211 West 10th St.....	7-8432
PHILADELPHIA, PA., 1101 Architect Bldg.....	Rittenhouse 2274
PITTSBURGH, PA., Oliver Bldg.....	Atlantic 8790
PORTLAND, ORE., E. 8th and Market Sts.....	4146
RICHMOND, VA., 511 Atlantic Life Bldg.....	Dial 3-5712
ROCHESTER, N. Y., 703 Temple Bldg.....	Main 3720
ST. LOUIS, MO., 16th and O'Fallon.....	Chestnut 1395
SAN FRANCISCO, CAL., 516 Call Bldg.....	Douglas 7969
SCRANTON, PA., Cedar Ave. & Laurel Line.....	3-1271
SEATTLE, WASH., 401 White Bldg.....	Ma. 7650
SYRACUSE, N. Y., 145 Harding Place.....	9-3244
TAMPA, FLA., 805 Peninsular Telephone Bldg.....	2868
WASHINGTON, D. C., 1101 Architects Bldg., Philadelphia.....	Rittenhouse 2274

Richmond

FIREPROOF DOOR COMPANY

HOLLOW METAL DOORS

KALAMEIN DOORS

FRAMES AND TRIM

ELEVATOR DOORS

DUMBWAITER DOORS

INDUSTRIAL DOORS

COUNTERBALANCED DOORS

FIRE DOORS

SWING-FOLD DOORS

ELECTRIC OPERATORS

TRADE **Fyrgard** MARK



RICHMOND, INDIANA • BROOKLYN, NEW YORK

Fyrgard ANNOUNCES

A New Factory and A New Line

The name Richmond and the trade mark "Fyrgard" are synonymous meaning highest quality and service extending back over a long period of years in the field of metal covered doors and frames also freight elevator and large industrial doors. Architects and engineers have learned they can rely on Richmond to execute their requirements in an efficient and satisfactory manner.

Richmond has now added to its old line of door products a complete line of hollow metal doors. The company has expanded its facilities in acquiring the completely equipped plant of the Reliance Bronze and Steel Company at Brooklyn, N. Y. This move places Richmond in the enviable position where complete door requirements for a building regardless of size or type can be supplied from one source.

Richmond hollow metal will of course embody the complete service usually associated with that line and includes passenger elevator fronts, swing doors, frames and applied trim. The most up-to-date thermostatically controlled ovens and enameling equipment together with expert workmanship insures a high class finish on all these products.

A COMPLETE LINE WITH BETTER SERVICE

Architects can now expect to see the complete door and frame requirements for their building furnished by one factory or sub-contractor. The advantages of this are apparent and well known to every architect and builder. Look through these pages and specify all your door and frame requirements to be furnished by one factory. Richmond has men of many years experience in all lines even including the new hollow metal line who will follow through to see materials are of the highest grade and to suit the requirements.



BROOKLYN • NEW YORK



RICHMOND • INDIANA

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LABELED AND UNLABELED DOORS

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THE RICHMOND FIREPROOF DOOR COMPANY

EASTERN FACTORY: BROOKLYN, N. Y. • WESTERN FACTORY: RICHMOND, IND.

Richmond FLUSH HOLLOW METAL DOORS

Labeled and Non-Labeled

FOR HOSPITALS, SCHOOLS, LABORATORIES, OFFICES, HOTELS, ETC.

A flush or slab type hollow steel door with high grade baked enamel finish to match other interior work cannot be excelled for beauty or service and is certainly the best type from a sanitary standpoint.

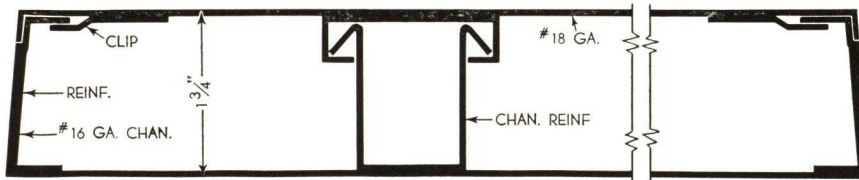
SPECIFICATIONS

Flush Type Hollow Steel Doors—Fabricated from two sheets of 16 gauge straightened and leveled furniture steel, to which are welded on the inside surfaces vertical stiffener sections about 4½ in. apart. The stiffener sections on opposite plates interlock. Horizontal stiffener channels full width of doors to be welded to plates at top and bottom of door. Flush type doors can be made 1¼ or 1¾ in. thick. Slide type elevator doors are made 1¼ in. thick. Swing type elevator doors are made 1¾ in. thick. Fillers of Insulite full width of doors in strips to be provided for sound deadening.



Corner of Flush Hollow Metal Door

"FYRGARD" CONSTRUCTION FOR DEPENDABILITY AND STABILITY



Richmond PANELED HOLLOW METAL DOORS

Labeled and Non-Labeled

FOR APARTMENTS, HOTELS, OFFICE BUILDINGS, SCHOOLS, ETC.

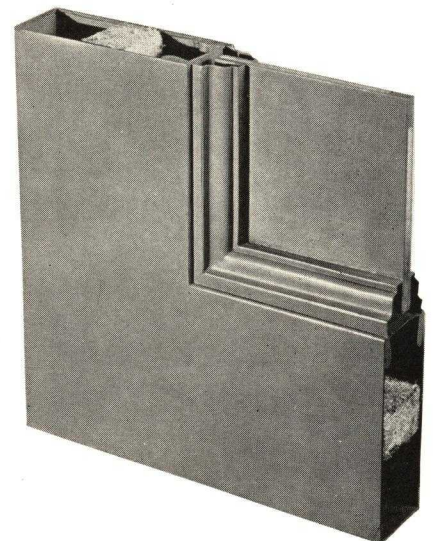
Hollow steel doors of any type desired should be used throughout all public buildings. With the improved methods and material both for basic construction as well as finishes now available the architect should insist on steel for all doors and frames. Specify a seven coat baked enamel finish now recognized as the peak of perfection by the better grade of hollow steel door manufacturers. You can expect to get a graining job that will match the most beautiful grain in natural woods and should insist upon it.

Hollow steel doors by Richmond may be specified to meet any Underwriters' classification required by the location of the door in the building.

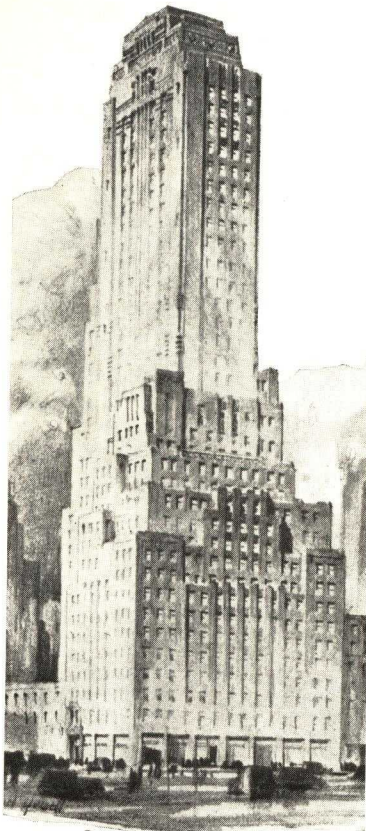
SPECIFICATIONS

Stiles and Rails of Paneled Doors—Made from 18-gauge cold rolled sheet steel having 20-gauge interlocking panel moulding of same material. Joints between stiles and rails to be welded. Top and bottom rail to be reinforced with two channel sections running full width of door and welded to rail plates, also to stiles.

Solid Panels—Built up from two outside thicknesses of furniture steel cemented onto a ¼-in. thick core of fire retardant material. Steel of 18-gauge thickness is used for panels over 36 in. wide and 20-gauge for those under.



Corner of Paneled Hollow Metal Door



19 Rector Street, New York

A Few Typical Installations

Bradley Memorial Hospital
Southington, Conn.
Medical Building No. 2
Veteran's Administration
Newinton, Conn.
Dormitory Building
Bryn Mawr College
Bryn Mawr, Pa.
Dormitory Building
Pennsylvania State College
State College, Pa.
U. S. Post Office
New Rochelle, N. Y.
Grimke High School
Washington, D. C.
Y. M. C. Association Building
Worcester, Mass.
Alco-Gravure
Publication Corporation Building
Hoboken, N. J.
Baptist Memorial Hospital
Memphis, Tenn.

HOLLOW METAL DOORS FOR SMOKE SCREENS

Smoke screens or fire retarding partitions should be a complete unit to fill the required space shown on plans. These partitions to be of all steel welded construction with the frames made to receive applied trim held in place with concealed trim (alternate) to have integral trim to match other combination steel frames and trim throughout the building.

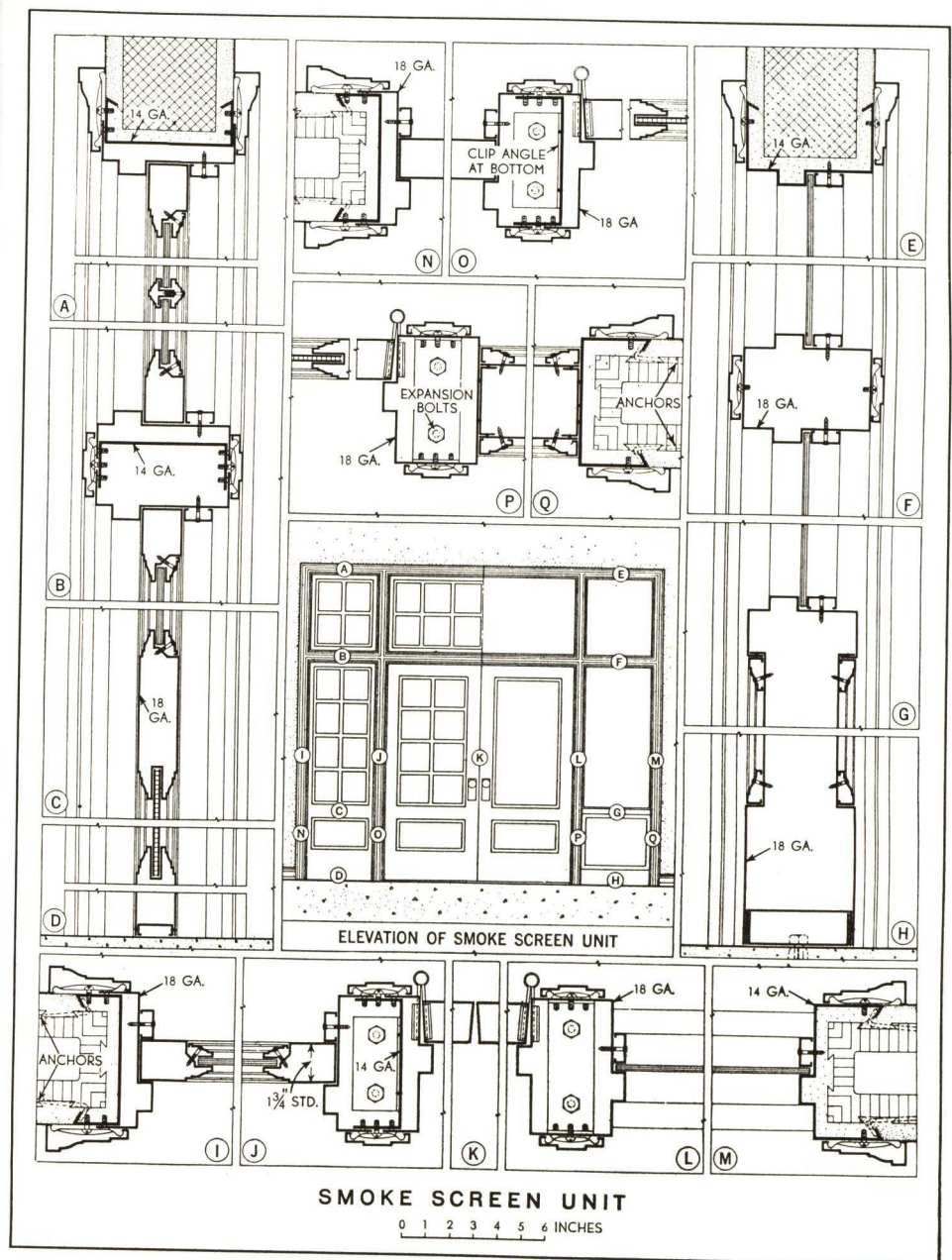
Where greater safety against burglarizing is desired than that afforded by the built-up panel described above, panels are made of $\frac{3}{16}$ or $\frac{1}{4}$ -in. thick steel plate.

Glazed Panels—Have glass mouldings of cold drawn steel secured to stationary mouldings by countersunk oval headed screws. All glass mouldings are made into frames with welded joints. When doors are of flush type, mouldings are welded to plates. Muntins where required are of cold drawn interlocking shapes welded to stiles and rails. Mirror doors have panel in back of mirror of 18-gauge steel.

LABEL SERVICE

Underwriters' Labeled Doors of hollow metal construction should be specified in all buildings where good appearances are a deciding factor.

Class A Fire Walls can now be supplied with all metal doors carrying an Underwriters' Class A Label in either flush or paneled construction. Simply specify the classification of label required according to the location in the building and designate whether paneled or flush doors are wanted.



Richmond KALAMEIN DOORS

Labeled and Non-Labeled

FOR APARTMENTS, HOTELS, OFFICES, SCHOOLS, INSTITUTIONS

Doors, frames, and trim furnished to any dimension, and any design illustrated. All types are standard in construction and thickness. Designs other than shown supplied upon request.

Kalamein swing doors may be furnished with or without Underwriters' label in accordance with construction.

Hollow metal mouldings, built into grooves in the stiles and rails or held by concealed clips, and machine pre-formed 24-gauge stretcher leveled metal covering are features of "Fyrgard" Doors.

Kalamein frames covered with tight fitting machine applied 24-gauge metal are smooth, with sharp, true lines. Kalamein frames cannot bear Underwriters' labels. If labeled frames are required, refer to our labeled all-metal frames.

Cores of all Richmond Kalamein doors, frames, casings, and moulds are machined from solid stock up to standard lengths.

Metal covered plinths of any design furnished upon request.

Standard finish—gray metallic primer. Durable baked enamel in plain color or wood grain applied in our factory when specified.

SPECIFICATIONS

LABELED AND NON-LABELED KALAMEIN DOORS

All metal covered doors shall be of the "Fyrgard" type as manufactured by The Richmond Fireproof Door Company.

Wood cores shall be of selected non-resinous spruce or white pine, kiln dried by door manufacturer. Stiles shall extend full height of door, and rails shall be tenoned into stiles. Wood cores shall be covered with 24 gauge zinc coated sheet metal (16 oz. copper where permitted and specified) drawn tight so as to lay smooth. All joints between rail and stile metal shall be lapped and nailed to wood cores. Seams to be soldered and ground smooth.

Panels shall be covered with 24 gauge zinc coated sheet metal glued to $\frac{1}{4}$ in. sheet asbestos (sheet rock for non-labeled doors) and held under high pressure until glue is set. Panels shall be set in hollow metal panel moulds, no nails, screws or clips to be used in moulds.

Glass shall be set in glass sash that is set in grooves of stiles and rails. Removable glass stops to be held in place with self-tapping sheet metal screws.

All doors shall be given one shop coat of gray metallic primer for galvanized iron.

Maximum door size all types except those with two solid panels is 3 ft. 6 in. wide by 7 ft. 6 in. high. Two panel doors limited to 3 ft. 10 in. wide by 7 ft. 6 in. high.

LABELED DOORS MANUFACTURED BY THIS METHOD COVERED BY U. S. LETTERS PATENT.

SPECIAL LABELED DOORS

Where sizes exceed those given and up to 4 ft. 0 in. by 8 ft. 0 in. or when exposed glass area must exceed 225 square inches, special labeled doors are furnished. The preceding specifications apply except as follows:

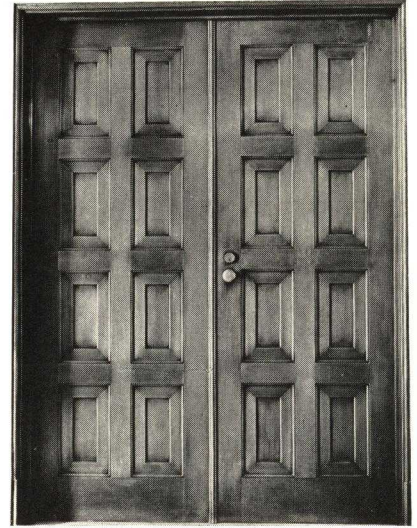
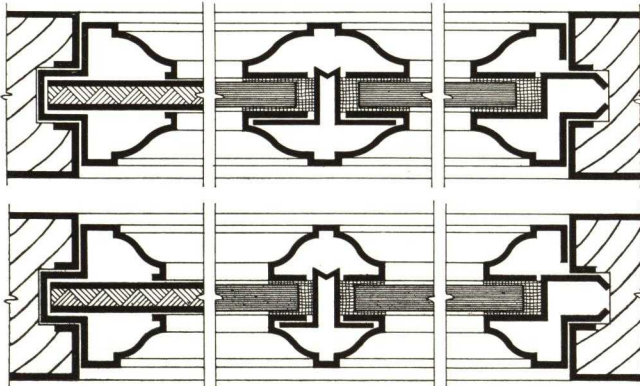
All joints between stile and rail metal shall be locked, soldered and ground smooth.

Panels shall extend into grooves in stiles and rails $\frac{1}{2}$ in. and be secured to core covering with $\frac{1}{8}$ in. bolts spaced not to exceed 10 in. on center.

Panel mould shall be hollow metal, mitered, brazed and attached to door with concealed clips.

Doors specified to have openings for glass, to have glass area surrounded by a $\frac{1}{4}$ x $\frac{7}{8}$ in. steel frame to which hollow metal glass mould and muntin bars are attached. Fixed muntin bar members shall be reinforced with $\frac{1}{8}$ x $1\frac{1}{2}$ in. bar steel for attachment of removable members.

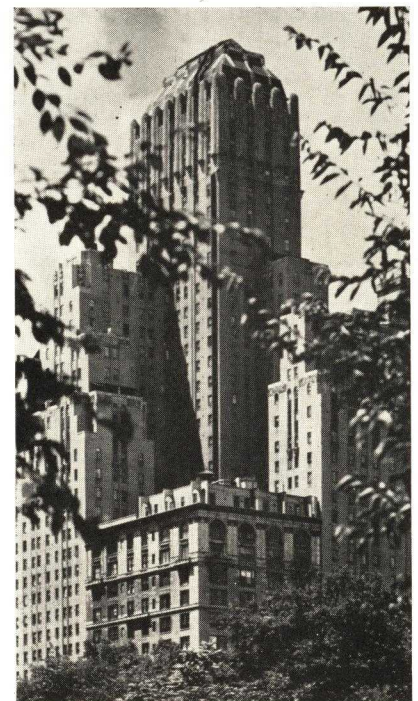
STANDARD UNDERWRITERS' LABELED OR NON-LABELED KALAMEIN DOORS (Patented)



Kalamein Doors

A Few Installations

Agfa Ansco, Binghamton, N. Y.
N. Y. Central Station, Syracuse,
N. Y.
Sewage Disposal Plant, Niagara
Falls, N. Y.
American-Viscose Co., Front Royal,
Va.
American Tobacco Co., Durham,
N. C.
American Can Co.
Supplee-Willis-Jones Co., Philadel-
phia, Pa.
Vassar College, Poughkeepsie, N. Y.
Johns-Manville, Richmond, Ind.
Traverse City Hospital, Traverse
City, Mich.

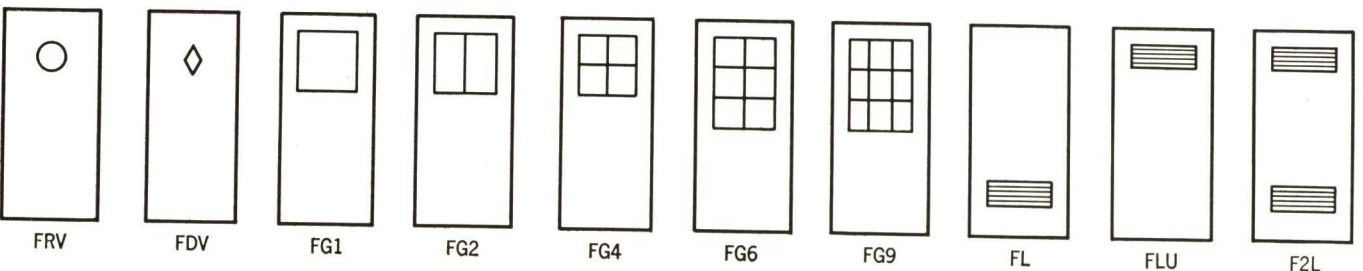
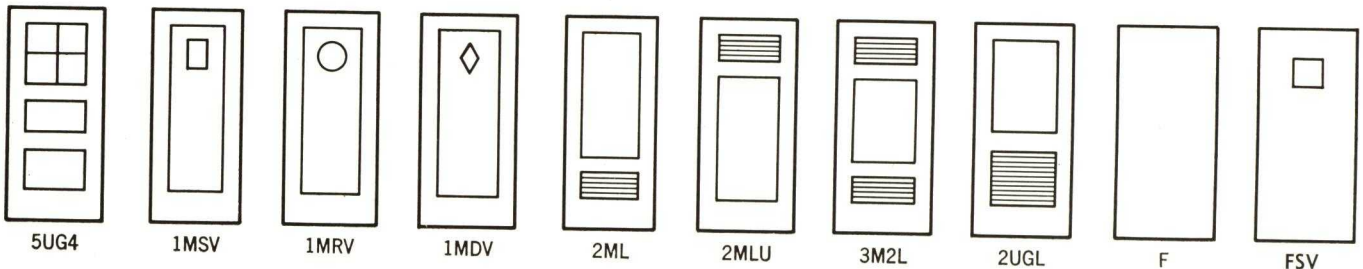
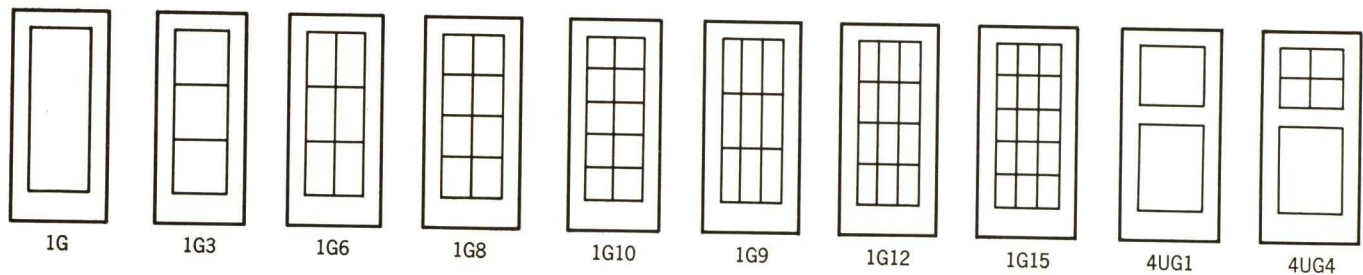
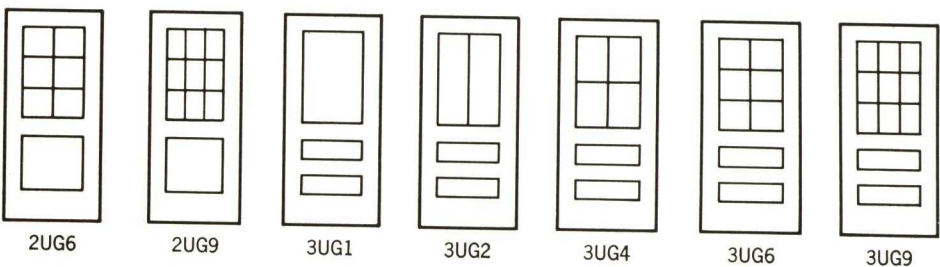
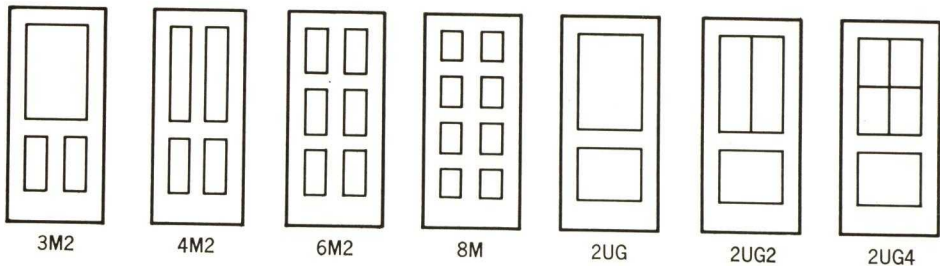
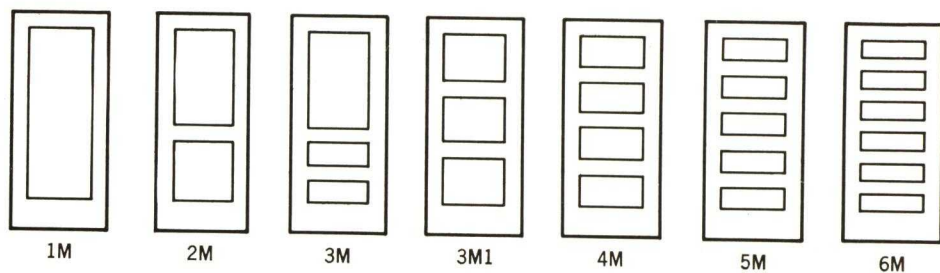


*Barbizon-Plaza,
New York City*

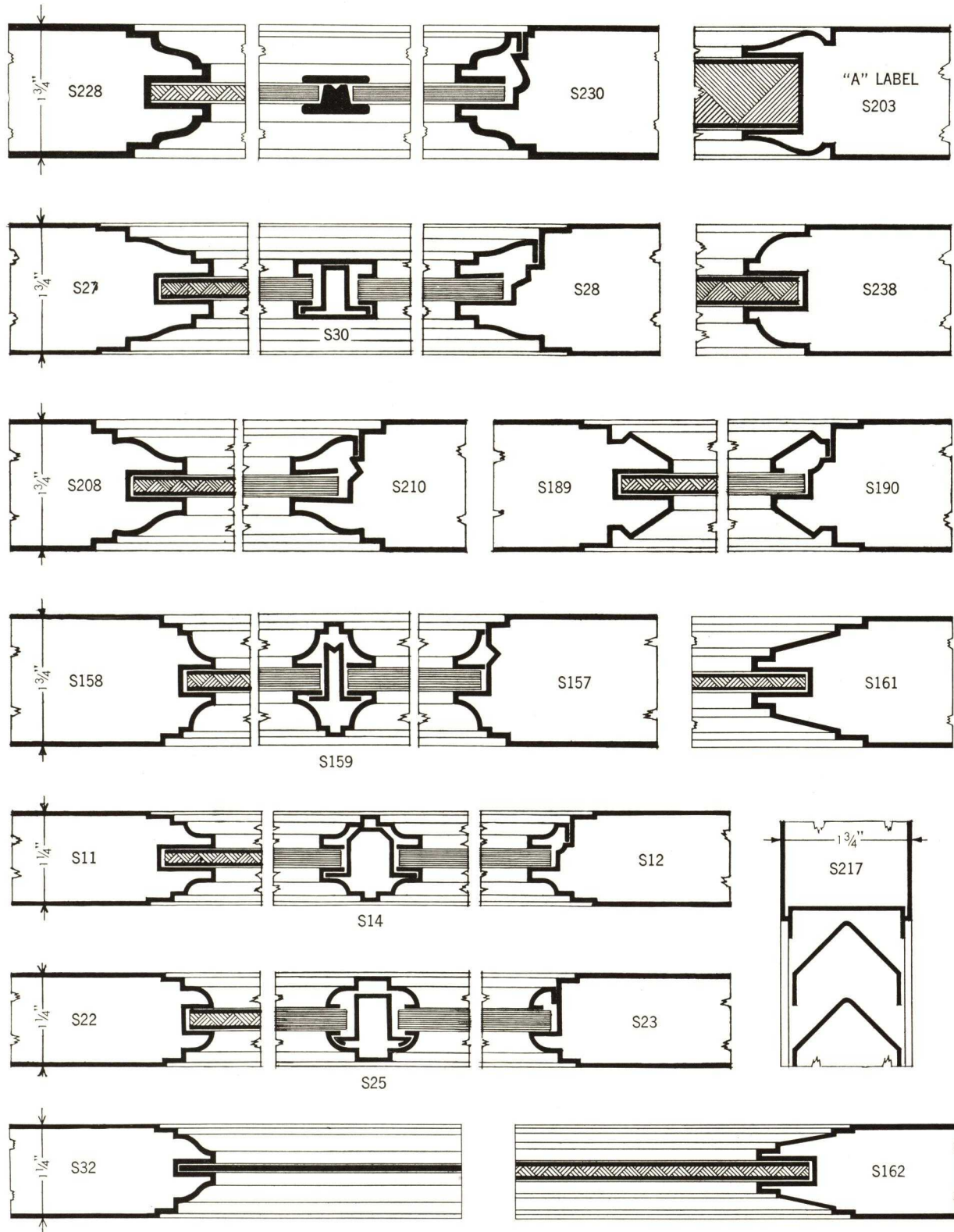
DESIGNS OF *Richmond* HOLLOW METAL *and* KALAMEIN DOORS



M - METAL VISION LIGHTS
G - GLASS SV - SQUARE
F - FLUSH RV - ROUND
L - LOUVRE DV - DIAMOND



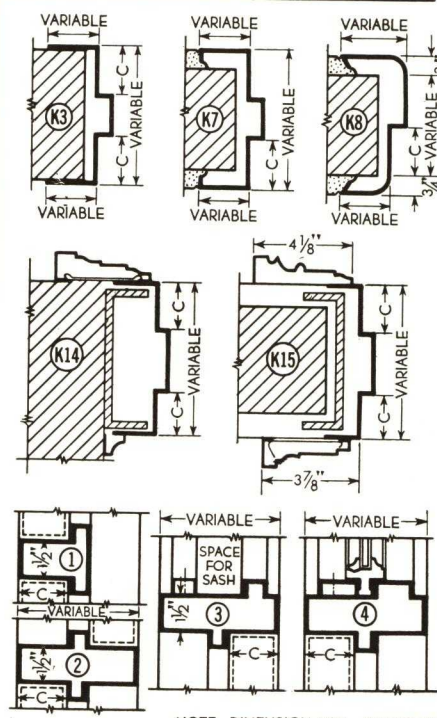
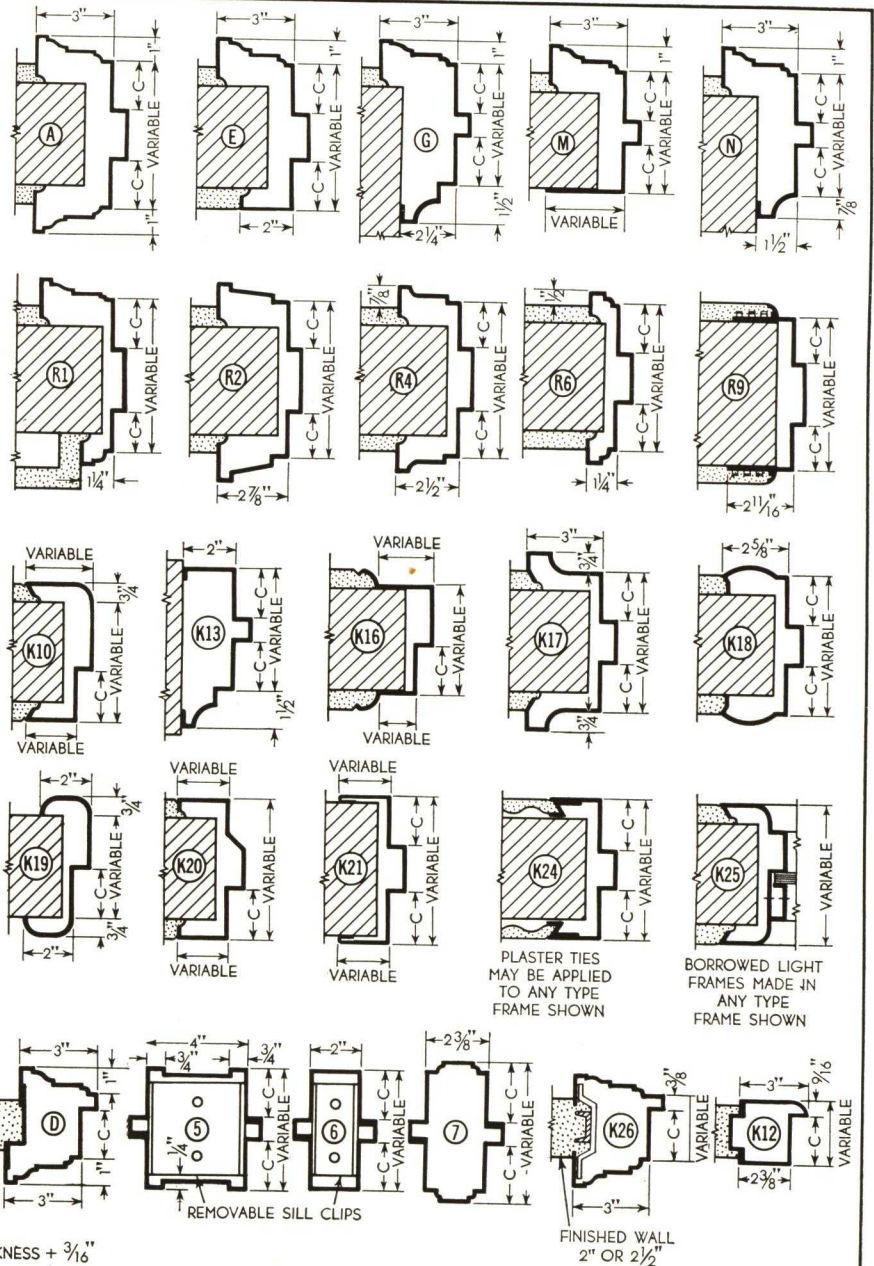
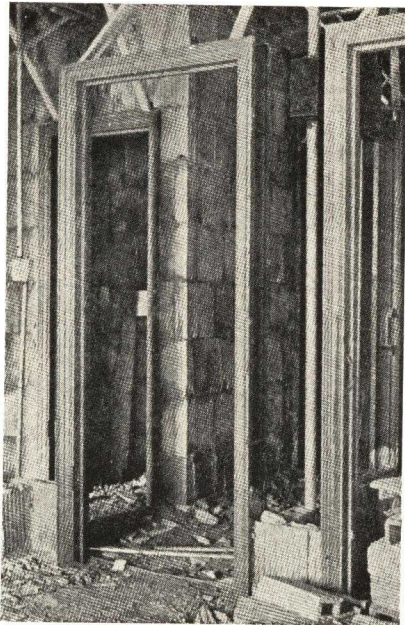
TYPES OF *Richmond* HOLLOW METAL DOOR MOULDINGS



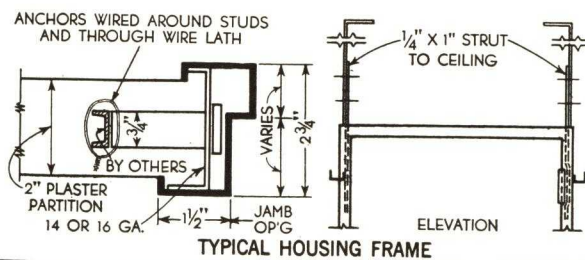
Richmond FRAMES AND TRIM

Architects are unanimous now in specifying combination steel frames and trim for use in apartments, schools, hospitals, hotels, and, in fact, all public buildings. Certainly, where long life, fire protection and economy are factors, this construction has completely replaced wood frames and trim.

TYPES AND SIZES



NOTE: DIMENSION "C" = DOOR THICKNESS + $\frac{3}{16}$ "

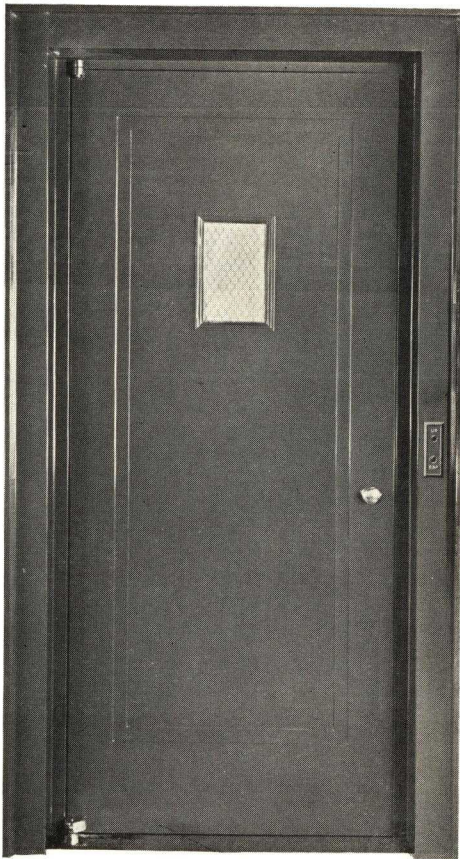


GENERAL NOTE

UNLESS OTHERWISE SPECIFIED WE WILL FURNISH ALL BUCKS WITH CLIP ANGLES AT BOTTOM FOR FASTENING TO FLOOR, $\frac{3}{4}$ " X $\frac{3}{4}$ " ANGLE SPREADERS AND SIX (6) No. 5 GA. WIRE ANCHORS 9" LONG.
ALL DRILLING AND TAPPING FOR MORTISE HARDWARE WILL BE DONE AT FACTORY.
ALL DRILLING AND TAPPING FOR DOOR CHECKS, CHECK BRACKETS, TRANSMOM ADJUSTERS AND FLUSH BOLTS FOR PAIR OF DOORS TO BE DONE BY ERECTION CONTRACTOR.



Richmond ELEVATOR ENCLOSURES



Swing Type Elevator Enclosure

DOORS, BUCKS AND TRIM

Built in the same manner as specified on preceding pages 3, 4, 5, 6, 8 and 9 for Hollow Doors the same quality may be obtained as well as the same design and finish as the doors for the balance of the building.

SWING TYPE DOORS

The popular apartment house elevator door. This is the practical unit to specify on the automatic passenger elevator for apartments or small office buildings where tenants are required to operate the elevator.

Specifications—Doors to passenger elevator to be Swing Type, extra heavy construction, rigidly reinforced for hardware and interlocks. Doors to be 1½ in. thick. Panel Type Doors to be constructed throughout 18 gauge stretcher leveled cold rolled steel. Flush Doors to be constructed of 16 gauge stretcher leveled cold rolled steel.

Frames for Passenger Elevator Doors to span full thickness of walls and to be of the buck and trim type as indicated on plans. Frames to be constructed of not less than 14 gauge stretcher level pickled steel.

Doors under this heading to be furnished complete and erected in place by door contractor and to include "Rixson" floor hinges and "Ferralun" sill. Push plate and knob set.

Finish—Doors and frames finished at the factory with a baked-on enamel rubbed to an eggshell finish.

SLIDE TYPE DOORS

Elevators required to carry extremely heavy traffic, such as for hotels, hospitals, office buildings, and, in fact, any elevator busy enough to warrant the expense of an elevator operator, should have Slide Type Doors specified. Center Parting Slide Type Doors, where each have slides in opposite directions, provides the maximum in speed to completely open or close.

Next in line comes the Single Slide, two and three speed slide.

The diagram on the opposite page illustrates Slide Type Passenger Elevator Door, two-speed, both sections sliding to one side.

Specifications—Doors to be 1¼ in. thick (flush or paneled as indicated.)

Doors to be constructed throughout of not less than 18 gauge stretcher leveled steel sheets adequately reinforced where required and assembled by electric arc weld process.

Doors to have insulite filler to provide sound deadening.

Finish—Doors and frames finished at the factory with a baked-on enamel rubbed to an eggshell finish.

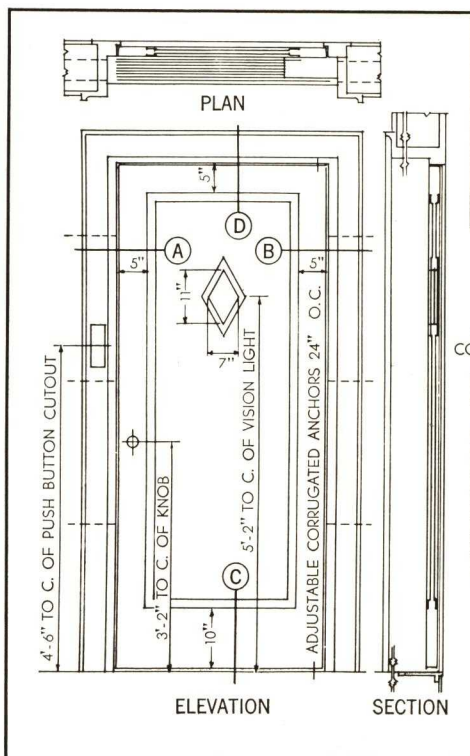
HANGER HOUSINGS—Formed of 9 gauge steel plates bent to form required and bolted to frame and angle supports.

ANGLE SUPPORTS FOR HANGERS AND CLOSERS—Built of structural angles extending from floor to floor and attached to the structural steel. Angles act as supports for operators or closers where used.

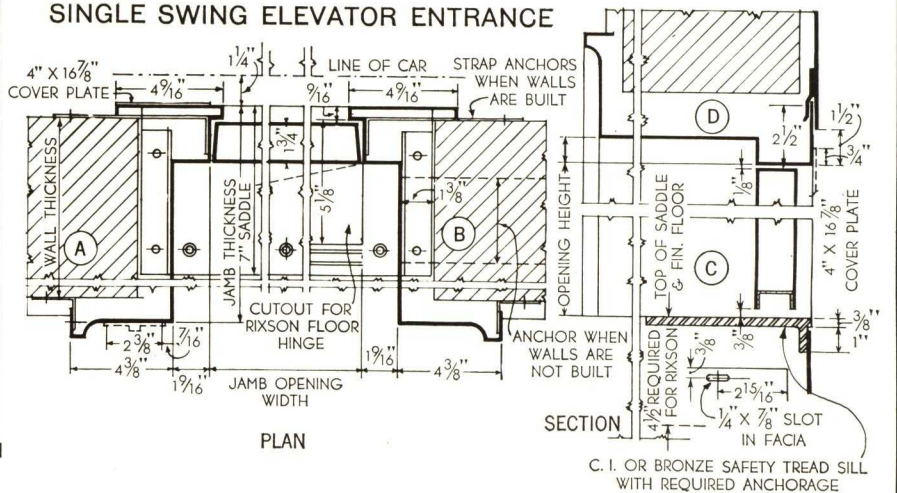
HOUSING COVERS—Made of 16 gauge metal and hinged or otherwise attached to hanger housings in such manner as to make inspection and oiling of hangers an easy matter.

ELEVATOR ENCLOSURE FRAMES—Either of the rough or finished type, are supported on the sills and attached thereto by clip angles.

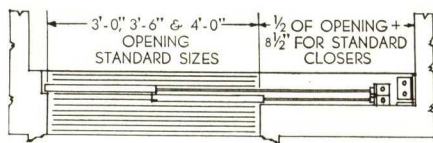
ELEVATOR ENCLOSURE SILLS—Iron or bronze castings arranged with a non-slip type of surface and constructed to set upon and be bolted directly to the structural steel. Grooves for door guides are machined. Bumpers will be attached to sills.



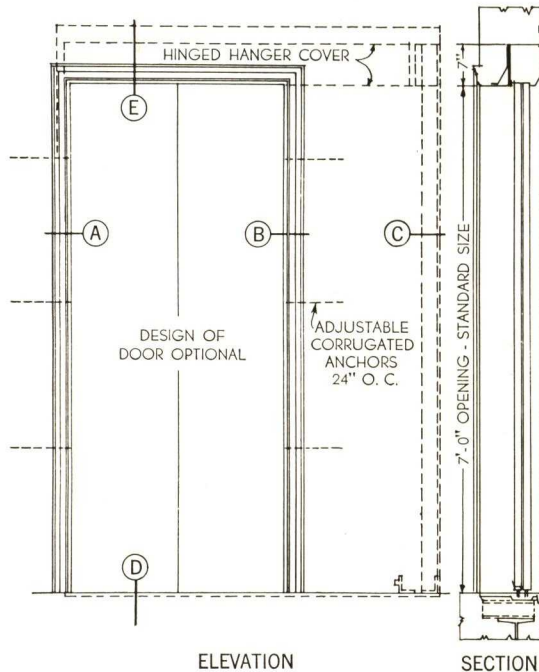
SINGLE SWING ELEVATOR ENTRANCE



TWO SPEED - TWO LEAF ELEVATOR ENTRANCE

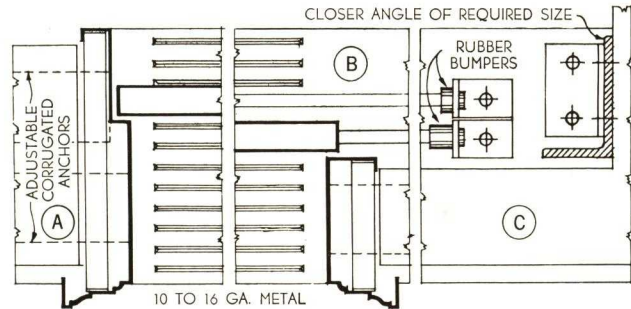


PLAN

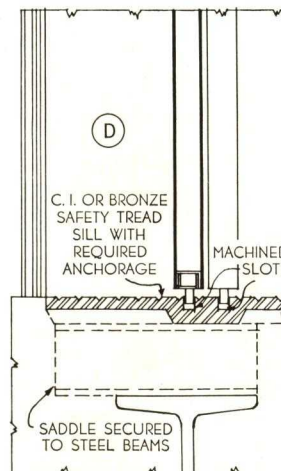


ELEVATION

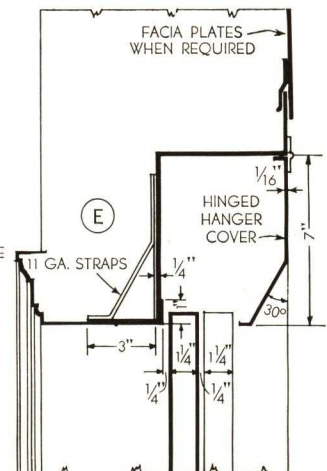
SECTION



PLAN



SILL



HEAD

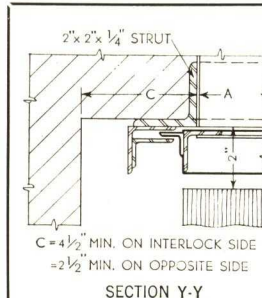
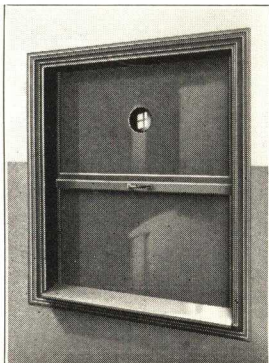
Richmond COUNTERBALANCED DUMBWAITER DOORS

Each unit to consist of the opening frame, supporting struts, door panels and guides. Vision Panels and Frame Shelf are optional. Suitable Interlocks furnished when specified.

CAN BE MADE WITH STEEL, ALUMINUM, STAINLESS STEEL OR STEEL CADMIUM PLATED

SPECIFICATIONS

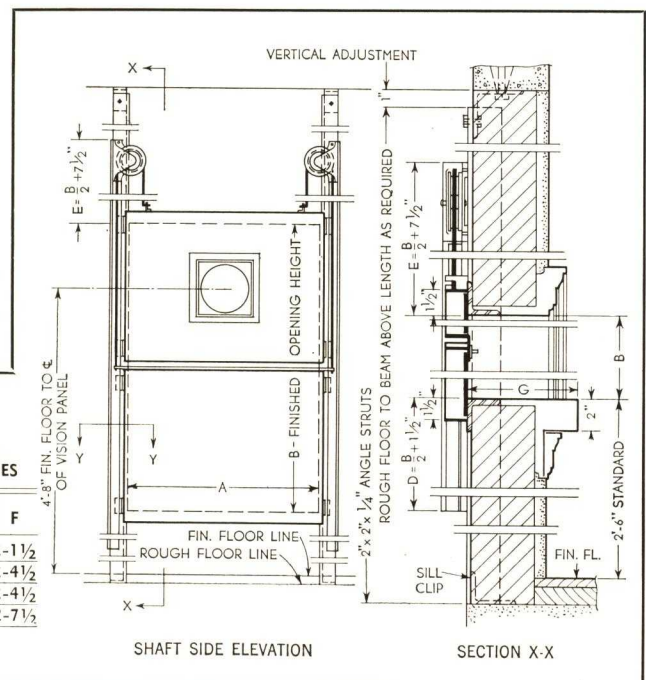
1. Doors to be steel plate and angle construction of the counterbalance type.
2. Doors to hang upon ball bearing sheaves with suitable cable chain and to operate in substantial guides.
3. Opening frames to be furnished in this contract and to be as shown on plans.
4. Doors to be equipped with suitable interlocks to prevent operation of car until all doors are closed.
5. Doors to be finished in metallic prime coat at factory.
6. Units to be assembled complete ready for installation and guaranteed by the manufacturer against defective material and workmanship for two years.



SECTION Y-Y

STANDARD OPENING SIZES

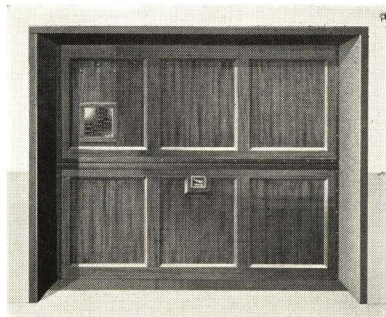
DOOR	A	B	F
60A	2-0	3-0	2-1 1/2
60B	2-6	3-6	2-4 1/2
60C	3-0	3-6	2-4 1/2
60D	3-0	4-0	2-7 1/2



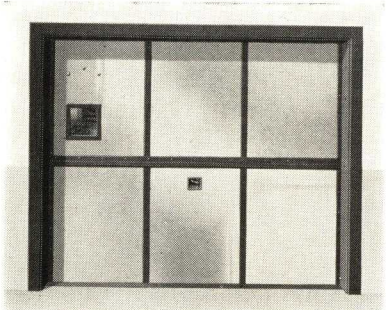
SHAFT SIDE ELEVATION

SECTION X-X

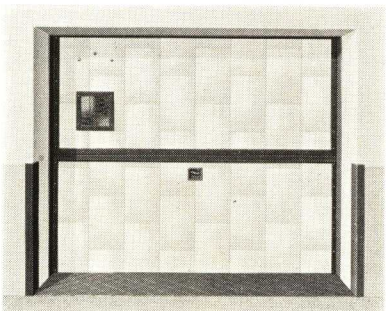
Richmond COUNTERBALANCED FREIGHT



C-1 (without), CV-1 with Vision Light
Kalamein Paneled



C-2 (without), CV-2 with Vision Light
Flush Panel Kalamein



C-3 (without), CV-3 with Vision Light
Panels Covered with Tin Plate



C-4 (without), CV-4 with Vision Light
Corrugated Steel Panels

Richmond "Fyrgard" Counterbalanced Freight Elevator Doors are fabricated to give the greatest amount of service, under very hard conditions over many years.

REGULAR DOORS

Regular Type Doors are required where there is sufficient space in the pit and between the floors. When the openings are substantially the same size the space required between openings equals one-half of the opening height plus 9 in. A clear return of 8 in. at each jamb is required. Minimum clearance car to building sill $4\frac{1}{4}$ in. Oversize doors $4\frac{1}{2}$ in.

REGULAR TYPE DOORS WITH EXTENDED SILLS

Regular Type Doors with Extended Sills are required at openings when the space between openings is sufficient for "Regular" doors but where "Pass Type" doors occur in the same vertical line or series. The construction is identical with "Regular" doors except for the trucking, which is similar to that of a "Pass Type" door. Clearances required are the same as for "Regular" doors, except minimum clearance car to building sill is $5\frac{1}{4}$ in. as for "Pass Type" doors.

PASS TYPE DOORS

Pass Type Doors are required where the space between openings is less than that specified for "Regular" doors (but not less than 12 in.), and where openings of different height are in the same series. The upper door section is set into the shaft to slide by the lower section of the door above. The trucking sill is extended accordingly, a swinging lintel frame guard is provided on the top edge of the upper section, and the guides have double guide angles. Otherwise the construction is similar to that of "Regular" doors. A clear return of 8 in. is required at the jambs, minimum clearance car to building sill $5\frac{1}{4}$ in. for standard and "Oversize."

DESIGN

Richmond Doors are furnished in the four styles shown. Other than the paneling, the construction of all styles is identical. All styles may be labeled.

Kalamein Paneled—CV-1—Door in grained enamel to match finish in corridor adds the finishing touch. Hatch side flush tin clad or metal clad. Standard finish—Gray Metallic Primer.

Metal Clad—CV-2—Combines fine appearance with serviceability and is the most popular style. Cap seams may be inverted to obtain a flush surface. Standard finish—Gray Metallic Primer.

Tin Clad—CV-3—Very serviceable for factory or warehouse where appearance is not important. Finish Gray Primer.

Corrugated Iron—CV-4—Recommended for damp places. May be cadmium plated after assembly. Standard finish—Gray Metallic Primer.

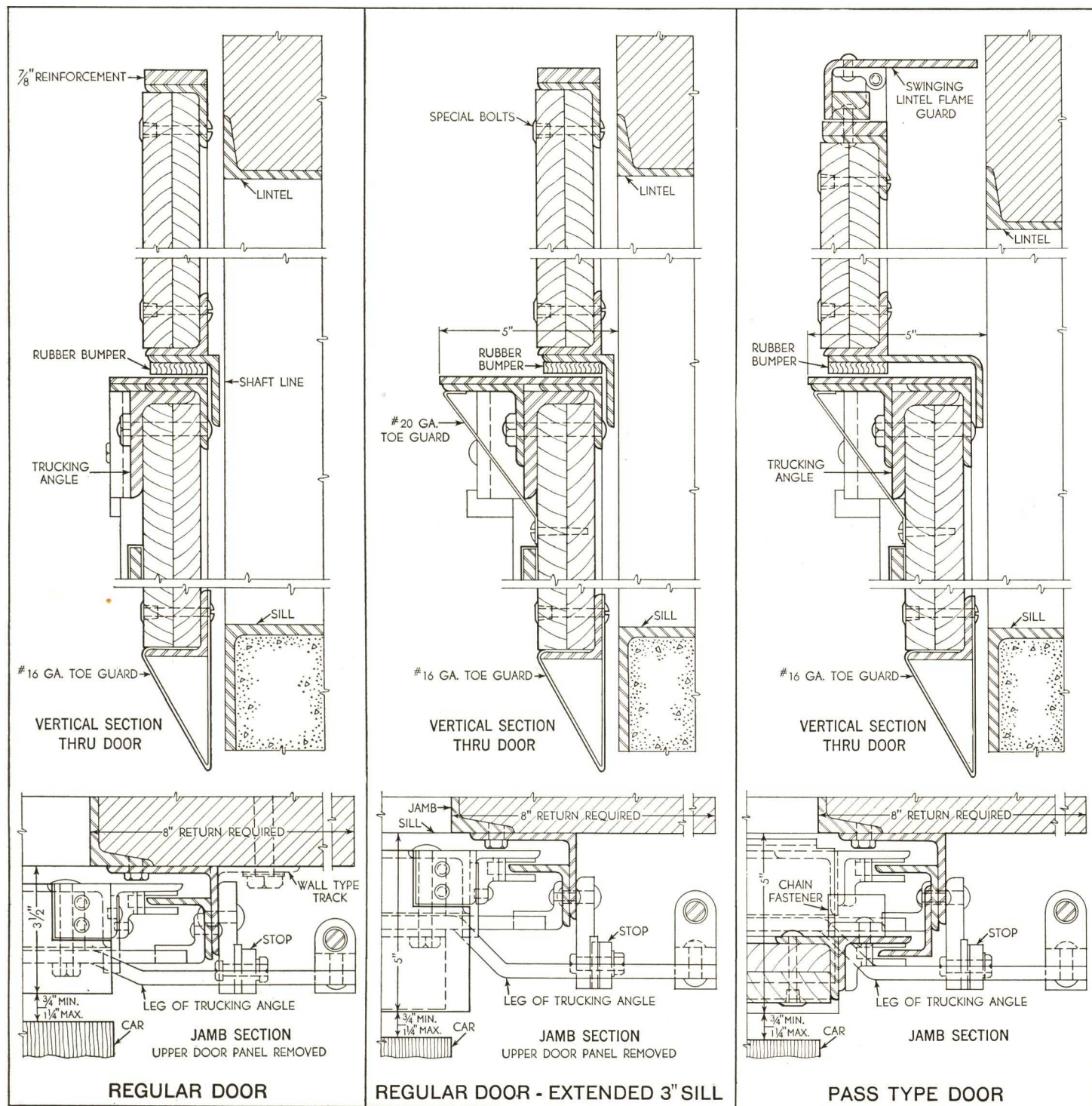
SPECIFICATIONS FOR FYRGARD LABELED COUNTERBALANCED

- For all openings to freight elevator shafts, except as otherwise noted, furnish and install "Fyrgard" Counterbalanced doors manufactured by The Richmond Fireproof Door Company, of Richmond, Indiana.
- Door paneling design to be Richmond Style—(CV-1), (CV-2), (CV-3), (CV-4).
 - CV-1 Door panels to be covered with 24 gauge galvanized patent leveled steel, laid smooth and free from waves and buckles, upon white pine kiln-dried core. Mouldings attached with concealed clips, corners mitred and welded.
 - CV-2 Door panels to be covered with 24 gauge galvanized patent leveled steel, laid smooth and free from waves and buckles, upon white pine kiln-dried core, with cap type vertical seams.
 - CV-3 Door panels to be covered with Standard approved Fire Door Terne plate.
 - CV-4 Door panels to be 18 gauge corrugated steel securely riveted to frame structure and reinforced with channel stays.
- Door trucking sills to sustain a maximum load of . . . pounds, to rest upon rigid adjustable stops riveted to door guides.
- Doors to be equipped with malleable antifricition milled groove guide shoes, to be hung upon $\frac{3}{8}$ -in. chain rods, and No. 6 cable chain running over 5-in. ball bearing machined malleable sheaves, and to operate in heavy structural angle guide rails, securely attached to shaft wall and opening frames.
- Doors to be provided with web strap closers for manual operation and equipped with (electro-mechanical interlocks) (Master interlocks) in accordance with car control. Interlocks shall be wired by (Door Contractor) (Elevator Contractor).
 - Doors to be equipped with DM Individual electric operators and interlocks arranged for (Push Button) (Automatic) control.
 - Doors to be equipped with (a) Penthouse Master Operator(s) and accessories complete arranged for (Push Button) (Automatic) control.
 - Doors to be arranged for prompt, easy manual operation in case of power failure.

ELEVATOR DOORS

Labeled and Non-Labeled

CONSTRUCTION OF STANDARD DOORS BUILT TO WITHSTAND ANY LOAD EQUAL TO ELEVATOR CAPACITY



(e) Power operated doors shall be completely wired by door contractor.

6. All material shall receive a prime coat of metallic primer at factory.

7. Door contractor to have free uninterrupted use of running elevator during installation of material.

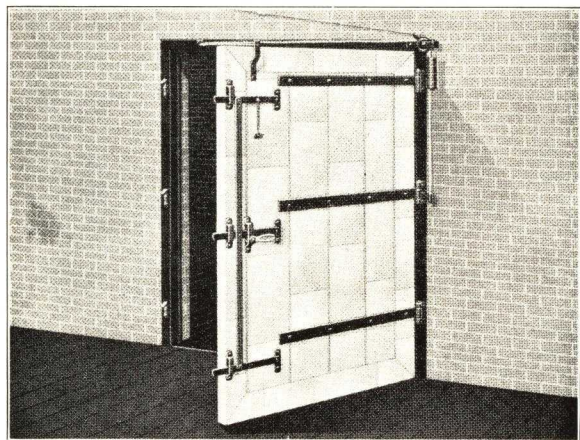
8. Unless otherwise noted, all opening frames, lintels

and sills to be furnished and installed by others.

9. Door contractor shall exchange drawings with elevator contractor, to the end that materials furnished under these contracts shall work for either to the best advantage.

10. All material to be guaranteed by The Richmond Fireproof Door Company against defective material and workmanship for a period of two years from date of installation.

Richmond AUTOMATIC FIRE DOORS



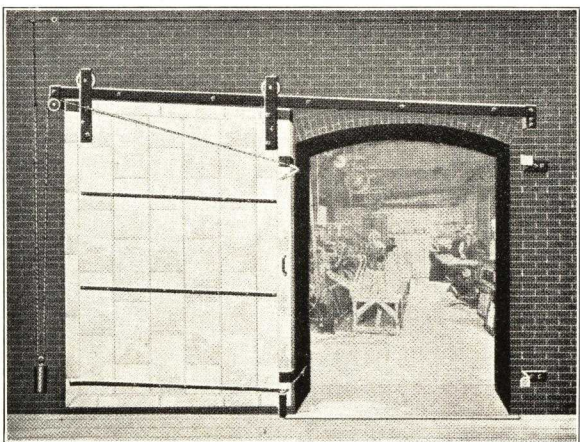
No. 125 Swinging Door and Hardware (Tin Clad)

Standard Headroom Required—Lap Type, 8 in.; Flush Type, 4 in.

Standard Return Required—Lap Type—6 in. at one jamb for Automatic Closing device.

Flush Type—Width of frame flange only. 6 3/4 in. required at one jamb for Automatic Closing device.

If conditions are not Standard, consult either Home Office or nearest Richmond Branch Office or Representative.



No. 200A Sliding Door and Hardware (Tin Clad)

Standard Headroom Requirements—Sliding Doors Nos. 205, 405: 14 in.

Nos. 200A and 400A Inclined Track, per following schedule:

Width of Opening	Req. Headroom	Width of Opening	Req. Headroom	Width of Opening	Req. Headroom
2'0"	17 3/4"	6'0"	23 3/4"	10'0"	29 3/4"
2'4"	18 1/4"	6'4"	24 1/4"	10'4"	30 1/4"
2'8"	18 3/4"	6'8"	24 3/4"	10'8"	30 3/4"
3'0"	19 1/4"	7'0"	25 1/4"	11'0"	31 1/4"
3'4"	19 3/4"	7'4"	25 3/4"	11'4"	31 3/4"
3'8"	20 1/4"	7'8"	26 1/4"	11'8"	32 1/4"
4'0"	20 3/4"	8'0"	26 3/4"	12'0"	32 3/4"
4'4"	21 1/4"	8'4"	27 1/4"	12'4"	33 1/4"
4'8"	21 3/4"	8'8"	27 3/4"	12'8"	33 3/4"
5'0"	22 1/4"	9'0"	28 1/4"	13'0"	34 1/4"
5'4"	22 3/4"	9'4"	28 3/4"	13'4"	34 3/4"
5'8"	23 1/4"	9'8"	29 1/4"	13'8"	35 1/4"

Standard Returns Required—Sliding Doors Nos. 200A, 400A, 205, 405. Return at opening jamb (past which door slides when opened). Opening width plus 20 in. Return at closing jamb, 14 in.

FYRGARD SWINGING DOORS

Doors are standard in channel frame or lap type, and are recommended where conditions will permit.

No. 125—(See cut)—Single swing door tin clad.

No. 325—Single swing corrugated steel door.

No. 135—Double swing door tin clad.

No. 335—Double swing corrugated steel door.

The double swing type is suitable for many situations where single door cannot be used.

FYRGARD SLIDING DOORS

No. 200A—(See cut)—Inclined track tin clad.

No. 400A—Inclined track corrugated steel.

Simple to install and operate. Universally and where ample headroom and returns are available.

No. 205—Level track tin clad.

No. 405—Level track corrugated steel.

Used where limited headroom will not permit use of inclined track.

No. 206—Level track, tin clad with closing and counterweights.

No. 406—Level track, corrugated steel with closing and counterweights.

Furnished where Nos. 205 and 405 are not approved.

SPECIFICATIONS (Swinging and Sliding Doors)

TIN CLAD DOORS

Core—Well seasoned white pine, fir, or spruce, tongue and grooved, dressed both sides to 3/8 in. two or three-ply as indicated by the plans, assembled with standard cut iron nails.

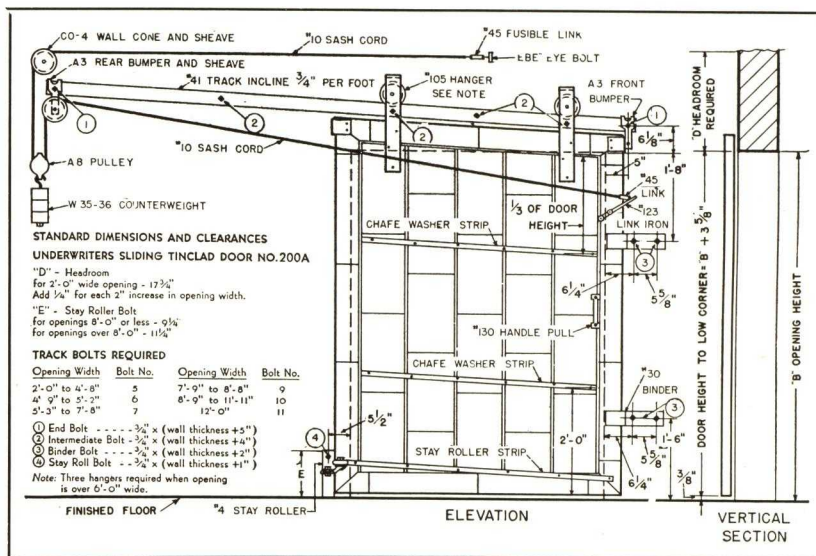
Covering—Standard I.C. 20 pound fire door terne plate laid flat to core. All seams locked. All in accordance with Underwriters' Standards.

CORRUGATED STEEL DOORS

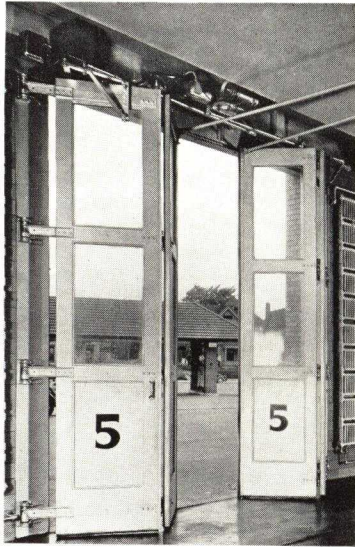
Door Panel Frame—To be 2 1/2 x 2 x 3/8 in. angle mitre notched, bent, and welded.

Panel—To be layers of 24-gauge galvanized corrugated steel laid with corrugations of one layer at right angles with those of the other with a 1/8 in. thick layer of sheet asbestos between. Panels to be riveted to frame. Sliding doors to be provided with track binder angle.

Doors to be manufactured by The Richmond Fireproof Door Company of Richmond, Indiana, and bear the Underwriters' label.



Richmond SWING-FOLD DOORS and OPERATORS



Four Section Swing Fold

FOR WAREHOUSES, FACTORIES, INDUSTRIAL BUILDINGS, ETC.

HEAVY DUTY for openings up to 34 x 22 (Four Section)

MEDIUM DUTY for openings up to 20 x 17 (Four Section)

The entire load of door leaves and hardware is carried by the malleable iron and steel ball bearing, spring cushioned, grease gun lubricated, weather proofed, adjustable hinges. The largest doors may be easily manually operated when power operator is disconnected.

Specify all equipment, including steel opening frame, wood door, hardware and electric operator to be built by one manufacturer.

SPECIFICATIONS

Heavy Duty Doors and Hardware

DOOR SECTIONS

Stiles and Rails—To be 2 $\frac{3}{4}$ in. thick, 2-ply White Pine or Sitka Spruce glued and blind screwed together. Joints between members to be double mortised and tenoned. Bottom edges of panel and sash openings to be lined with oak watersheds.

Panels—To be 1 $\frac{1}{8}$ in. thick tongue and groove "V" grooved White Pine or Fir Ceiling.

Sash—To be White Pine, moulded into openings, muntin bars machined from solid stock with loose glass mould to match.

Design—Panel and sash combination to be as shown on plans.

HARDWARE

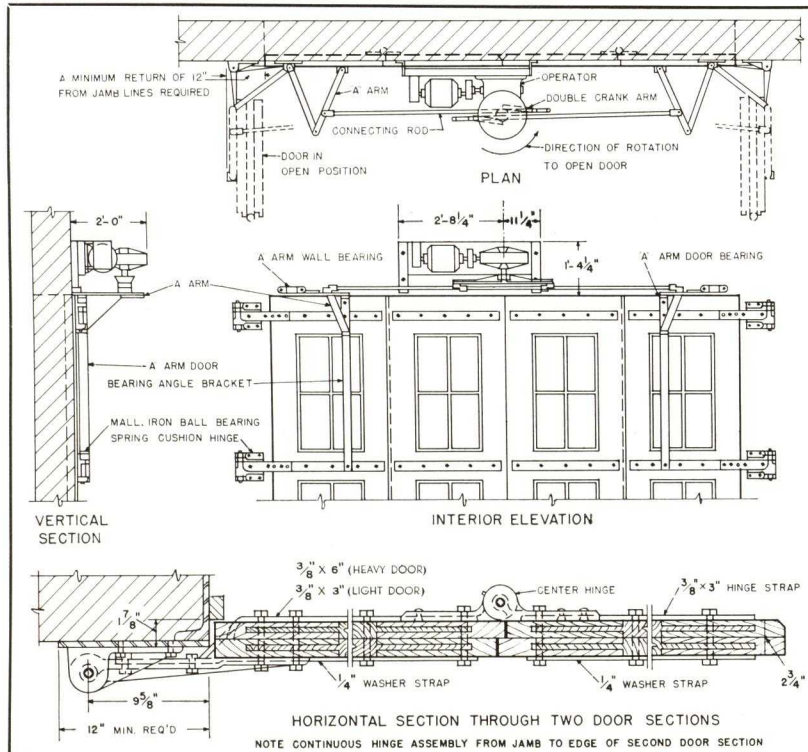
Jamb Hinges—Jamb leaf to be attached to jamb with four bolts or cap screws. The door leaf to be provided with two 6 in. steel straps for heavy or two 3 in. steel straps for medium duty to extend across both faces of Jamb Door-Section and be through bolted thereto.

Center Hinges—Female leaf to be riveted to exterior strap of jamb hinge. The male leaf to be provided with a 3 in. steel strap to extend across exterior with a companion washer strip on interior of Suspended Door Leaf and through bolted thereto.

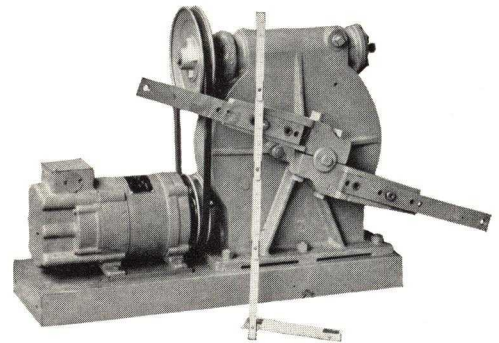
Trusses—Diagonal I-Beam Trusses and all required reinforcing to prevent distortion and warpage of door sections to be provided.

Astragal—All four section doors to be provided with Rubberized fabric and 5 in. strap steel astragals.

Note—For more complete specifications and data, write Home Office or consult local representative.



TYPE "DM" ELECTRIC EVERY PURPOSE OPERATOR



A successful, positive and automatic operator for installation on Swing-Fold Doors. By substituting suitable arms and linkage the operator may be used for Bifold or Swing Doors. The arms are secured to brackets on the jamb leaf in either case.

MOTOR SPECIFICATIONS

The Power Unit to be Richmond Type "DM" manufactured by The Richmond Fire-proof Door Company. All parts to be made to standard dimensions, using template jigs, to permit replacement of parts and insure perfect fitting of all parts in machines of same size.

Motor—To be totally enclosed () Volt, () Phase, () Cycle A.C. Squirrel cage induction type, instantly reversible, high starting torque; to develop not less than () foot pounds when installed.

Note—Polyphase A.C. power supply preferred in all cases, but single phase A.C. or D.C. motors may be furnished, at increased cost.

Motor shaft to run in precision ball bearings.

Brake—To be two disc type. Rotating disc to be securely pinned to motor shaft, and carefully balanced. Brake disc to be faced with special friction material.

Brake to be applied by spring pressure and released by electro-magnets. (A.C. magnets to have laminated cores with damping rings to prevent humming noise.)

Entire brake and releasing magnets to be totally enclosed in motor and bell.

THE RICHMOND

FIREPROOF DOOR COMPANY

RICHMOND • INDIANA BROOKLYN • NEW YORK

Branch Offices • Agents • Representatives

AKRON, OHIO, Fred J. Crisp, Inc., 710 N. Main St.
 ALBUQUERQUE, NEW MEX., A. C. Weigerding, P. O. Box 173
 ALLENTOWN, PA., Geo. K. Halteman & Co., Allen & St. Cloud Sts.
 AMARILLO, TEXAS, Jenkins Mantel & Brick Co., 816 Harrison St.
 ASHEVILLE, N. C., J. A. Thompson, 57 Buchanan Place
 ATLANTA, GA., E. P. Hoffman, 212 Red Rock Bldg.
 BALTIMORE, MD., H. B. Brown Co., 406 W. Franklin
 BINGHAMTON, N. Y., Babcock, Hinds & Underwood,
 174 Washington St.
 BIRMINGHAM, ALA., D. P. Barrett Co., 320 Brown Mark Bldg.
 BLUEFIELD, W. VA., Bluefield Hardware Co.
 BOISE, IDAHO, J. G. Doerr, 501 S. 8th St.
 BOSTON, MASS., H. W. Pedersen, 57 Bartlett St., Everett
 BUCYRUS, OHIO, Patterson Iron & Wire Works
 BUFFALO, N. Y., Shults Engr. Co., Morgan Bldg.
 CAMBRIDGE, OHIO, Hanse H. Griswell, 306 N. 7th St.
 CANTON, OHIO, L. G. Peter, 715 Shorb Ave., N. W.
 CHARLESTON, S. C., Carolina Supply & Cement Co.
 CEDAR RAPIDS, IOWA, O. W. Latimer & Co., 701 Security Bldg.
 CHARLOTTE, N. C., R. R. Robertson, 212 Latta Arcade, P. O. Box 56
 CHATTANOOGA, Tenn., Currin-Andrews Co., 821 East 11th St.
 CHICAGO, ILL., The Richmond Fireproof Door Co., 130 N. Wells St.
 CINCINNATI, OHIO, Durbrow & Otte, 1424 Clay St.
 CLEVELAND, OHIO, The Richmond Fireproof Door Co.,
 405 Caxton Bldg.
 COLUMBIA, S. C., Columbia Steel Co., P. O. Box 741
 COLUMBUS, OHIO, Alvan Tallmadge, 63 Parkwood Ave.
 DALLAS, TEXAS, Maisey & Paige, 208 Construction Bldg.
 DAVENPORT, IOWA, Austin Crabbs, Inc., 715 East River St.
 DAYTON, OHIO, Dayton Fabricated Steel Co., 1300 E. Monument Ave.
 DECATUR, ILLINOIS, C. J. Gandy, 245 N. Westlawn Ave.
 DENVER, COLO., Colorado Bldrs. Supply Co., 1534 Blake St.
 DES MOINES, IOWA, Des Moines Stair Co., 610 Polk Bldg.
 DETROIT, MICH., The Richmond Fireproof Door Co.,
 2211 Woodward Ave.
 DULUTH, MINN., H. D. Bullard, 410 Builders Exchange
 ELMIRA, N. Y., Elmira Bldg. Units, Inc., 1898 Grand Central Ave.
 EL PASO, TEXAS, C. C. Gaines, 1002 Mills Bldg.
 ERIE, PA., Geo. H. Kraft & Son, 602 Schenley Drive
 FLINT, MICH., Flint Iron & Wire Works
 FT. WAYNE, IND., Jones & Moss, 225 Standard Bldg.
 FT. WORTH, TEXAS, Chas. F. Williams Co., Inc., 328 Lipscomb St.
 GRAND RAPIDS, MICH., Haven-Busch Co., 501 Front Ave., N. W.
 GREAT FALLS, MONT., Harold R. Hewitt, 3500 Fourth Ave., N.
 GREENSBORO, N. C., J. D. Wilkins, W. Lee St. at Glenwood Ave.
 GREENVILLE, S. C., Frank R. Henry Co., Masonic Temple
 HARRISBURG, PA., Atherton Bowen, 222 North St., P. O. Box 853
 HOUSTON, TEXAS, Maisey & Paige, 2911 Dalton St.
 HUNTINGTON, W. VA., James J. Weiler & Sons, 202 Elm St.
 INDIANAPOLIS, IND., Stackhouse Bldg. Spec. Co., 823 Lemcke Bldg.
 JACKSONVILLE, FLA., Louis Aichel, % Florida Brick & Tile Co.
 JOHNSON CITY, TENN., Eustis A. Lancaster, Jr.
 KANSAS CITY, MO., E. C. Marqua Co., 2728 Jarboe St.
 KNOXVILLE, TENN., R. G. Jefferies, 409 Clinch Ave.
 LOS ANGELES, CALIF., Kenneth C. Gaines, 1046 S. Olive St.

LOUISVILLE, KY., Equipment & Supply Co., 420 Baxter Ave.
 MANSFIELD, OHIO, Mansfield Structural Erecting Co.
 MEMPHIS, TENN., Mr. J. W. Peete, 1639 Vance Ave.
 MIAMI, FLA., The Aufford Kelley Co., 144 N. E. 21st St.
 MIDLAND, TEXAS, Chas. F. Williams Co., 311 W. Florida St.
 MILWAUKEE, WISC., Wm. M. Heinz, 720 N. Jefferson St.
 MOBILE, ALA., Underwood Coal & Supply Co.
 NASHVILLE, TENN., John Williams, Room 1207 Warner Bldg.
 NEW HAVEN, CONN., Hans Dumelin, 295 Sherman Ave.
 NEWARK, N. J., Yunker Metal Products Co., 17 Cypress St.
 NEW ORLEANS, LA., Nachary Bldrs. Supply Co., 318 Carondelet St.
 NEW YORK, N. Y., The Richmond Fireproof Door Co., 1 E. 42nd St.
 NORFOLK, VA., Globe Iron Construction Co.,
 Princess Anne Rd. & Park Ave.
 OKLAHOMA CITY, OKLA., Town-Sco Equip. Co., 211 N. W. 10th St.
 OMAHA, NEBR., Earl S. Lewis, 601 Redick Tower
 ORLANDO, FLA., A. N. Goodwin, P. O. Box 1104
 PADUCAH, KY., Paducah Iron Co., 216 So. 1st St.
 PEORIA, ILL., Samuel J. Smith & Co., 510 Lehmann Bldg.
 PHILADELPHIA, PA., N. R. Guilbert, Jr., 1722 Sansom St.
 PITTSBURGH, PA., James R. Pitcairn, 1822 Oliver Bldg.
 PORTLAND, ME., W. O. Hutchins, 193 Middle St.
 PORTLAND, ORE., E. E. Gilmer, 316 S. E. Madison St.
 PORTLAND, ORE., Columbia Wire and Iron Works,
 814 S. E. Market St.
 PORTSMOUTH, OHIO, Earl C. Hayes & Co., 1042 So. 20th St.
 POUGHKEEPSIE, N. Y., Hudson Valley Bldrs., Steel Co., 178 Cottage St.
 PROVIDENCE, R. I., Edward A. Gillerin, 30 Cherry Rd., Edgewood
 READING, PA., John H. Millard, 8 S. 20th St.
 RICHMOND, VA., J. S. Archer, 511 Atlantic Life Bldg.
 ROANOKE, VA., A. L. Horwitz, 208 Boxley Bldg.
 ROCHESTER, N. Y., E. W. Maurer, 703 Temple Bldg.
 ROCKFORD, ILL., Capitol Ornamental Iron Works, 1012 Ninth St.
 SALT LAKE CITY, UTAH, Manufacturers Spec. Co., 26 Exchange Bldg.
 SAN ANTONIO, TEXAS, John A. Williamson Co., 804 Avenue A
 SAN DIEGO, CALIF., Chas. H. Lentz, P. O. Box 727
 SAN FRANCISCO, CALIF., The Persons Co., 516 Call Bldg.
 SAN JUAN, PUERTO RICO, Earl K. Burton, Inc.
 SCRANTON, PA., Labar & Evans, 711 Linden St.
 SEATTLE, WASH., Tourtellotte-Bradley, Inc., 401 White Bldg.
 SHREVEPORT, LA., The Meriwether Co., 1312 Jordan St.
 SIOUX CITY, IOWA, Otto F. Bridge, 513 Jackson St.
 ST. LOUIS, MO., Lasar Mfg. Co., 16th & O'Fallon Sts.
 ST. PAUL, MINN., Builders Engr. Co., 2694 University Ave.
 SYRACUSE, N. Y., B. R. Johnson, 145 Harding Place
 TAMPA, FLA., Stovall & Archer, 805 Peninsular Telephone Bldg.
 TOLEDO, OHIO, S. L. Everitt, 619 Edison Bldg.
 TUCSON, ARIZ., Construction Service Co., 423 N. Forth St.
 TULSA, OKLA., Murray R. Womble, 316 Atco Bldg.
 UTICA, N. Y., American Hard Wall Plaster Co., 728 Broad St.
 WASHINGTON, D. C., W. M. Schoenfelder,
 1222 Connecticut Ave., N. W.
 WICHITA, KANS., C. L. Anderson, P. O. Box 1143
 WILMINGTON, DEL., J. Francis Blaine, Inc., 25th St. near Broom
 WORCESTER, MASS., Haskins-Haire Wire Works, 9 May St.
 YOUNGSTOWN, OHIO, G. A. Doeright, Jr., 355 E. Wood St.

SIMPLEX DOOR CO.

612 N. Michigan Avenue, CHICAGO, ILL.
REPRESENTATIVES IN ALL PRINCIPAL CITIES

SIMPLEX TRUCKABLE COUNTERBALANCED FREIGHT ELEVATOR DOORS

Kalamein or Metal Clad Panels

Simplex Counterbalanced Doors embody the latest improved features in freight elevator door construction. They are in use in factories, warehouses, mercantile buildings, hospitals, schools—in fact in every type of building equipped with a freight elevator.

Special features that reduce friction guarantee easy operation. Reinforced trucking bars that set flush with the opening sill provide a smooth trucking surface between elevator car and opening sill. All parts are designed to provide simple, smooth and continued operation under the severest service requirements.

Simplex Doors are usually furnished with F-6 flush type metal clad panels having two-ply wood cores. These have proven to be the strongest and most practical for freight elevator use. Vision panels are furnished when specified.

Simplex Doors can also be furnished with kalamein or corrugated steel panels.

Adjustable Shoes—The door sections are provided at each side with special friction reducing patented Adjustable Shoes. This is a very important feature. Through the use of Adjustable Shoes it is possible to erect the doors easily with a minimum amount of clearance between the door sections and guides and to maintain the doors in this manner after long, continued use.

Ball Bearing Sheaves—The door sections operate in heavy steel guides, and are hung on heavy adjustable steel rods and flexible steel cable chains operating over 5-inch double race ball bearing sheaves.

Latches—Simplex Doors are provided with specially designed anti-pinch center hook latches, easily operated both when opening and closing the door.

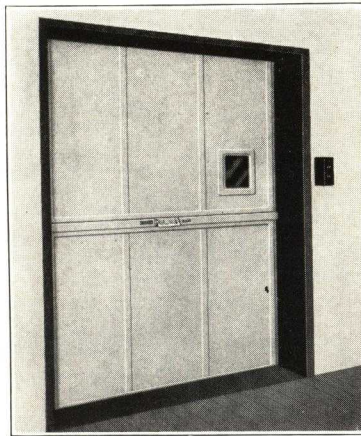
When room side handles are specified or required for Push Button elevators, a simple bow type handle is attached to the room face of angle astragal. A slight upward pull on this handle releases the hook latch and

permits raising of the door with the same upward thrust.

Interlocks—Simplex Doors are equipped with electric interlocking devices that prevent the operation of the elevator until all doors in shaft are closed. For push button elevators special latch devices are furnished in addition to the interlocking devices so that the door cannot be opened from either the room or shaft side until the elevator car is at the floor level and special latch is released by the cam attached to the elevator car.

Trucking Bars—(See diagrams below).

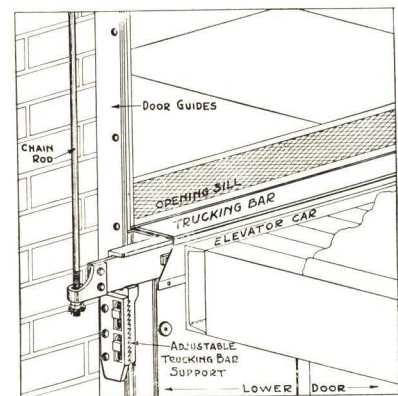
Vision Panels—Vision panels are furnished when specified. A vision panel is necessary when Simplex Doors are used with a Push Button or Hold On Button elevator having room side operating buttons. Vision panels having a clear 8x10-in. opening are furnished unless otherwise specified. Larger openings are not permitted in labeled doors.



Room Side View F-6 Metal Clad Panels

(Showing glass vision panel)

Strongest and most practical construction



Shaft Side View

Showing special adjustable stops for door trucking bar. Door is kept in alignment with opening sill

Simplex Metal Clad Counterbalanced Doors

These Metal Clad Simplex Doors with the steel frames around the door sections, are of fireproof construction, thereby protecting the elevator shafts not only against accidents, but, also, against the spread of fire from one floor to another.

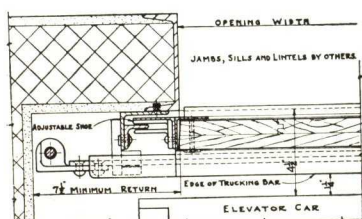
The Metal Clad panels are made of two thicknesses of white pine, clinch nailed together and covered on both sides with smooth, galvanized steel sheets securely fastened to the wood cores and with special reinforcing clips at the vertical joints between the sheets so as to provide flush type panels.

The majority of architects and users now specify the type of construction, known as our F-6, for they have found from experience that this type of door is attractive in appearance as well as being built for service.

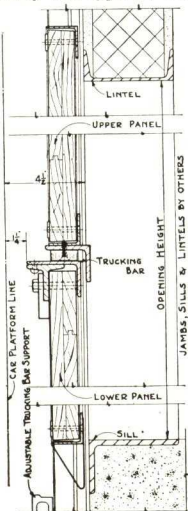
Simplex Metal Clad Doors are of rugged construction throughout. Simplex Doors for large openings are properly reinforced, and when the elevator capacity is indicative that heavy trucking loads will pass over the door the Trucking Bars are also heavily reinforced to properly sustain the trucking load.

Simplex Metal Clad Doors can be labeled for openings that do not exceed 8 ft. 0 in. in width or 10 ft. 0 in. in height.

The structural steel frames and sills for all freight elevator openings should be specified in Miscellaneous Iron or Structural Steel Work.



Plan at Jamb—Regular Type Metal Clad Simplex Door



Vertical Section through Regular Type Metal Clad Simplex Door

Simplex Pass Type Metal Clad Counterbalanced Doors

Simplex Pass Type Doors with Metal Clad panels are used where low story heights do not permit the use of Regular Type doors.

The Pass Type can be used where the story height from finished floor to finished floor is only eighteen inches greater than the opening height, provided openings directly above each other are of equal height.

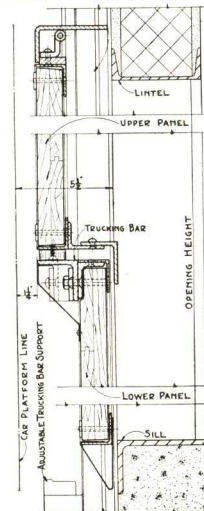
For openings of varying heights, some additional space allowance is necessary.

Simplex Pass Type Metal Clad Doors are especially adaptable for garages, warehouses and industrial plants where high openings are required.

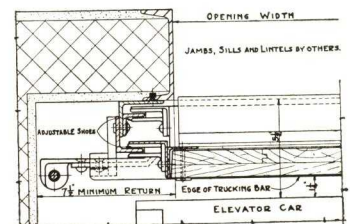
Pass Type doors require larger size Trucking Bars due to the fact that the doors are staggered and operate in double guides to permit the upper door section on one floor to pass the lower section of the door on the floor above. The gap between the upper edge of the upper door section and the lintel of the opening is closed by means of a hinged Movable Lintel or Filler Plate attached to the top rail of upper door section.

Pass Type and Regular Type doors can be installed one above the other by providing the Regular Type doors with extended or Pass Type Trucking Bars.

Simplex Pass Type Doors are labeled by the Underwriters for openings not exceeding 8 ft. 0 in. in width or 10 ft. 0 in. in height.



Vertical Section through Metal Clad Pass Type Simplex Door



Plan at Jamb—Pass Type Metal Clad Simplex Door

SECURITY FIRE DOOR CO.

Counterbalanced Truckable and Other Fireproof Freight Elevator Doors

3036-3048 Lambdin Avenue, ST. LOUIS, MO.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Security Products

SECURITY COUNTERBALANCED FREIGHT ELEVATOR DOORS ("SECO" Doors) with metal clad, kalamein or steel plate panels.

SECURITY UNI-MOTOR ELECTRIC OPERATORS for freight elevator doors and car gates, trapdoors, loading platform doors, etc.

SECURITY DUMBWAITER DOORS.

"SEC-TEL" metal clad and kalamein two-section slideup freight elevator doors.

SECURITY ELECTRIC INTERLOCKS.

"HORIFOLD" (bi-folding) warehouse doors for freight houses, shipping platforms and garages.

"VER-TEL" two-section slideup door for exterior warehouse, freight house and shipping platform openings.

Engineering Service

Our competent engineers will be glad to serve you in connection with your door problems. You may secure this service by consulting our nearest representative or by directly communicating with us.

Write for our new catalog covering SECURITY Freight and Dumbwaiter Doors and UNI-MOTOR Operators. Our catalog "C" gives complete information about our "HORIFOLD" Doors (horizontal or bi-folding type) and our "VER-TEL" Doors.

Underwriters' Approval

All SECURITY and "SEC-TEL" Freight Elevator Doors are inspected and labeled by the Underwriters' Laboratories, Inc., and the Factory Mutuals, when so desired, provided they

are within the size limits that permit labeling: viz., 8 ft. wide by 10 ft. high.

Security Sales Policy

SECURITY doors are sold on an erected basis only, the installations being made by our own or our representatives' experienced erectors.

Security Counterbalanced Freight Elevator Doors

SECURITY doors are of the *truckable* counterbalanced type, being made in two sections which slide in opposite directions on the shaft face of the wall. The sections evenly counterbalance each other without separate counterweights.

SECURITY doors can be furnished with metal clad, kalamein, or steel plate panels.

SECURITY doors are provided with heavy steel *angle trucking bars*. The *trucking bars* form the top edge of the lower section of the doors and are supported in *perfect alignment* with the opening or floor sill when the door is in the open position by means of heavy *angle trucking bar supports* at each end of the trucking bar. These sill or trucking bar supports rest on the solid opening sill and will remain in the same permanent position. The supports are designed to act as gusset plates in the upper corners of the lower section, reinforcing it and securely joining the section frame to the trucking bar.

SECURITY doors are hung with heavy adjustable chain rods and cable chains operating over large double race ball bearing sheaves. No safety gates are required when SECURITY doors are used.



Photo by Dallin Aerial Surveys, Philadelphia

Aerial View of Philadelphia—Showing Some Prominent Buildings Equipped with Security Doors

1. New Philadelphia Post Office
2. New York Pennsylvania Railroad Station
3. Pennsylvania Railroad West Philadelphia Office Bldg.
4. Pennsylvania Railroad Warehouse
5. University of Pennsylvania
6. Pennsylvania Railroad Pullman Bldg.
7. Benjamin Franklin Memorial and Franklin Institute
8. Pennsylvania Railroad Center City Suburban Station and Office Bldg.
9. John Wanamaker Department Store (Lincoln Liberty Bldg.)
10. Center City Terminal Reading Railroad
11. N. Snellenburg & Co. Department Store
12. Campbell Soup Co., Camden, N. J.
13. RCA Victor Corp., Camden, N. J.

Metal Clad Panels—These are constructed of two thicknesses of white pine covered on both sides with patent leveled galvanized steel sheets and securely bolted into heavy angle frames. See illustration showing our type M-6 Door. This type, with the flush metal clad panels, is generally used on account of its neat appearance and sturdy construction.

Kalamein Panels—This type of door is used when the architectural design requires a more elaborate type of paneling to harmonize with the surrounding building construction. The room side of the door is covered with smooth kalamein iron with drawn steel mouldings around the sunken panels, the mouldings being fastened in place so no nail or screw heads show. The shaft side of the door is covered with flat galvanized steel sheets. All seams between stiles and rails are clipped, filled with solder and ground smooth.

Adjustable Shoes (Patented)—SECURITY doors are equipped with patented adjustable shoes. These eliminate excessive friction and permit easy adjustment to reduce side play between the doors and guides caused by wear and by spreading of the guides.

Security Interlocks (Patented)

SECURITY doors when equipped with SECURITY patented electric interlocks provide maximum protection against fire and accident.

SECURITY electric interlocks are especially designed for vertically sliding doors and have been approved by the Underwriters and various State and municipal departments, assuring low casualty insurance rates.

Specify Type "C" or Type "D" Interlocks for Car Switch controlled elevators, Type "DL" Interlocks for Push Button or Double Button operated elevators. Type XFE and XHE Explosion Proof Interlocks for hazardous locations Class I Group D, Class II Group G.

Space Requirements for Security Doors

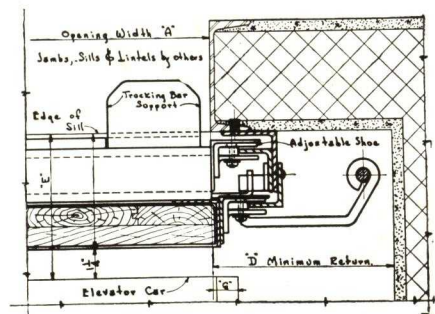
The schedule should be consulted in order to determine the highest opening obtainable in certain story heights for Regular and Pass Type SECURITY DOORS.

Also note other space requirements.

SCHEDULE OF MAXIMUM OPENING HEIGHTS SECURITY DOORS For Various Floor Heights

Opening height "B" ft. in.	Minimum "C" for regular type ft. in.	Minimum "C" for pass type ft. in.
6 0	9 6	7 3
6 6	10 3	7 9
6 8	10 6	7 11
6 10	10 9	8 1
7 0	11 0	8 3
7 6	11 9	8 9
8 0	12 6	9 3

Note: Minimum "C" for Regular Type doors can be slightly decreased in special cases. Consult factory.



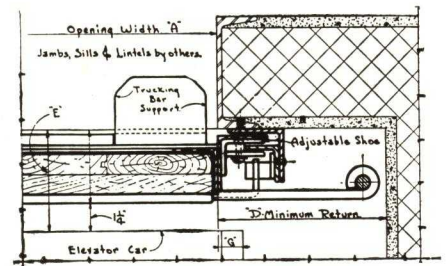
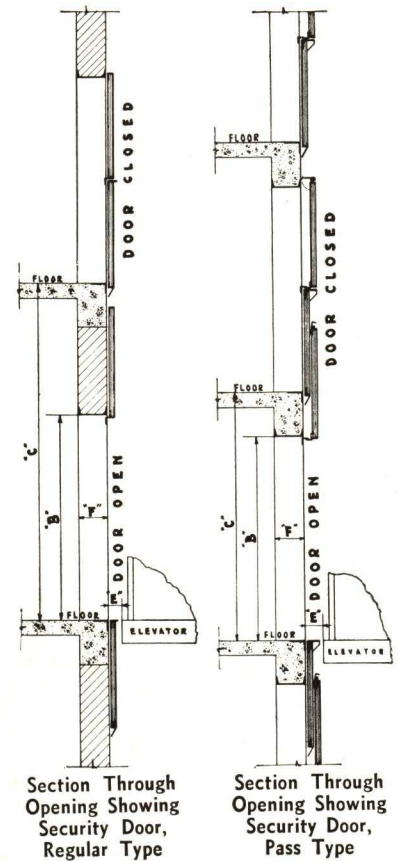
Security Door, Pass Type
Plan of shaft at jamb

CLEARANCE REQUIRED FOR SECURITY DOORS

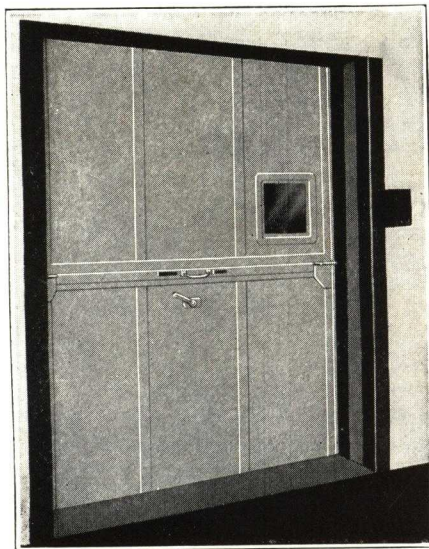
Type	D, in.	E, in.
Regular type.....	7 1/2	*4 1/2
Pass type.....	8	6 1/2

*Minimum.

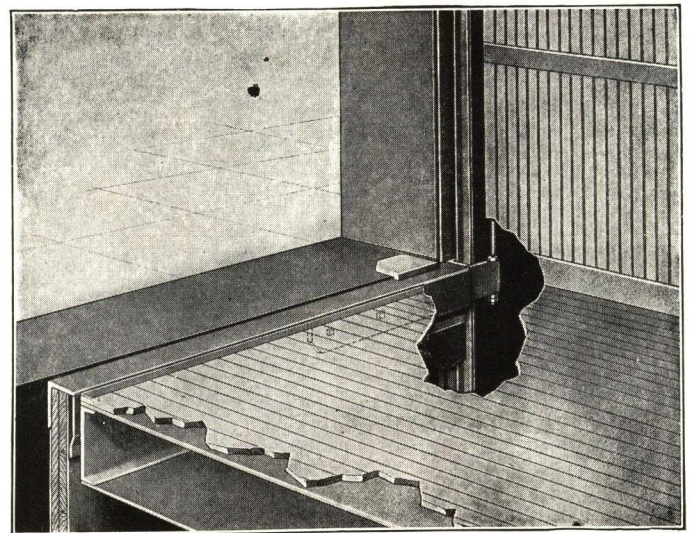
Note: For wide openings or for heavy trucking loads, Regular type doors, both metal clad and corrugated, may require 5 or 5 1/2 in. for clearance E.



Security Door, Regular Type
Plan of shaft at jamb



Room Side of Type M-6 Security Door
Arranged for room side operation in connection with double Button elevator



Security Door with "Stay-set" Trucking Bar Support
Note that trucking load is supported by opening sill

Security Uni-Motor Electric Operators

A single motor unit of ample size applies power equally at both sides of the door. The motor has capacity to operate the doors at approximately $\frac{1}{2}$ second per foot of opening height.

Should the door meet an obstruction while opening or closing, the motor will stall without injury to the apparatus. It is guaranteed to withstand stalling, at full voltage, without injury, for short periods.

Car gates can be equipped with similar operators. The gate will be raised simultaneously with the door so that both reach the full open position at about the same time. The doors and gates can be operated manually with perfect ease without disconnecting the power operator equipment.

The cross-drive is covered to protect it against dirt. All gears are enclosed. Ball bearings are arranged for pressure gun lubrication.

Failure of one unit will not affect the others. A motor can be removed for replacement without blocking up the door.

Only normal shaft space is needed, see drawing below. Operators can be applied to old elevator doors. If space is limited, the cross-drive, and even the power unit, can be placed on the room side, being entirely enclosed and not interfering with the space around the opening.

Specially designed zone switches, with electro-mechanical interlocks, actuated by a cam on the car, prevent operation of the elevator unless all the doors are closed and latched.

Rugged, door operating buttons are placed near the car control. The "open" button requires momentary pressure; the "close" button requires constant pressure. An emergency "stop" button will stop all door movement. With leveling type elevators, the doors may be opened automatically as the car stops at the floors. The doors may be closed by the car switch if desired. Doors and the car gate, when used, are operated by the same buttons.

Motors are available for 208 or 220 volts, 2- or 3-phase, alternating or 230 volts direct current, power.

Security Door and Uni-Motor Specifications

For all openings to freight elevator shaft, except as noted, furnish and install metal clad SECURITY Doors as manufactured by the SECURITY FIRE DOOR Co., St. Louis, Mo. Door panels to be Type M-6, covered with flat galvanized steel sheets [or kalamain paneled] as shown on plans.

Furnish trucking bars to sustain a load of pounds, designed to transfer trucking load to opening sill.

Doors shall be provided with adjustable shoes and shall be hung on $\frac{5}{8}$ -in. adjustable rods and heavy Security steel chains operating over 5-in. double race ball bearing sheaves. Doors shall work in heavy angle guides securely fastened to opening frames and walls.

Doors shall be provided with web straps for manual operation. Doors shall be equipped with electro-mechanical interlocks, with the necessary wiring for same. In lower corner of upper door provide 8x10-in. glass vision panel.

Where indicated on the plans, furnish and install Security Uni-Motor electric door and car gate operators, complete with all necessary wiring, limit switches, operating buttons and master control.

The door movement shall be retarded near the end of travel, in both directions, to prevent slam or jar.

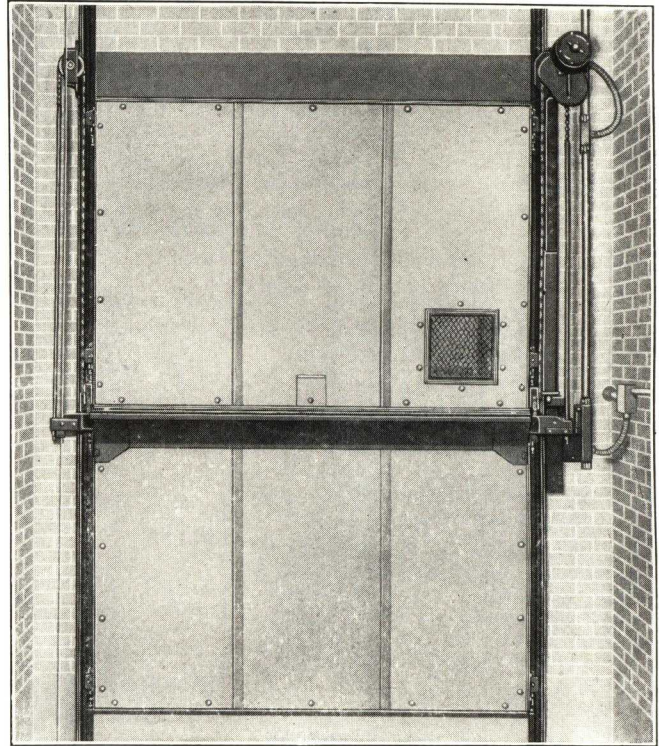
The operating equipment shall permit easy manual operation of doors and car gates in case of power failure without the use of any clutch or special releasing mechanism.

All material shall receive a priming coat of paint at factory.

Door contractor shall have the free and uninterrupted use of the running elevator when installing the doors.

All parts must be guaranteed against defects in material and workmanship for two years.

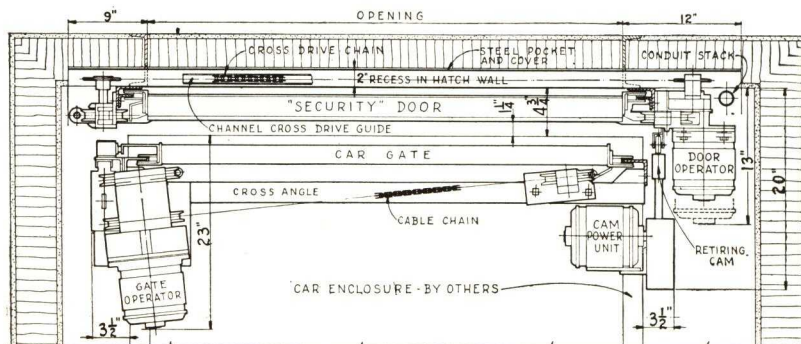
Steel frames and sills will be furnished under Miscellaneous Iron Work. Power line will be brought to penthouse with fused switch, by others.



Shaft View of Security Door and Uni-Motor Operator

**A Few Security Door Installations
Uni-Motor Operated**

Texas & Pac. Bag. & Expr. Bldg., Fort Worth, Tex.
 Bureau of Engraving and Printing, Washington, D. C.
 Ternstedt Div., General Motors Corp., Trenton, N. J.
 Frigidaire Div., General Motors Corp., Dayton, Ohio
 Minnesota Mining & Mfg. Co., St. Paul, Minn.
 Schunemans & Mannheimers, St. Paul, Minn.
 Kansas City Terminal Ry. Co., Kansas City, Mo.
 Cold Storage Plant, State Docks, Mobile, Ala.
 Frankford Grocery Co., Philadelphia, Pa.
 Pennsylvania Railroad, Philadelphia, Pa.
 Vocational School, Philadelphia, Pa.
 Maiden Creek Filter Plant, Reading, Pa.
 Postal Station Garage, Rochester, N. Y.
 Montgomery Ward & Co., Fort Worth, Tex.
 Brown & Bigelow, Publishers, St. Paul, Minn.
 Rike-Kumler Dept. Store, Dayton, Ohio
 Sears, Roebuck & Co., Philadelphia, Pa.
 Warner & Swasey Co., Cleveland, Ohio
 West Publishing Co., St. Paul, Minn.
 Bush Terminal Warehouse, Brooklyn, N. Y.
 Central Terminal Co., St. Louis, Mo.
 Agfa Ansco Corp., Binghamton, N. Y.
 Chevrolet Motor Co., Buffalo, N. Y.
 Fisher Body Corp., Cleveland, Ohio
 The May Dept. Store, Cleveland, Ohio
 U. S. Post Office, Philadelphia, Pa.
 American Ice Co., Philadelphia, Pa.
 Wilson & Co., Chicago, Ill.
 Celanese Corp., Cumberland, Md.
 U. S. Post Office, Detroit, Mich.
 Delco Corp., Dayton, Ohio



Plan View Giving Space Requirements for Power Operated Doors and Gates

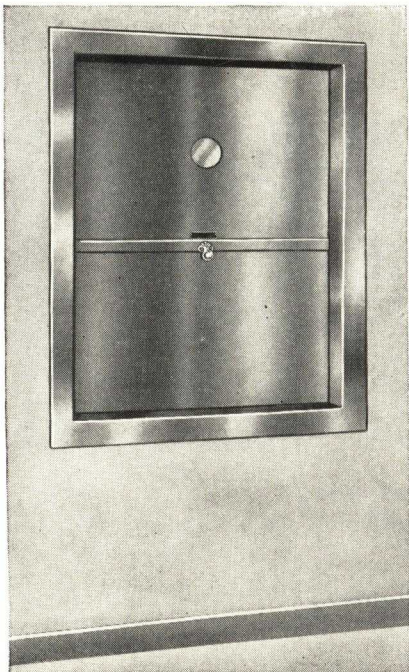


Merchandise Mart, Chicago, Ill.

241 SECURITY freight elevator doors used

A Few Security Dumbwaiter Door Installations

John Deere Co., San Francisco, Calif.
 St. Francis Hospital, Wilmington, Del.
 White House Kitchen, Washington, D. C.
 Peoples Drug Store, Washington, D. C.
 Moody Bible Institute, Chicago, Ill.
 Swift & Co., Chicago, Ill.
 Ball Memorial Hospital, Muncie, Ind.
 La. State University Cafeteria, Baton Rouge, La.
 Charity Hospital, New Orleans, La.
 Mass. Memorial Hospital, Boston, Mass.
 Boston City Hospital, Boston, Mass.
 Statler Hotel, Detroit, Mich.
 Montgomery Ward & Co., St. Paul, Minn.
 Sisters of Mercy, St. Louis, Mo.
 Washington University, St. Louis, Mo.
 University of New Hampshire, Durham, N. H.
 Princeton University, Princeton, N. J.
 Eastman Kodak Co., Rochester, N. Y.

Security Bi-Parting Dumbwaiter Door
Showing Flush Steel Trim

S & W Cafeteria,
 Charlotte, N. C.
 Statler Hotel, Cleve-
 land, Ohio.
 Rike-Kumler Store,
 Dayton, Ohio.
 Ohio State Reforma-
 tory, Mansfield,
 Ohio.
 Youngstown City
 Hospital, Youngs-
 town, Ohio.
 Okla. Capitol Office
 Bldg., Oklahoma
 City, Okla.
 Franklin Memorial,
 Philadelphia, Pa.
 University of Texas,
 Austin, Texas.
 Governor's Mansion,
 Richmond, Va.

Installations in many
 cities for the follow-
 ing:

S. H. Kress Co.
 F. W. Woolworth Co.
 John R. Thompson
 Restaurants.
 J. J. Newberry Co.
 S. S. Kresge Co.
 W. T. Grant Co.

DUMBWAITER DOORS

SECURITY bi-parting dumbwaiter doors are furnished as a complete unit with door sections, guides, sheaves, and combination frame and flush trim assembled at the factory, ready to be built into the wall of the dumbwaiter shaft. They may in this way be set by the general contractor.

The door sections are usually furnished with insulated panels or with No. 16 ga. steel plates securely fastened to angle frames forming the door sections. When doors are labeled by the Underwriters, the panels are insulated.

The doors, being fitted with guide shoes, slide easily in steel guides, are hung on steel cable chains operating over double race ball bearing sheaves.

The doors are provided with a knob type handle and latch.

No counterweights are required, each section of the door balancing the other.

SECURITY dumbwaiter doors are usually furnished with combination No. 16 ga. steel frames and flush trim for the room side of the openings. Frames are reinforced at head and sill with No. 14 ga. steel channels. Ornamental trim can be attached to the flush trim if desired. Projecting sills or shelves can also be furnished. Consult our local representative.

SECURITY dumbwaiter doors have proven their adaptability and efficiency for hospitals, department stores, hotels, restaurants and factories. For restaurants and hospitals we recommend the use of stainless steel for the door panels and frames.

SECURITY dumbwaiter doors are furnished with 3 in. round vision panels when specified.

For electric dumbwaiters we furnish our type E Interlocks and latches operated by a stationary cam on the car.

Suggested Specifications—For all dumbwaiter door openings shown on plans and as noted, furnish Security bi-parting dumbwaiter doors as manufactured by the SECURITY FIRE DOOR CO.

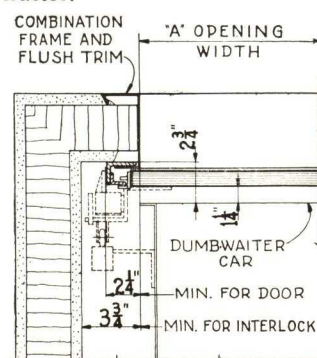
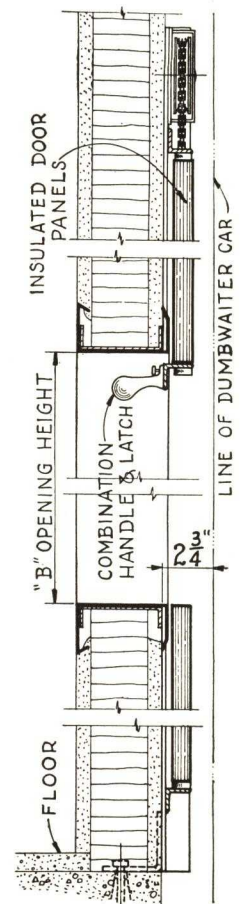
Provide the necessary steel guides, ball bearing sheaves, cable chains, combination knob type handle and latch. Doors shall be attached to combination steel frames and flush trim on room side, all ready for setting into masonry wall.

(A) The door sections shall have insulated steel panels. Doors to be labeled by the Underwriters' Laboratories, Inc. Provide 3 in. diameter round vision panel.

(B) The door sections shall have No. 16 ga. steel panels securely fastened to the angle frames.

Doors and parts shall receive a prime coat of paint at the factory.

For electric dumbwaiters also specify Security Type E Interlocks and latches. The wiring for the interlocks should be installed by the dumbwaiter contractor.

Plan at Jamb of Dumbwaiter Door
with Flush Trim for Tile
or Plastered WallsSection Showing Door in
Open Position

MEMORANDA

ESTABLISHED 1909

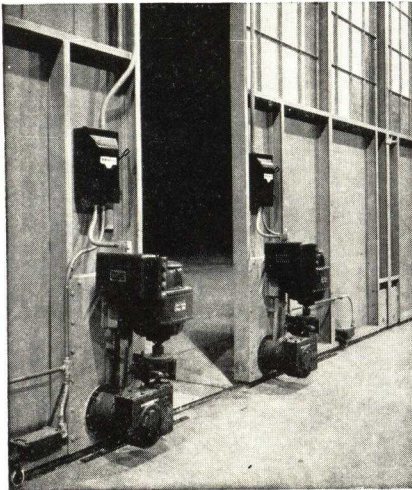
BABCOCK-DAVIS CORPORATION

474 Dorchester Avenue, BOSTON, MASS.

For other Babcock-Davis pages, see File Index

MONO WHEEL DRIVES—ELECTRICALLY OPERATED

For operating doors to shipping areas—bus terminals—roofs—airplane hangars—gates—etc. (Patent 1960860.)



**Mono-Wheel Units As Applied to
Airplane Hangar Doors**

For large openings, such as hangar doors we have a patented system of banding which makes all the doors operate in unison.

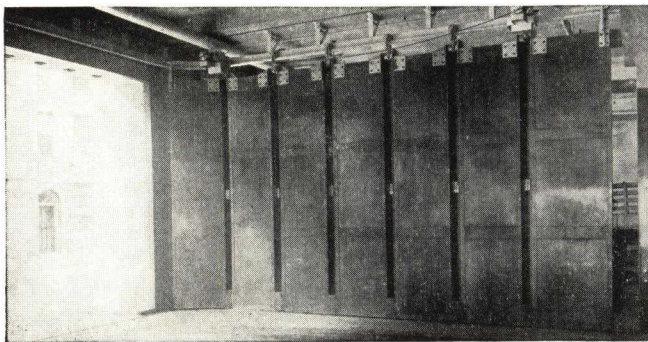
Heating problem is helped by motorizing the doors, as they can be opened and closed in a short period of time by the touch of a finger. Mono-Wheel Units can be installed on existing doors in a very short time without interfering with usual traffic.

If the hoisting cables of lift style doors, which are exposed to the weather and vandalism, are broken, the doors remain closed and inoperative. Mono-Wheel Drive type of doors are always operative by hand in case of power failure.

This type of door eliminates the heavy trusses that span the opening which have to be designed to carry the entire weight of the door panels and roof when they are of the overhead or canopy types. The Mono-Wheel doors are supported on ball bearing wheels which travel on steel rails that are built into the floor construction. This means considerable saving in the structural part of the building and also keeps the headroom down to a minimum.

Mono-Tandem Units

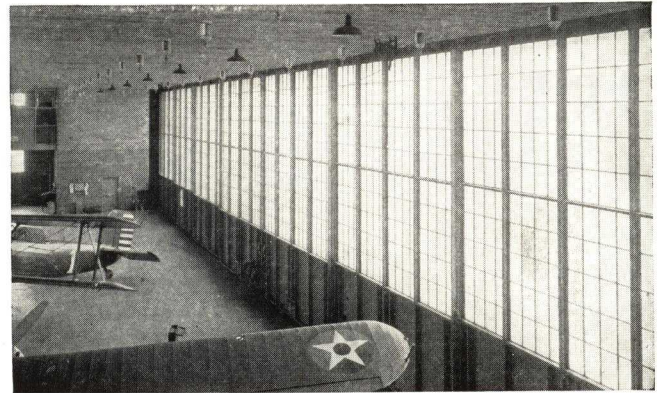
Mono-Wheel Units for train drive type of doors can be adapted for one or more panels depending on the size of the opening. There are no operating cables or chains required and



Inside View Showing Door Opening Around Corner

Shipping Doors Christian Science Publishing Society (5 openings), Boston, Mass.

CHESTER LINDSAY CHURCHILL, Architect

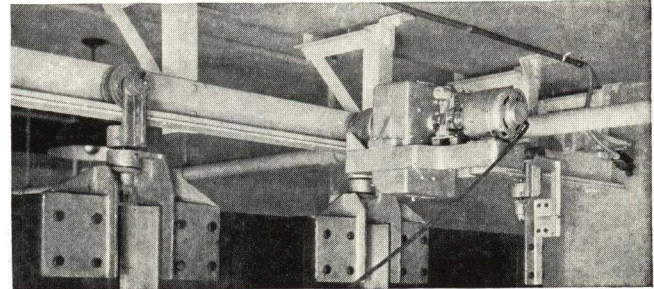


Opening Controlled by Two Mono-Wheel Units at Spokane, Wash.

Opening 158 ft. 2 in. wide by 25 ft. high

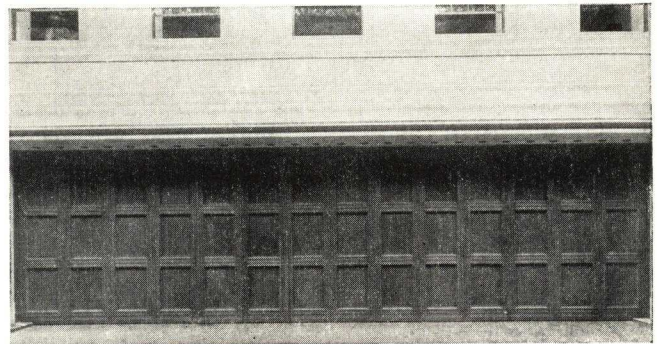
the doors can be partially opened or closed in a few moments from any control station.

These drives come in single or tandem styles and will operate doors of either straight line or round the corner types of doors.



Mono-Tandem Unit and Ball Bearing Swivel Hanger Hinges

Shipping areas protected by doors with Mono-Wheel Drives are being specified by far-sighted engineers and architects because working space behind these doors can be heated in extreme cold weather, thus facilitating quicker handling of materials and protecting the space against inclemency of the weather and undesirables.



Outside View Showing Door Closed

LOCKWOOD GREEN ENGINEERS, INC., Engineers

SOME RECENT INSTALLATIONS

Movable Roofs—Club Mayfair and Cocoanut Grove, Boston, Mass.

Light-Proof Curtains—Massachusetts Institute of Technology, Wellesley College; and Pratt Hospital, Boston.

Movable Blackboards—Massachusetts Institute of Technology; Wellesley and Harvard Colleges.

Bleachers, Electric Operated—Washingtonville High School, N. Y. (Galen H. Nichols, Architect).

Mono-Wheel Units—Washington National Guard Hangar, Spokane, Wash.; Christian Science Publishing Society, Boston, Mass. (Chester Lindsay Churchill, Architect; Lockwood Green Engineers, Inc., Engineers).

Fire House Door Operator—4 Four-fold Door Operators, City of Cambridge, Mass. (Sturgis Associates, Architects).

Garage Doors—Cambridge Police Headquarters (Putnam & Cox, Architects); Bowdoin Square Garage, Boston, Mass.

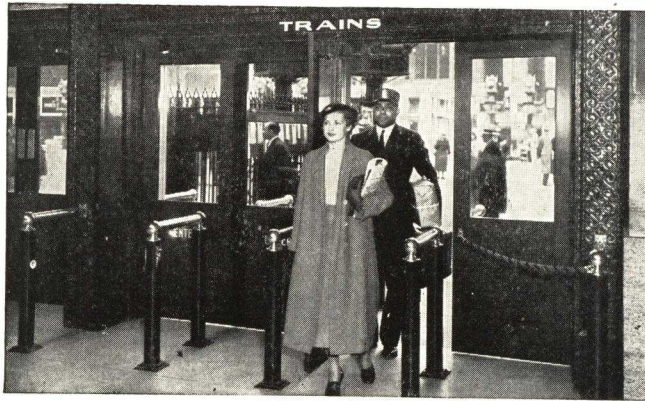
THE STANLEY WORKS

MAGIC DOOR DIVISION

NEW BRITAIN, CONN.

NEW YORK REPRESENTATIVE: George Lowe, 100 Lafayette Street (Telephone: CAnal 6-0500)

For Stanley "Roll-up" Doors, see File Index



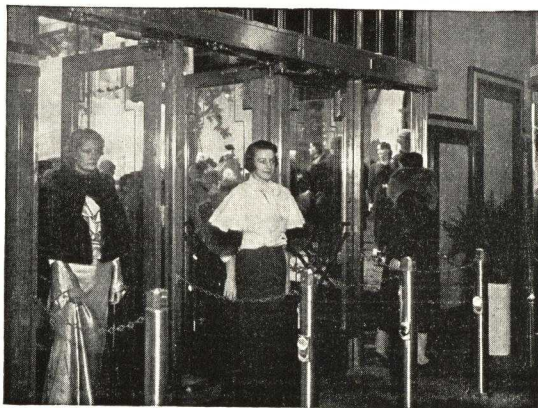
Railroad Station



Building Entrance



Chain Restaurant



Shop Entrance

STANLEY MAGIC DOORS

(Patented)

Open at Your Approach—Close Automatically
Doors of Any Size, Weight and Materials

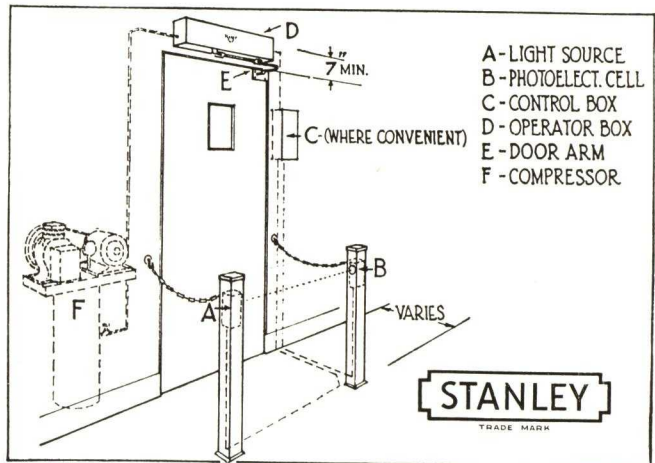
Stanley Magic Door equipment is available for the economical operation of heavy entrance doors, single or double types, in stores, office buildings, hotels, factories, hospitals, railway stations, clubs, garages, etc. They are thoroughly practical in application and dependable in operation.

With this equipment doors are made completely automatic. They operate when a ray of light, falling on a photoelectric cell, is interrupted—the door opens long enough for a person to pass through, then closes automatically. If the door is partly closed when the next person approaches, it immediately re-opens from any degree of closing. When a number of people pass through in quick succession, the door stays open until the last person passes through.

For Single or Two-part Doors of Any Size

Doors of any size, weight or material may be operated. Where maximum speed is desired, as in restaurants, two-leaf doors operated in one direction in pairs are generally recommended. Two-leaf doors may also be operated with one part opening "out" and the other "in" if desired. Doors already in place are easily equipped with Stanley Magic Door Operators without rehanging.

In addition to the photoelectric control mentioned above, push button, ceiling pull cord, and various other types of controls can be supplied to meet special conditions. Recommendations and prices will be submitted on receipt of working drawings or sketches of the door and all conditions surrounding the door, including electric current available.



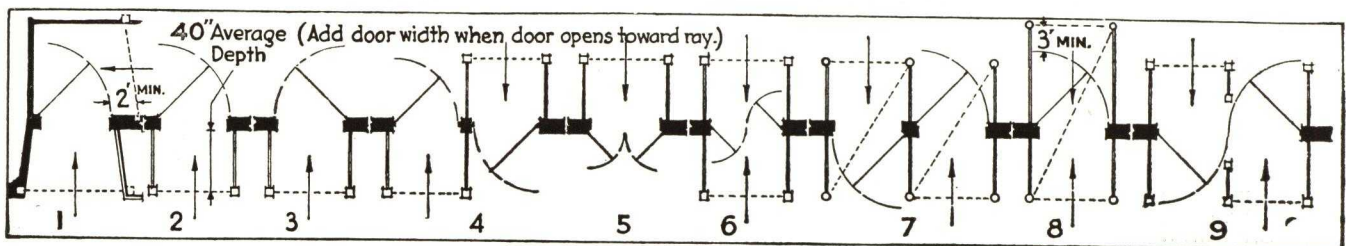
Operation of Stanley Magic Doors

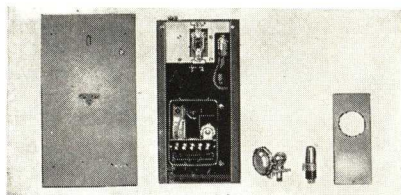
The equipment consists of four parts—Operator, Control, Railings or Posts for housing the Photoelectric Control and Air Compressor. The operation is best explained by reference to the diagram above.

Light Source (A) in post projects a beam of light which falls upon photoelectric cell (B) in opposite post or railing. Interception of this beam causes cell to actuate photoelectric relay (C) which in turn causes air to be released through air valve controlled by a solenoid in pneumatic operator (D). Motion is transferred to door through bracket (E).

At the limit of the opening stroke, air valve permitting entrance of air is closed by a cam, and the door is then closed by springs contained in the operator. Automatic air compressor (F) supplies air at a constant pressure through pressure regulating valve.

In actual operation, the door opens quickly to approximately a wide open position, pauses at the full open position, after which it closes with a gentle checking motion. Operator is designed so that it may be adjusted for slow opening if preferred.



Equipment for Stanley Magic Doors**Control**

Compressor—Complete with motor, air compressor with automatic switch, steel storage tank, air filter, pressure regulating valve and gauges.

Operator—The entire mechanism, completely assembled, is enclosed in a cadmium-plated steel case or other material, as desired.

Control—Includes photoelectric relay, steel relay box, switch, transformer for light source.

Also photoelectric cell and complete light source ready to fit into railings.

Railings or Posts—Available in a wide range of designs, metals and finishes.

Doors—Furnished by others.

Current—110 volts, 60-cycle, single-phase a-c. Rotary converter furnished where alternating current is not available.

Stanley also offers electric motor operators with various forms of control for Swinging, Sliding, Swing-up, and Roll-up Garage Doors and for the operation of Gates.

**Operator****Consulting Service**

Our engineers are always available to discuss the adaptability of Stanley Magic Doors to any specific problem, to recommend the most suitable type for the traffic to be handled and to furnish estimates or any pertinent information desired.

OTHER TYPES OF CONTROL AVAILABLE TO USE WITH STANLEY MAGIC DOOR OPERATORS**Diagonal Beam Control (Patent Applied For)**

On doors constantly used by the public—some passing quickly and some slowly (in a wheel chair, on crutches, etc.), this auxiliary control is practically a necessity. This diagonal beam holds the door open as long as the beam is intercepted. A person starting through the aisle intercepts the cross light beam—the door opens. Almost immediately in continuing his passage he intercepts the diagonal light beam—holding the door open as long as it is intercepted. The second he steps out of the light beam door closes.

Hardware Control

Illustration shows a shop entrance, where photo-electric control is used on outside and hardware control on the inside. This is particularly desirable where space is limited. A person leaving the store grasps the handle which is connected electrically to the door operator. Contact with the handle opens an air valve in the operator, setting the door in motion. Speed of the door may be regulated, opening slowly to avoid danger to persons using it.

A practical use for Hardware Control is on heavy entrance doors which, due to weight or draft, would ordinarily require such heavy spring pressure to keep closed that it would be difficult to open manually.

Hardware Controls can be built into door handles, push bars, push plates, door knobs, or panic bolt bars.

Floor or Wall Switch Control

A practical installation of this kind has been made at the door to a lacquer room in an industrial plant—air conditioning necessitates keeping door closed. Previously, door was manually operated necessitating one free hand to open door, or foot type door holder to keep it open. In both cases efficiency of air conditioning was reduced. Most industrial plants have conditions similar to this.

On this particular job control is by means of a plate switch (may be located in either floor or wall), which allows the worker to approach the closed door with both hands full, step on the switch and door opens—then closes.

Pull Cord Control

Pull Cord Control is practical in industrial plants on passage doors between departments—especially where doors are used for truck passage. The truck operator, in approaching door, pulls cord switch located at any point convenient to route of traffic—door opens, truck passes through, and door closes after a pre-determined period, or it can be arranged to close by pulling cord switch on either side of the door.

Variations of Photoelectric Control

Illustrations on preceding page show the photoelectric control apparatus located in either posts, railings or walls—horizontally in front of doorways. In industrial plants, controls located in posts are inconvenient, as there is always the possibility of their being struck by trucks. An installation on doors leading from shipping room to loading platform has been made by us, which eliminates posts. A beam of light runs from an overhead point on the inside of the building to a floor box on the outside, diagonally through a window in the doors. An operator or truck approaching the doors, intercepts the path of light—doors open and remain open until operator has passed through—then they close.

Another suitable installation where posts are undesirable is running a beam of light in front of the doorway from overhead to a floor or wall outlet. A more suitable location for the outlet than on floor is a low point on wall where it will not be walked on, accumulating dirt. This type of installation is practical where the same people use the door repeatedly, routing their path through the beam of light, but for doors being used by the public the definite aisle approach is more practical.

Protective Rope Feature

Rope is attached from outer stile of door diagonally back to a post or wall; when door opens this rope drops in back of the door and entirely out of the way. A person approaching from the wrong direction sees this rope and realizes this door is not for his use and is shied over to the next door, which is marked—"Enter."

**Hardware Control****Diagonal Beam Control****Protective Rope Feature****Pull Cord Control**

Stanley Magic Doors Are Displayed at Architect's Samples Corporation, 101 Park Avenue, New York

SINCE 1828

CORNELL IRON WORKS, INC.36th Avenue and 13th Street
LONG ISLAND CITY, N. Y.BRANCH OFFICE: 378 Newbury Street, Boston, Mass.—Kenmore 1396
102 REPRESENTATIVES IN PRINCIPAL CITIES

TELEPHONE

Stillwell 4-3880-1-2-3

PRODUCTS

CORNELL ROLLING DOORS and SHUTTERS in Steel, Bronze, Aluminum, Stainless Steel or with Cornell Non-corroding Curtain Bottoms.

UNDERWRITER'S LABELED ROLLING STEEL FIRE DOORS.

ROLLING STEEL ESCALATOR ENCLOSURES.

FLOAT-OVER OVERHEAD DOORS in Galvanized Tubular Steel; and in Wood, 2 $\frac{3}{8}$ and 1 $\frac{3}{4}$ -in. thickness.

ROLLING GRILLES and GATES in Steel or other metals; SLIDING GRILLES in Steel or other metals.

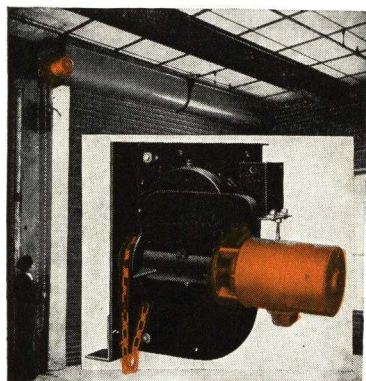
CANOPY; BI-FOLD; VERTICAL LIFT; ACCORDION and TURN-OVER DOORS in Steel or Wood; SLIDING HANGAR DOORS.

ELECTRIC MOTOR DRIVES for all above products.

Makers of fine doors for over one hundred years, CORNELL IRON WORKS, INC. owes its origin to George Cornell, who purchased his employer's metal business July 29th, 1828, in New York City. With completely equipped modern one-story factory buildings in Long Island City, the Company can produce all parts with the greatest efficiency and dispatch.

**UPWARD ACTING DOORS AND SPECIAL DOORS FOR ALL PURPOSES**

Listed on next page is a most complete line of upward acting doors suitable for exacting specifications. Cornell makes every type of counterbalanced door and grille. They save valuable floor and wall space, occupying unused space overhead. Materials and trucks can be stored right up to the doorway. They eliminate trouble from ice and snow and irregularities of the sill.

**Cornell Motor Operator and Door**

Cornell motor drives are especially designed for severe door service and usually include electric brakes, emergency hand chain operator, automatic starters, and push buttons

ROLLING DOORS AND GRILLES

Cornell Rolling Doors date back to their first slat door patent in 1854. The doors proper are made up of interlocking metal slats running in vertical metal side guides, flexible to coil. All-steel curtains are hot galvanized. Made in U. S. gauges 22, 20, 18 and 16.

Rolling Fire Doors are labeled by Underwriters' Laboratories, Inc., for fire walls, etc.

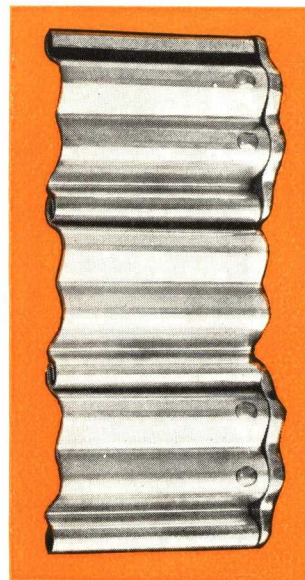
CORNELL IRON WORKS, INC., is the originator of the rolling grille in America. (Headroom for rolling doors and grilles on page 3.)

CLEARANCES

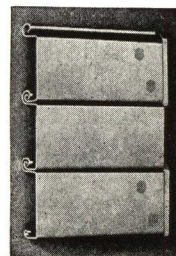
Minimum headroom should be figured 14 in. for nearly every type of upward acting door or grille. This increases in proportion to the height for rolling doors and grilles. Big Float-Over Doors, canopy doors and bi-fold doors need 18-in. headroom. Vertical lift doors require headroom equal to height of opening, one-half or one-third the height, plus 8 to 15 in. for sheaves and cables. Less than standard headroom often can be accomplished to meet special conditions. Apply to the factory.

Side room on jambs varies from 3 to 6 in. for doors counterbalanced by overhead springs. Where counterweights are used allow from 8 to 18 in. on one jamb depending on weight of door.

Engineering layouts and complete catalogs available without obligation.

**Cornell Special Design Slats**

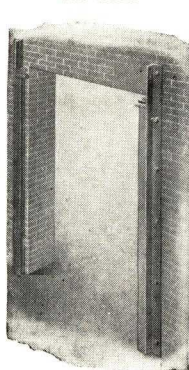
With interlocks to shed water and allow frictionless coiling

**Small 1 $\frac{1}{4}$ -In. Slat**

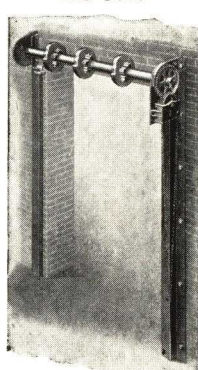
For flush surface counter shutters etc., of moderate width

Erection of a Cornell Chain Gear Face of Wall Rolling Door Type CGF

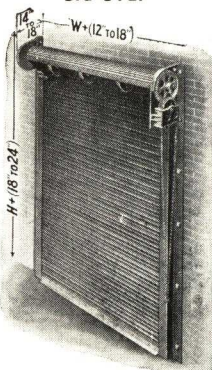
Four steps in the erection of a Cornell Chain Gear Face of wall door. Abbreviation "CGF" specifying type. The chain and gearing may be placed on the left side if preferred. The pipe shaft contains the counterbalancing springs. This is the standard door for openings over 80 sq. ft., up to the large motor driven installations.

1st STEP

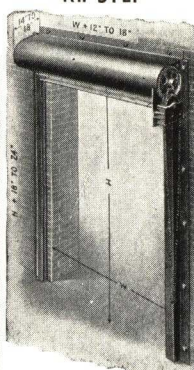
Channel shaped guides in place, fastened at the top with a through bolt, expansion bolts below.

2nd STEP

Steel brackets, attached to the guides, support the shaft. Makes for easy, accurate erection.

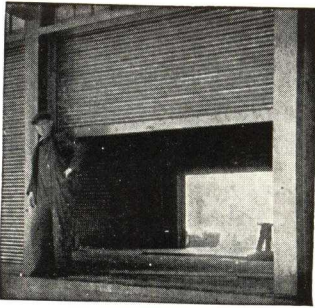
3rd STEP

Curtain in place fastened to shaft. Note dimensions: H equals height, W equals width.

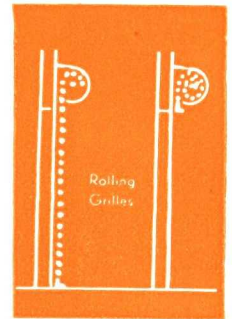
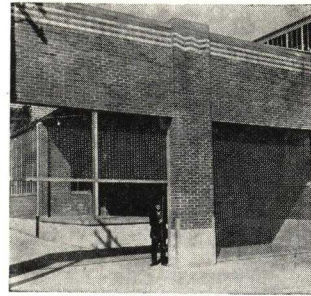
4th STEP

Curtain rolled up with galvanized steel covering hood fastened to brackets.

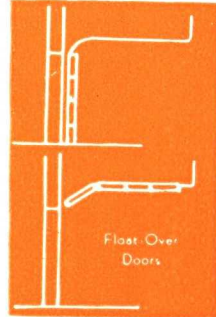
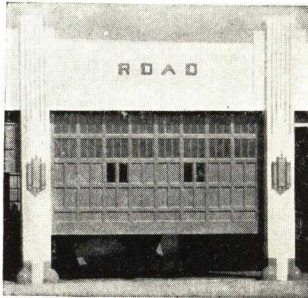
**Cornell Non-corroding Bronze Doors on Exterior Louvres, Museum Building**



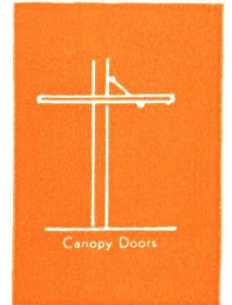
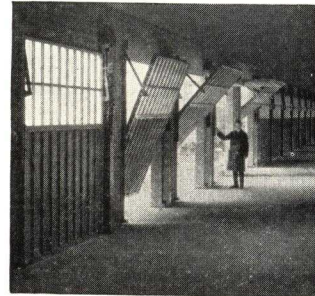
ROLLING DOORS—rugged, durable, coiling around an overhead counterbalancing shaft. Take minimum jamb room. Underwriters' labeled where required. Readily motorized. Up to 50 ft.



ROLLING GRILLES—steel, aluminum, bronze or stainless. Operated like rolling doors. Impassable, convenient and good looking.



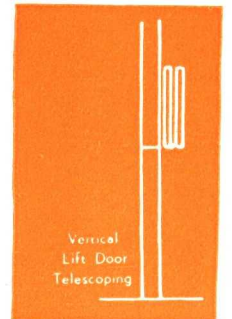
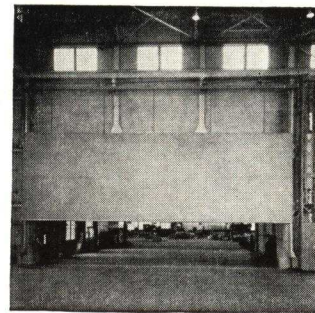
FLOAT-OVER OVERHEAD DOORS—light, fast and economical. Spring counterbalanced. Generally glazed. Wood or steel. Up to 20 ft. Patented weatherstrip. Readily motorized.



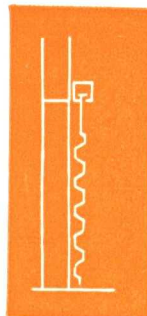
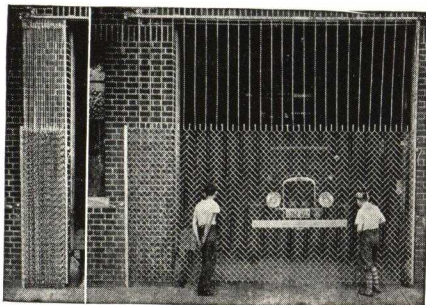
CANOPY DOORS—one-piece, simple and economical, fast and easy. Weight counterbalanced. Wood or steel. Most convenient for pass doors. Glazed. Up to 20 ft. Patented weatherstrip.



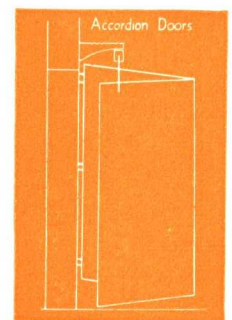
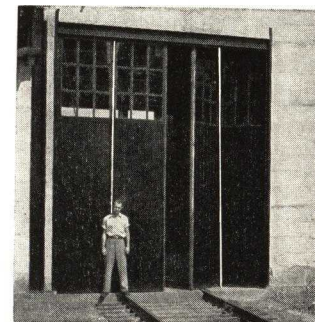
BIFOLD DOORS—for heavy industrial duty, in wood or steel. Generally glazed. Counterbalanced by weights or springs. Up to 20 ft. Weatherstrip. Can be made very rugged.



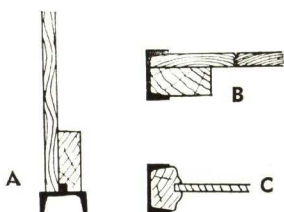
VERTICAL-LIFT DOORS—in one; or two or three sections telescoping. Wood or steel. Perfectly counterbalanced by weights. Up to 60 ft. wide. Readily motorized.



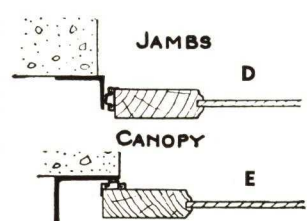
SLIDING GRILLES—galvanized steel heaviest chain link and rods. Easily operated with pull cords and very economical for outside or inside protection. Any width. Stock—10 ft. wide by 12 ft. high—\$38.50.



ACCORDION DOORS—usually made in four sections parting at the center. Wood or steel. An economical sliding door for large areas, clearing the opening at both sides and fast operating.



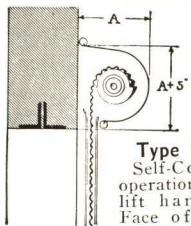
(A) is a section through the bottom rail of a steel framed wood door of the batten or flush type.
(B) is a section through top rail or stiles of the same type.
(C) is a section through top rail or stiles of a steel framed wood door of paneled construction.
(D) Section through jamb illustrates the application of Feather-Touch weatherstrip to the canopy door.
(E) Section through jamb shows how Feather-Touch Weatherstrip is applied to Bi-fold, Vertical Lift and Float-over doors.



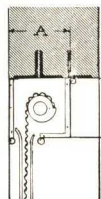
**TYPES OF CORNELL
COMMERCIAL SERVICE
ROLLING DOORS AND
ROLLING GRILLES**

All Types

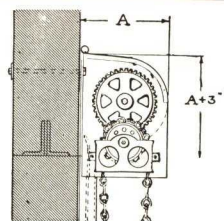
A = 14 in. up to 7 ft.
opening height. Add 1 in. for
each 3 ft. additional height.



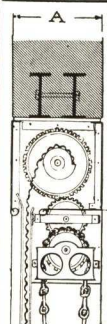
Type SCF
Self-Coiling
operation with
lift handles.
Face of wall
location



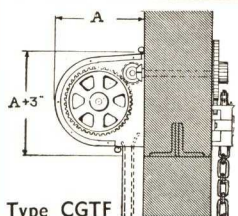
Type SCB
Self-Coiling
operation. Be-
tween jambs
location



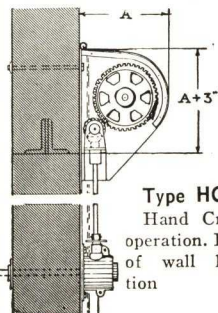
Type CGF
Chain and Gear operation.
Face of wall location



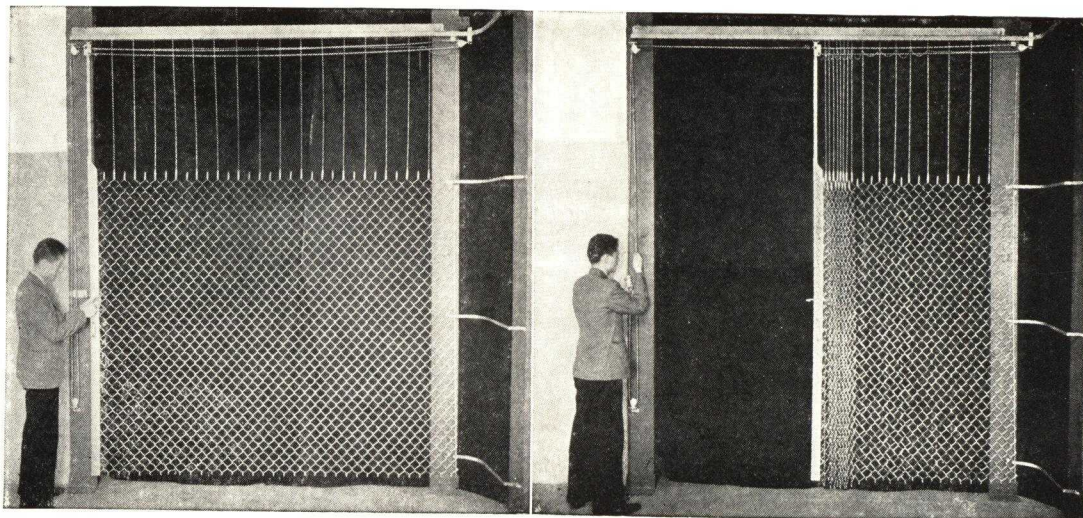
Type CGB
Chain
and Gear
operation.
Between
jambs loca-
tion



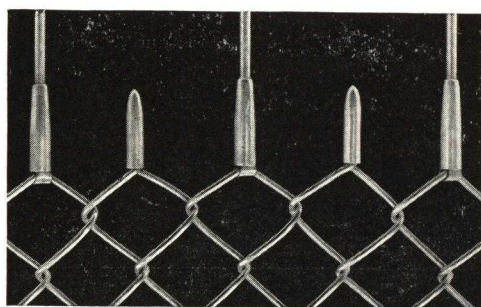
Type CGTF
Chain and Gear operation.
Through wall



Type HCF
Hand Crank
operation. Face
of wall loca-
tion



CORNELL SLIDING GRILLES



The Cornell Sliding Grille, illus-
trated, is a patented steel curtain, of
the heaviest galvanized chain link fac-
tory fence, extended to any height of
opening by galvanized rods running
to a track above.

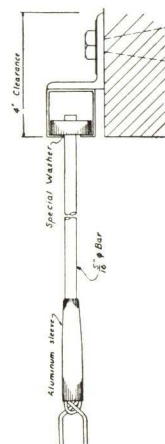
The grille can be used anywhere to
keep out intruders, allowing free
circulation of air in hot weather.
Other applications include windows,
switchboard fronts, corridors, store
fronts, markets, storage bins, etc.

The construction makes it possible to nest the Sliding Grille at the side of an opening in a space only one-sixth of the opening width. The Sliding Grille will also travel around a curve and lie at a right angle to the opening if there is 10 in. room available from the edge of the jamb.

Provision is made for padlocking from either side.

Bottom tracks, or special bottom locking devices, can be furnished on wide grilles if desired.

These grilles can be made in aluminum or stainless steel if desired.



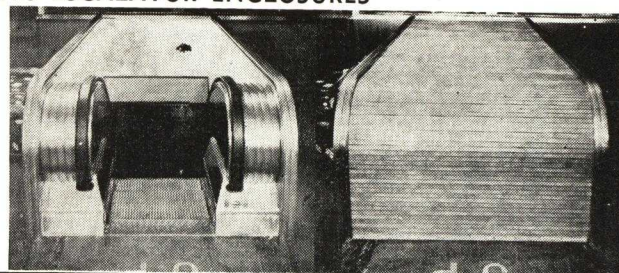
**Section Through
Top Track
and Lintel**

CORNELL ROLLING ESCALATOR ENCLOSURES

Kiosks and partitions required by building codes over escalator well holes are eliminated by the installation of flexible rolling steel enclosures, as shown at the right in open and closed position.

The rolled up cover and mechanism are completely concealed. The closure can be made automatic in case of fire.

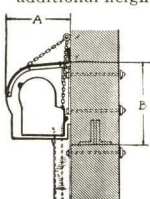
These closures have been approved and are installed in many of the largest department stores in New York and other big cities.



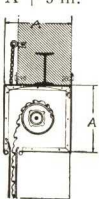
TYPES OF CORNELL LABELED UNDERWRITERS ROLLING DOORS

All Types

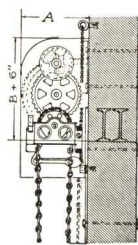
A = 15 in. up to 7 ft. opening
height. Add 1 in. for each 2 ft.
additional height. B = A + 3 in.



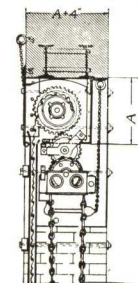
Llenroc 1
Self coiling
operation with
handles. Auto-
matic door on
face of wall



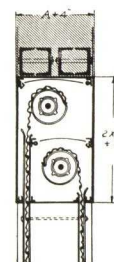
Llenroc 101
Self coiling
operation with
handles. Auto-
matic door
under lintel



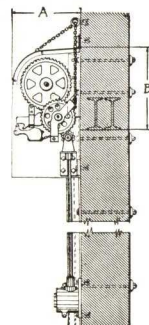
Llenroc II
Hand chain op-
eration. Auto-
matic door on
face of wall



Llenroc 111
Hand chain
operation. Auto-
matic door
under lintel



Llenroc 101
Double doors in a
fire wall. One
coiling above
the other



Llenroc 21
Hand crank
operation

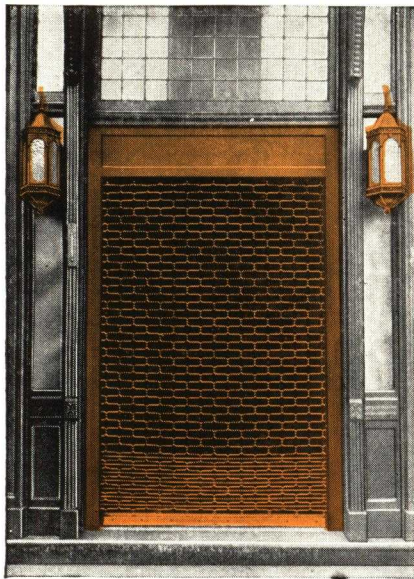
CORNELL ROLLING GRILLES

Cornell Rolling Grilles operate like Cornell rolling doors but are used to give equal security without blocking light, air, or vision. Guides may be completely concealed in wall, and overhead coil concealed in ceiling.

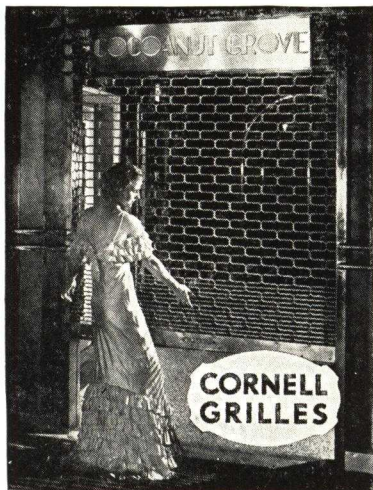
CORNELL IRON WORKS introduced the Rolling Grille in America in 1931. One of the earlier installations consisted of four large Cornell grilles in the Century of Progress Exhibition at Chicago.

Cornell Rolling Grilles are made of 5/16-in. round hard drawn galvanized steel bars running continuous horizontally from jamb to jamb and locked into rolled steel vertical side guides. The horizontal bars are flexibly connected by unbreakable vertical certified malleable iron or steel links, or diagonal chain links, which permit the entire grille to coil overhead. The weight of the grille is counterbalanced accurately by fine oil tempered springs located in the overhead horizontal pipe shaft.

Rolling Grilles take the same bracket, hood and overhead clearances as rolling doors. See opposite page. Types SCF, CGF, HCF, SCB and CGB.



Bronze Rolling Grille, Restaurant



Aluminum Rolling Grille, Night Club

An eight-page catalog sent upon request, shows further details and illustrations.

Cornell Float-Over doors slide overhead under the ceiling and take up no floor or sidewalk space and no wall or window space at the sides. They are not affected by ice, banked snow or wind. Out of the way of damage when up—they cannot blow shut or open, wedge or jam.

Doors roll on floating ball bearing wheels operating in cold rolled steel tracks fastened to continuous steel angles from sill to lintel. The doors are hung on high test preformed cables running over roller bearing sheaves. Each section carries patented feather-touch,

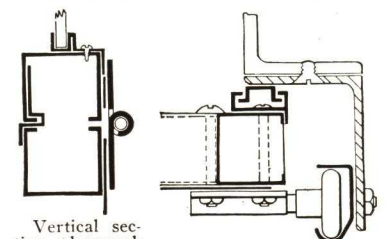
self-adjusting, metal weatherstrip insuring a perfect metal to metal seal.

Designs—To suit architectural treatment. Tubular metal doors are furnished in black or galvanized steel, aluminum, bronze or stainless steel. Wood doors with plywood panels, raised panels, slab or V-joint surfaces, segment top and metal covered wood. Wicket or pass doors can be furnished in all types. Mullion posts either swinging, sliding or removable.

Clearances—15 in. headroom is standard, but 8 in. can be used if 12 in. side room is available. Standard minimum jamb clearance is 3 in.

Standard Details for Type S Tubular Steel Float- Over Door

Steel doors are made on frames of 2-in. cold rolled copper bearing galvanized steel tubes, machine mortised and tenoned. Galvanized steel sheets are electrically welded to the frames to make up the panels. Tubes are 20 or 16-gauge; sheets 22-gauge or heavier. Paneled either side, flush the other side.

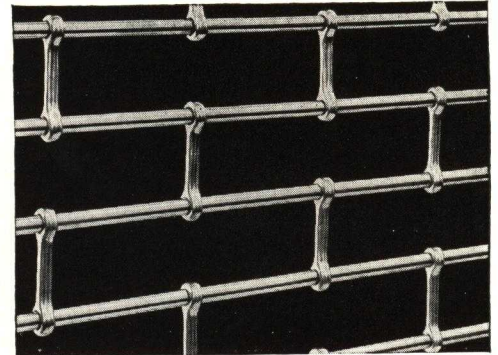


Vertical section through meeting rails, with glass above and sheet below

Horizontal section through stile showing jamb construction applied to steel buck

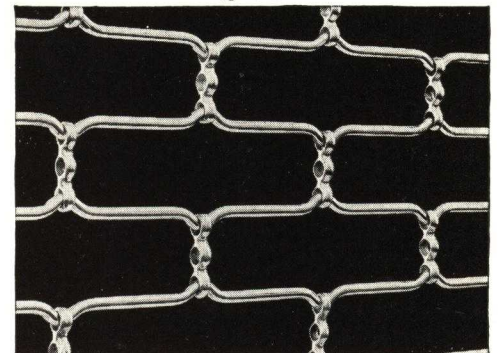


All-Glass Type SF Steel Float-Over Doors



Standard Design

Straight bar type—malleable iron links with tubular spacers



Crimped Bar Design

Standard for aluminum, bronze or stainless steel grilles



Locking Devices

Bars throw to both sides and engage holes in backs of the side guides. Either padlock or cylinder lock can be furnished, workable from either side. Springs return the bars to position when the lock is released.

GEO. W. JOHNSON MFG. CO.

For 36 Years Manufacturers of Rolling Doors and Shutters

GENERAL OFFICE AND FACTORY

209 W. 17th Street, KANSAS CITY, MO.

REPRESENTATIVES IN PRINCIPAL CITIES

TYPES, USES AND CONSTRUCTION

Rolling Doors are individually designed for their particular openings. They are of two general types—Service for ordinary commercial use, and Underwriters' Labeled for fire protection and insurance credit. Service types are ideal for a wide variety of uses as they are easily operated even in large sizes, are not affected by climatic changes and take up no floor space in either open or closed position. Labeled types are also suitable for ordinary use and furnish a high degree of resistance to fire. They are more expensive than Service types and should not be specified unless there is a definite need for fire doors bearing Underwriters' Labels. Both types are most frequently constructed for installation on the face of wall but may be arranged for installation under lintel and between jambs.

DESCRIPTION

Curtains—Made of interlocking slats rolled without sharp bends from rust-resisting cold rolled steel. Endlocks are double riveted to slat ends to prevent lateral movement and provide wearing surface in the guides. Top slat is reinforced with a steel band to avoid possibility of its tearing loose from the drum and lower edge is stiffened by a bottom bar formed of two angles bolted back to back.

Guides—Made of angle or bar sections with bell-mouths formed in their upper ends providing a continuous groove for the curtain edges. They are suitably arranged for attachment directly to the wall or to steel frames and are bolted to the end brackets to insure perfect alignment.

End Brackets—Of unbreakable steel plates well reinforced, which readily permits them to be properly designed for each opening condition; provides great strength without excessive weight and avoids danger of breakage by careless handling during erection or from excessive heat.



Drums—Full-floating full roller-bearing mounted, revolving around a stationary center shaft. Misalignment of end brackets cannot interfere with the perfect freedom of roller-bearing construction. Highest quality oil tempered motor springs are contained in the drum and form an exact and responsive counterbalance for every point of the curtain travel with ample margin of reserve power.

Hoods—Formed from steel sheets to the profile of the end brackets. Top and bottom edges are stiffened by beading or forming and formed angle supporting hoops are furnished for doors of any considerable width.

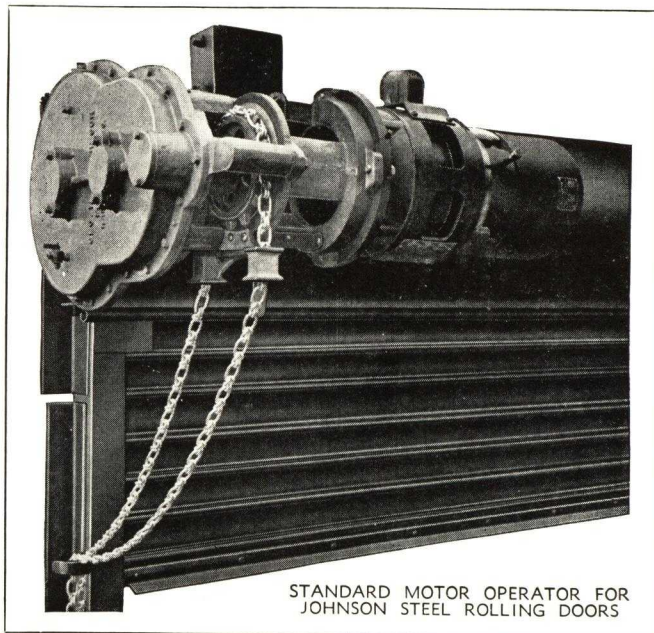
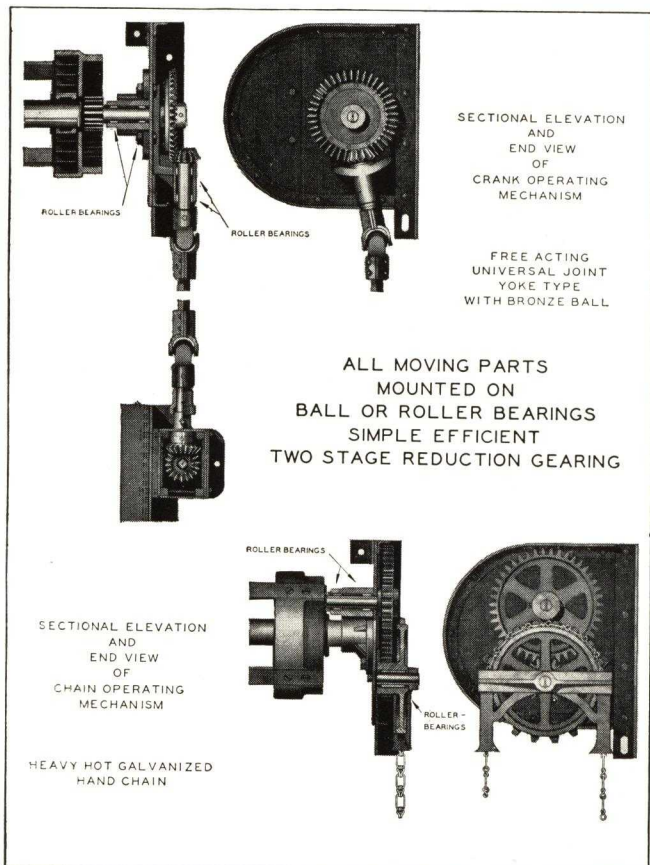
Operation—Doors of smaller sizes are easily operated by handles on the bottom plates. Larger sizes (over 8 ft. in height or 100 sq. ft. in area) usually should have endless chain or crank operation. Gearing is simple and efficient in design, of ample strength and arranged for fast and easy operation.

Bearings—All parts of every style of operating mechanism are full mounted on grease sealed ball or roller bearings. This, with Johnson full roller-bearing curtain drum, provides anti-friction bearings for every revolving part of a Johnson door, increasing ease and speed of operation and reducing lubrication maintenance to the minimum.

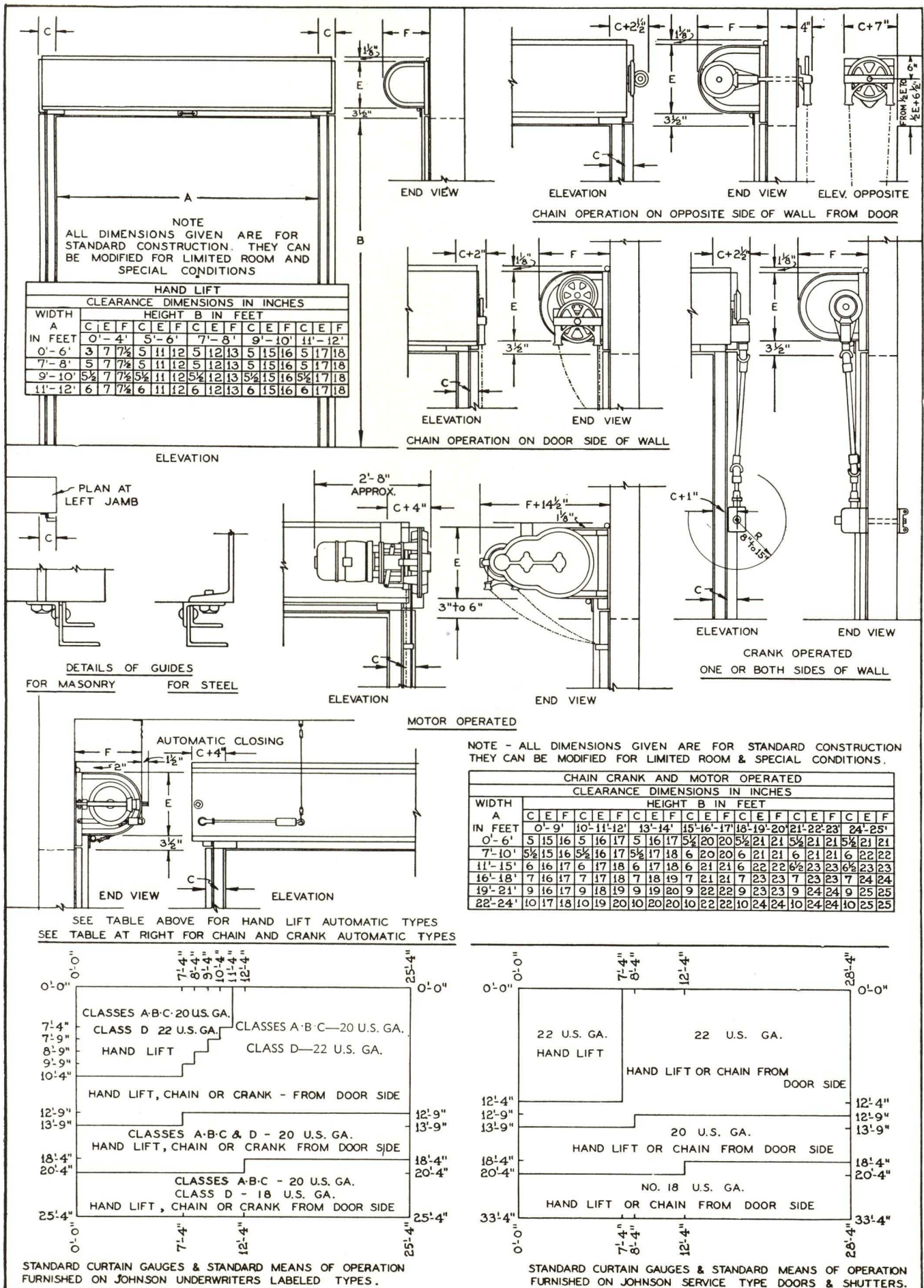
Motor Operators—Simple and rugged in construction and suited for severe industrial use. Units consist of hoist type motor with built-in magnetic brake, cut-tooth reduction gears ball or roller-bearing mounted in an enclosed oil reservoir case, and gear-driven limit switch. Reversing starter and 3-button pushbutton station are usually furnished for control. Emergency operation is entirely independent from motor making it possible to remove motor without interference with manual operation. A positive mechanical feature makes operation by motor impossible when manual operation is engaged, and shifting from one to the other does not affect adjustment of timing switch.

Automatic Closing—Mechanisms used on Underwriters' Labeled doors control speed of closing, and on doors of excessive sizes an auxiliary checking device is added as an additional precaution.

Galvanizing and Painting—Curtains and hoods are regularly furnished of galvanized steel with coating not exceeding .9 oz. per sq. ft. of flat metal. Other parts can be galvanized or a heavier coating furnished at extra cost. All parts are given a prime coat of paint at factory, and necessary bolts for erection are included with shipments.



STANDARD MOTOR OPERATOR FOR JOHNSON STEEL ROLLING DOORS



MEMORANDA

**STEEL
ROLLING DOORS**

**LABELED
FIRE DOORS**

**LABELED
FIRE SHUTTERS**

**METAL ROLLING
GRILLES**

RoL-TOP DOORS
(WOOD OR STEEL)

BIFOLDING DOOR
(WOOD OR STEEL)


**DOOR OPERATING
EQUIPMENT**

**WOOD ROLLING
PARTITIONS**



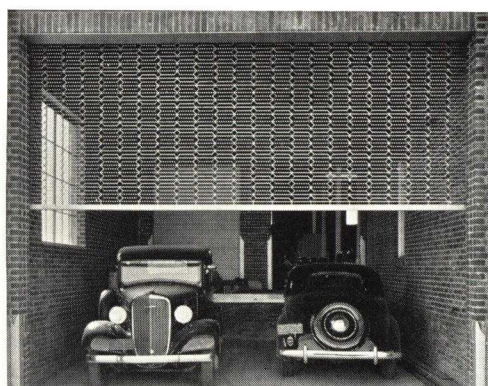
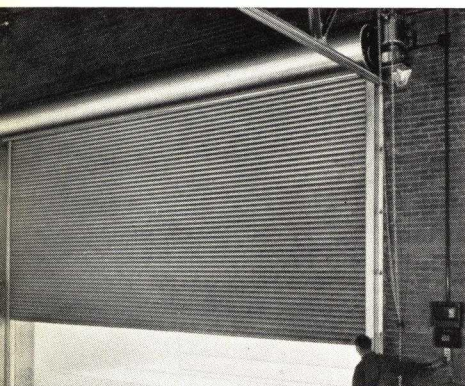
KINNEAR

ROLLING DOORS



**MADE TO FIT
YOUR INDIVIDUAL
REQUIREMENTS BY
EXCLUSIVELY DOOR
MANUFACTURERS**

Will You Always be Satisfied with the Door You Choose...?



KINNEAR DOOR USERS THROUGHOUT THE WORLD HAVE DEMANDED 9 MAJOR DOOR REQUIREMENTS

1 • EASY, QUICK OPERATION

Operating upward, clearing all ground obstructions and accurately and permanently counterbalanced, Kinnear Doors operate with speed, ease and smoothness . . . effecting substantial savings in time and effort.

2 • SAVING SPACE

When open, Kinnear Doors are stowed overhead, where space is cheap—not requiring expensive floor or wall space. Merchandise or materials can be stored within a few inches of either side of the door, without hampering its operation.

3 • GREATER DURABILITY

By virtue of their upward-action, Kinnear Doors are out of the way, less subject to damage from moving objects, wind and elements. Designed by experienced door engineers, no point has been overlooked in fabricating a door that will best withstand the effects of the elements and hard, rough usage. This, coupled with Kinnear's nation-wide servicing organization, means negligible maintenance costs.

4 • FIRE PROTECTION

Kinnear Metal Rolling Doors are fire-resisting, providing an effective guard in case of fire. When fire protection is of primary importance, the use of Kinnear Automatic, Labeled Rolling Doors reduces insurance premiums substantially, through endorsement by the Underwriters as a fire door and bearing their label. They can also be used for service purposes.

5 • MAXIMUM SAFETY

Kinnear Doors are built with strength and quality in excess of mechanical requirements. Springs are individually tested. Automatic Doors are provided with a governor safety device and other special safety features.

6 • WEATHER GUARD

The curtain or panels are of weather-resisting materials and given a high grade protective coating. If special weathertight features are required, this is accomplished by the use of weather-seal guides, special endlocks, special bottom bar treatment, etc.

7 • ECONOMICAL INSTALLATION

Kinnear Doors are designed to be installed with the minimum preparation of the opening, and to facilitate rapid and economical erection.

8 • NEAT APPEARANCE

Open or closed, Kinnear Doors give the openings a clean-cut appearance to harmonize with the architectural treatment of the building. All mechanism is neatly arranged, with concealed parts wherever possible.

9 • THEFT PROOF

Strongly built and with provisions for locking, Kinnear Doors are dependable guards against thieves, marauders and rioters.

Yes! IF YOU SPECIFY

- UPWARD OPENING TYPE DOOR
- 9 MAJOR DOOR REQUIREMENTS
- COMPLETE DOOR SERVICE

Satisfaction . . . the word that wins the favor of clients and architects alike, has been the watchword of THE KINNEAR MANUFACTURING COMPANY since its founding.

By strict adherence to this formula "The Upward-Opening Type of Door with the 9 Major Door Requirements Plus a complete Door Service" they have guaranteed to all concerned the satisfaction that one demands, regardless of the type of door he chooses, or the usage to which it is to be put.

The Kinnear Organization of Engineers, Designers and Skilled Workmen devotes itself exclusively to the manufacture of doors and door equipment. As the originator of the interlocking slat door and leaders in the field of the upward-opening type of door they are responsible for the most important improvements in door design and are in a position to *design and build any kind of an upward-acting door for any kind of an opening*. They have built a world wide recognition and reputation for satisfaction and reliability permitting you to place your door or closure problem in their hands, without exhaustive study and with the assurance that they will recommend the door that will give maximum efficiency and unequalled economy, both in operation and maintenance.

The KINNEAR MANUFACTURING COMPANY

820-870 FIELDS AVENUE, COLUMBUS, OHIO

COLUMBUS, OHIO

FACTORIES

SAN FRANCISCO, CALIFORNIA

BRANCH OFFICES

New York, N. Y. 30 Rockefeller Plaza—R.C.A. Bldg.

Boston, Mass. 6 Jersey Street

Philadelphia, Pa. 1321 Arch Street

Cincinnati, Ohio. 2335 Reading Road

Chicago, Ill. 1919 Randolph—Wells Bldg.

Detroit, Mich. 7710 Woodward Ave.

Baltimore, Md. 210 Fidelity Bldg.

San Francisco, Cal. 361 Brannan St.

Washington, D. C. 410 Bond Bldg.

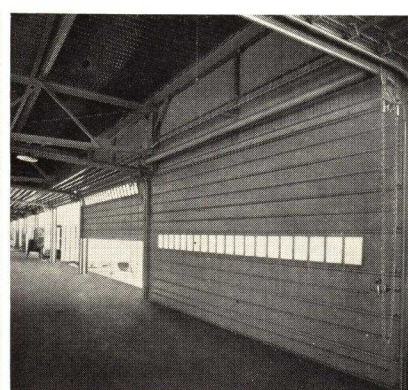
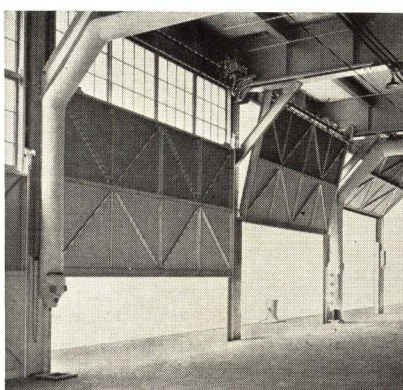
New Orleans, La. 529 Hibernia

Bank Bldg.

Pittsburgh, Pa. 1822 Oliver Bldg.

Cleveland, Ohio. 7704 Carnegie Ave.

Agents in Principal Cities



COMPLETE DOOR SERVICE

THE ORIGINATOR OF THE INTERLOCKING SLAT DOOR

KINNEAR
ROLLING DOORS

Bulletin No. 23

A Complete Door Service

KINNEAR ORGANIZATION ASSUMES COMPLETE RESPONSIBILITY

NATION-WIDE SERVICE ORGANIZATION

Branch offices and sales representatives, trained and experienced in door engineering, strategically located throughout the United States and many foreign countries. Anxious to cooperate and assist you in the solution of door problems.

YOUR SPECIAL PROBLEM KINNEAR'S EVERY DAY JOB

A practical research staff of experienced door engineers and clever designers are ready to study your opening problem to determine your exact requirements and to submit recommendations. Consequently, if given the opportunity to work with the Architect and Engineer during the designing period of the job, it is frequently possible to conceal all operating mechanisms of the door in the building structure.

EVERY DOOR A SPECIAL DOOR

Though Kinnear Doors are built in a number of standard types, as described in the following pages, for old or new buildings, every door is especially built or assembled for your job. After type has been selected or design approved, every door is carefully assembled in the largest and best equipped plant in the industry by competent and experienced door mechanics.

ERECTION SERVICE BY TRAINED WORKMEN

The greatest benefits of a good door can be received only through proper erection and adjustment. Kinnear trained erection crews are available to take the responsibility of making speedy and proper installation at the same time cooperating in complying with the building procedure plan.

PERMANENTLY AVAILABLE REPLACEMENT SERVICE AFTER INSTALLATION NO ORPHANS

Kinnear keeps records and patterns of every door sold in fireproof vaults. In case of accidental damage, duplicate parts can be promptly supplied. Replacements can be easily and economically made.

Nation-wide Kinnear Service will always be found as close as your telephone and as interested in servicing present installations as in selling new units.

KINNEAR REPUTATION YOUR PROTECTION

In addition to economical installation and numerous operating economies, the initial cost of Kinnear Doors is generally the last cost for many years. Inherently durable they give long uninterrupted efficient service. Doors now in excellent operating condition after twenty-five to thirty years of daily service give mute evidence of perfection of design, reliability of manufacture and satisfaction to the owner.

THE **9** MAJOR
REQUIREMENTS
WITH COMPLETE
DOOR SERVICE

+

UPWARD-OPENING DOORS

FOR THE ARCHITECT . . . THE CONTRACTOR . . . *and* THE OWNER

WHAT KINNEAR MEANS TO THE ARCHITECT

As every rolling door is factory assembled and not a stock item, Kinnear engineers cooperate with design service vital to the architect. Every door has operating efficiency and economy, built in with compactness, safety and simplicity and high quality. The long service records of Kinnear Doors provide a reputation sufficiently reliable to permit him to readily specify Kinnear without exhaustive study. Your special problems are being solved every day by Kinnear.

WHAT KINNEAR MEANS TO THE CONTRACTOR

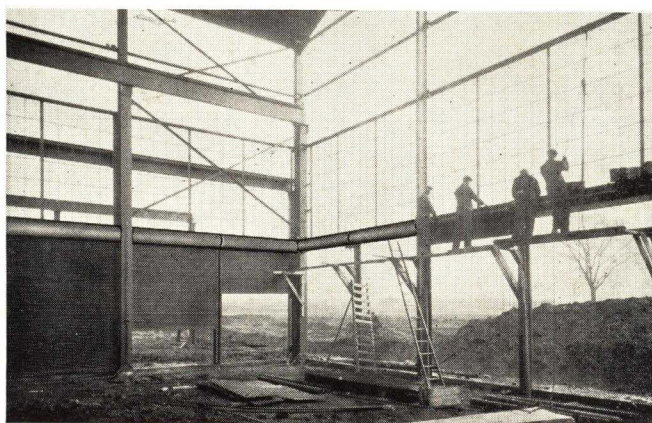
Quick and accurate estimates, accurate designs and working drawings, entire co-operation of a trained construction crew at the time of installation in complying with the building procedure plan, are a few of the reasons Kinnear Doors have won such favor with Contractors. By being relieved of the responsibility of speedy and proper installation they have learned that by accepting the Kinnear bid they are money ahead . . . and protect their reputation for delivery quality.

WHAT KINNEAR MEANS TO THE OWNER

In addition to the numerous operating economies Kinnear Doors are inherently durable. They give years of uninterrupted, efficient service. This is evidenced by hundreds of doors that are still in daily service, after more than 30 years of hard usage. For a sound investment, the performance of Kinnear Doors, coupled with Kinnear's permanently available replacement service for cases of accidental damage, cannot be overlooked.



A partial view of Kinnear's extensive designing department



Showing Kinnear's trained erection crew at work

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(also see RoL-TOP Motor Operator—Page 31)		RoL-TOP MOTOR OPERATORS	31
STEEL ROLLING FIRE DOORS AND		BIFOLDING DOORS (WOOD OR STEEL)	32
WINDOW SHUTTERS	17-22	SPECIAL UPWARD-ACTING DOORS	33-35

Kinnear presents in the following pages certain standard types of doors which are indexed as to type, to meet repeated requirements and use. However, since these doors are specially assembled from your specifications, every job becomes a special job for Kinnear. If your requirements are unusual call in the nearest Kinnear Engineer. Many variations and uses of these doors are known to Kinnear Engineers, who are ready to assist you in making designs and installation plans. Your special requirements are our everyday problems!

KINNEAR *Steel Rolling* SERVICE DOORS

NON-LABELED FIRE REPELLENT DOOR FOR

PROTECTION AGAINST BURGLARY, THEFT *and* WEATHER . . .

Can also be fabricated in
WOOD (for non-corrosive
uses)

BRONZE, ALUMINUM
and OTHER ALLOYS

For Department Stores, Warehouses, Garages, Piers, Freight
Stations, Factories, and other types of Industrial, Mercantile
and Monumental Buildings.

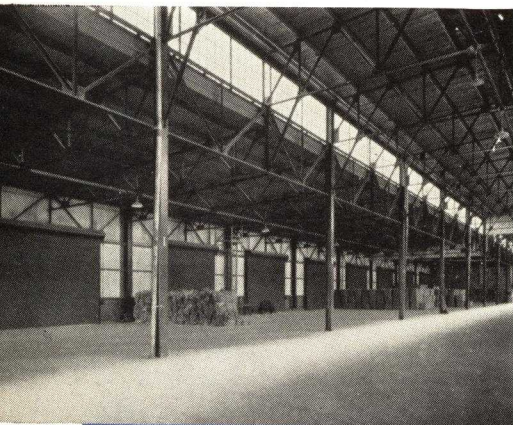
THE DOOR THAT PAYS DIVIDENDS

Doors represent an investment that will pay dividends if properly selected. Kinnear Steel Rolling Service Doors have a greater value in that they are designed to save money for a long period of time by greater operating economy, lower cost of maintenance and by lasting efficiency and durability.

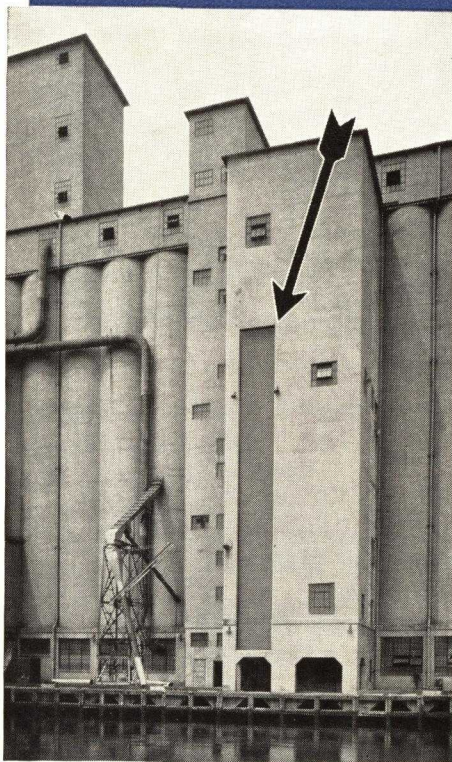
Kinnear Steel Rolling Doors and Shutters are sold under two distinct classifications, viz.: Service Doors that are designed for openings which do not require an Underwriters' Label, and where fire insurance is not a consideration; Automatic Fire Doors (see pages 17 to 22) which are built for places where the protection of human life and property against fire is of prime importance. However, the Service Doors described here by the very nature of their construction are fire repellent and afford a certain amount of fire protection. They also have the eight other major door requirements: easy, quick operation; upward-action, thereby saving space; greater durability; maximum safety; weather guard; neat appearance; theft proof; and economical installation.

LONG LIFE AT LOW MAINTENANCE COST

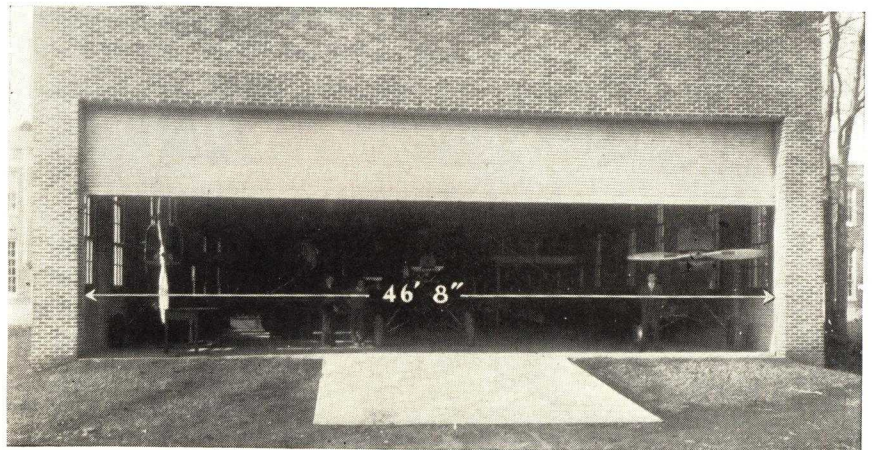
From the very outset everything is planned to provide at lowest cost a door that will function properly, have long life and minimum maintenance and operating cost. This is accomplished by combining all the factors of the complete door service: designing skill, the highest quality of materials and workmanship; tailoring it to meet the individual requirements and assembling the door in our plant. Although no doors are carried in stock, certain standard types of installations can be selected from this catalog (see pages following). Others perhaps more suited to your exact needs and not illustrated in this catalog will be recommended or designed if you write the Kinnear Engineers. Your door is registered, plans kept in fireproof vaults, making replacement of parts necessary because of accident, easy to fill.



A large installation which emphasizes the
space economy of Kinnear Rolling Doors.



A single Kinnear Steel Rolling Door 110
feet high installed in a marine tower.



This Kinnear Rolling Door opens the entire side of a building . . . and by means
of perfect counterbalance one man can easily operate it.

TAILORED AT THE FACTORY TO MEET YOUR REQUIREMENTS

The curtain proper is made of open hearth, copper-bearing steel interlocking slats, heavily galvanized by the Kinnear Tite-Cote hot process (also of pure iron, stainless steel, aluminum, bronze and other metals) and equipped with endlocks of suitable material. This curtain is coiled upon a barrel journaled in heavy cast iron or steel plate brackets and travels in steel guides. Helical springs enclosed in the barrel provide counterbalancing. A metal hood covers barrel and coil.

8 STANDARD TYPES

Based on method of installation and operation, Kinnear Steel Rolling Service Doors are offered in eight standard types. The selection of the type to employ is determined by the size of the door, the service required and limitations in clearances and headroom.

The two methods of installation are between-the-jamb and face-of-the-wall. Where space is limited, or appearance in new buildings calls for the door mechanism to be concealed, the between-the-jamb type, which is encased under the lintel, is employed. In old buildings, with ample headroom, the brackets and coil are mounted and encased on the face of the wall. For further installation details, see page 10.

The four methods of operation most commonly employed in Kinnear Doors are: manual push-up by means of handle in bottom bar; mechanically by hand chains working through sprockets and reduction gears; mechanically by hand crank operating on shaft and reduction gearing; and electrically by a power operator, controlled by one or more conveniently located push buttons or other electrical switching arrangement.

While manual operation is used for small doors, mechanical operation is recommended for those over 80 square feet in area. In view of the saving in time, labor and inconvenience afforded by motor control, it is today's most frequently used method of operation. For further details on operating mechanism, see page 12.

SIZES AND LIMITATIONS

Because of the compactness and small amount of clearances required, Kinnear Rolling Doors can be practically adapted to most any doorway or other type of building opening. Also, as every Kinnear Door is especially built for the specific job, they can be constructed in most any size, the primary limitation on maximum size being one of what is possible and practical from an engineering construction standpoint. Since Kinnear copes with the unusual problems every day, before drawing any conclusions on limitations, ask for a special Kinnear recommendation.

KINNEAR SLATS

Kinnear Slats are made in different sizes and weights. The four most commonly used are shown in detail in drawing at right.

SLAT NO. 2—Made in 22-20-18 and 16-gauge open hearth copper-bearing steel, hot galvanized. Depth of crown $\frac{1}{2}$ in. and $1\frac{1}{4}$ in. on centers.

SLAT NO. 4—Used on extremely wide doors, is same as Slat No. 2 except has $\frac{3}{8}$ in. depth of crown and $2\frac{3}{8}$ in. on center and is made in 20-18 and 16 U. S. gauge.

SLAT NO. 10—Made in 20 and 18 gauge. Depth of crown $1\frac{1}{8}$ in. and $3\frac{1}{8}$ in. on center.

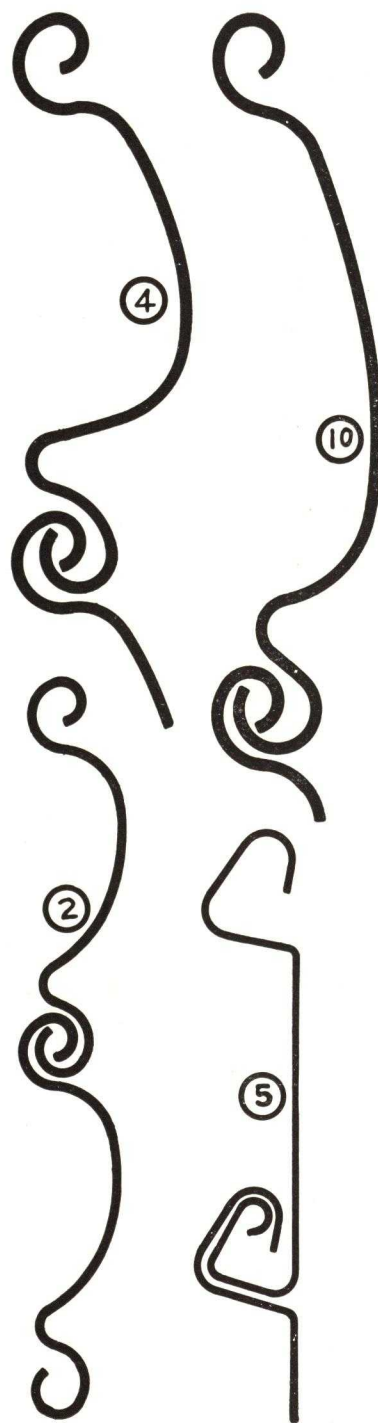
SLAT NO. 5—Made in 22 and 20 U. S. gauge. Depth of crown $\frac{1}{2}$ in. and $1\frac{1}{8}$ in. on centers.

Kinnear fabricates a number of other style slats. Details submitted upon request.



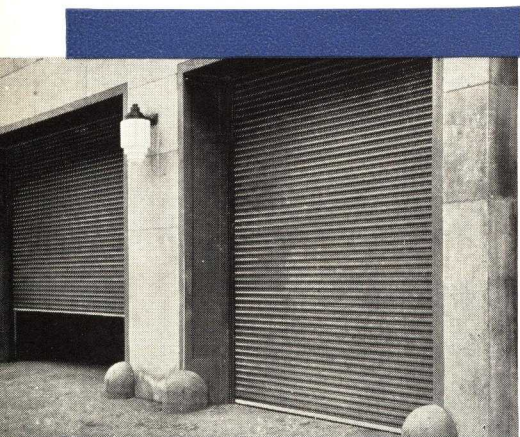
A part of the battery of 119 Kinnear Rolling Doors installed on St. John's Terminal, New York City . . . mute evidence of Kinnear capabilities.

DETAIL (Full Size) OF FOUR STYLES OF KINNEAR SLATS

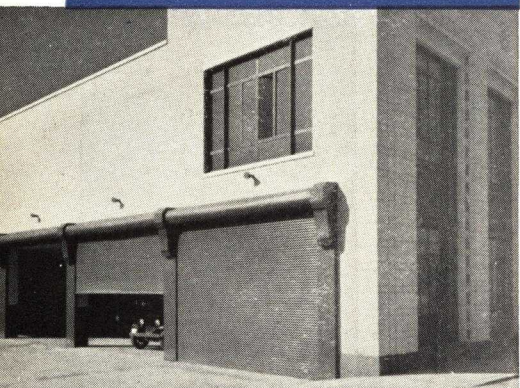


KINNEAR CONSTRUCTION

A LOOK UNDER THE HOOD WILL REVEAL 17 REASONS FOR THE LOW MAINTENANCE COST and LONG SERVICE



Kinnear Rolling Doors harmonize with any style of architecture and give a clean-cut appearance to the opening.



above . . . Illustrates how the mechanism of a Kinnear Door can be encased in ornamental hoods to meet individual demands.

below . . . Merchandise on trucks can be placed close to either side of the door without hindering operation.



A Kinnear Steel Rolling Door is a thoroughly developed piece of mechanical equipment.

The engineering skill and quality materials used in its fabrication are responsible for exclusive construction features which give it the lasting efficiency and low cost of maintenance so necessary to a sound investment.

Since so much of the dollar value of a Kinnear Door is hidden under the hood, the discriminating purchaser will find the construction points listed below of interest. They permit a visual appraisal of the superior merits that make a Kinnear Door ultimately the lowest cost door to buy.

1 • BRACKETS

Uniformly cast in special molds. All surfaces are smooth and even. Made of steel plate or gray iron of uniform texture with high-test value and suitably proportioned with large factor of safety. Bracket mouth and stops are at an established distance between center and back of bracket, thus providing a throat which permits smooth operation without friction and eliminates the excessive drag of curtain over the stops.

Bearings of large proportions are provided for barrel spindles.

2 • HOODS

Neatly formed hot galvanized sheet steel hoods to fit contour of brackets suitably reinforced with beads or flanges to prevent deflection.

3 • CURTAIN

Composed of interlocking slats of hot galvanized copper-bearing steel. For slat details see No. 15.

4 • SPRING BARREL

Each door is provided with a heavy steel barrel of sufficient diameter and thickness to avoid deflection in excess of .03 inches per lineal foot of barrel. This barrel serves a three-fold purpose, viz.:

1. Encases the counterbalancing mechanism.
2. Serves as the load-carrying beam.
3. Provides an axis around which curtain coils.

5 • COUNTERBALANCE

Oil-tempered helical springs wound from especially heat-treated steel and tempered with oil, providing a permanent means of counterbalance. Each of these springs is tailored, tested for each job and all springs for each door anchored to same tension rod.

6 • RINGS

Rings of malleable iron of involute shape, designed to coil the curtain with an uniformly increasing diameter. Size provides an initial diameter sufficient to insure uniform and constant counterbalance for all points of the door travel.

7 • SHAFTING OR TENSION ROD

Of sufficient size to carry the torsional load of the spring counterbalance and to be of cold rolled polished steel in order to eliminate friction in all bearings.

8 • BARREL PLUGS

Heavy cast iron plugs machined to fit perfectly into the ends of barrel and having Kinnear special design for holding the ends of the spring and eliminating the usual excessive strain at the spring ends.

9 • REDUCTION GEARING

Suitable reduction gearing cast with teeth machine molded from machine-finished patterns. Designed with a high factor of safety and reduction ratio individually suited for the door operated.

10 • CHAIN GUARD

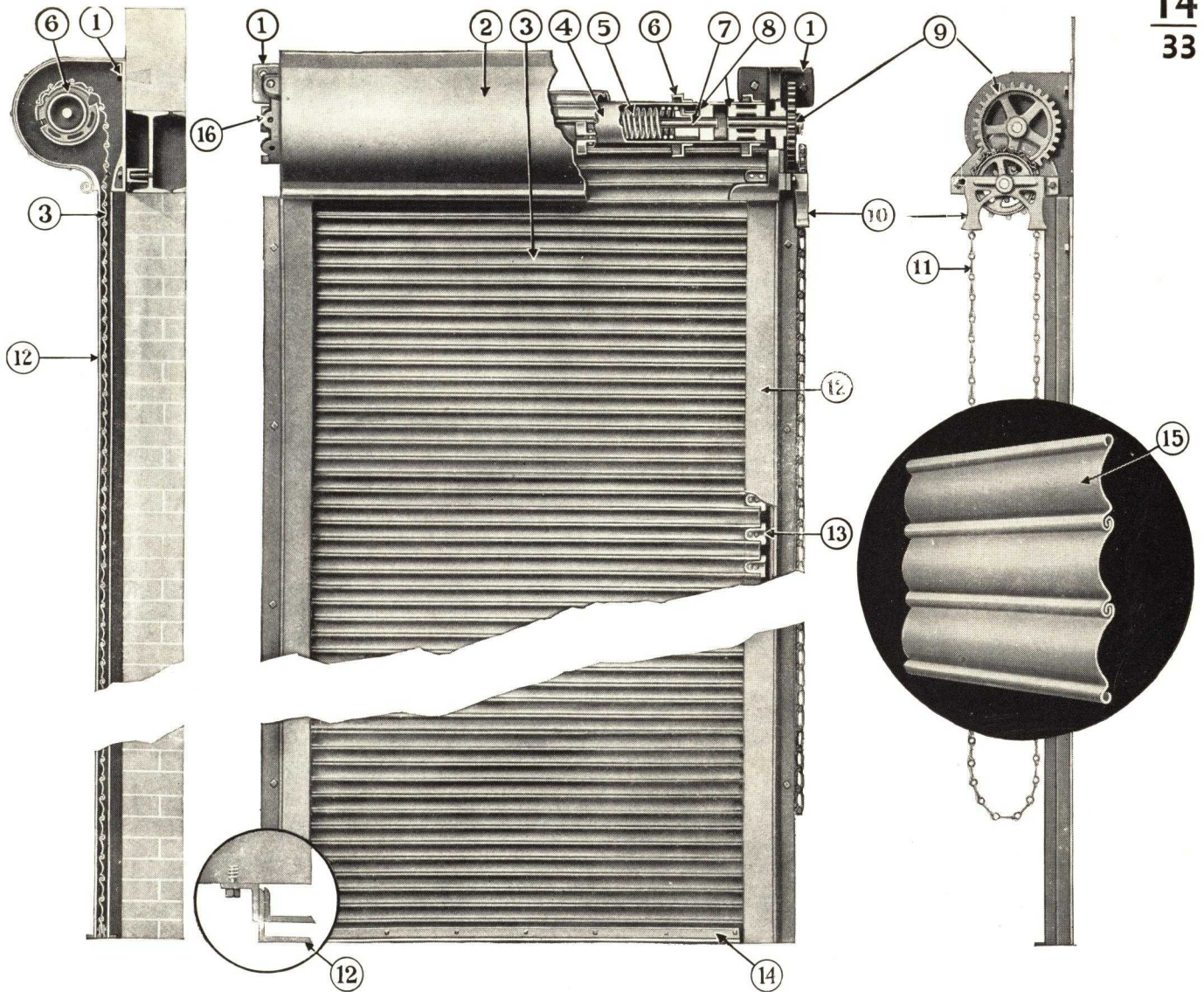
Sprocket wheel provided with a guard, especially designed to properly guide and prevent hand chain from leaving wheel.

11 • OPERATING CHAIN

Heavily galvanized, and of design and strength to prevent stretching and to provide a comfortable hand grip.

12 • GUIDES

Fabricated from structural steel angles. The Kinnear Guide is designed with



groove depths varying from 2 to 8 inches, depending upon the width of the door. This guide is especially adaptable for doors exposed to heavy wind pressure and is packed out from the face of the wall in order to accommodate the especially designed throat of the bracket.

13 • END LOCKS

Made of malleable iron and customarily placed on alternate slats. Where required, they are placed on every slat. They retain slats in place, protect them against rubbing in the guides and maintain the curtain in alignment.

14 • BOTTOM BAR

Reinforces the curtain against wind pressure and is made with two angles of equal weight in order that they balance and hang freely on the curtain to eliminate binding friction in the guides. Provides contact for the curtain against the sill when the door is closed and against the stops on the bracket when the door is open.

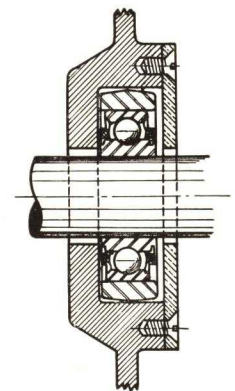
15 • SLATS

Made of different sizes to accommodate the width of the door. Slats are designed to have a high crown to provide rigidity. The hinging centers are so arranged to give free action in the curtain and to properly nest when coiled on the barrel. Standard slats are rolled from copper-bearing steel and hot galvanized. The gauge of metal used in the slats depends upon the width of the opening. In every instance the size and gauge of slat is selected to best meet customers' requirements.

Slats can be furnished in stainless steel, aluminum, bronze and copper.

16 • ADJUSTMENT WHEEL

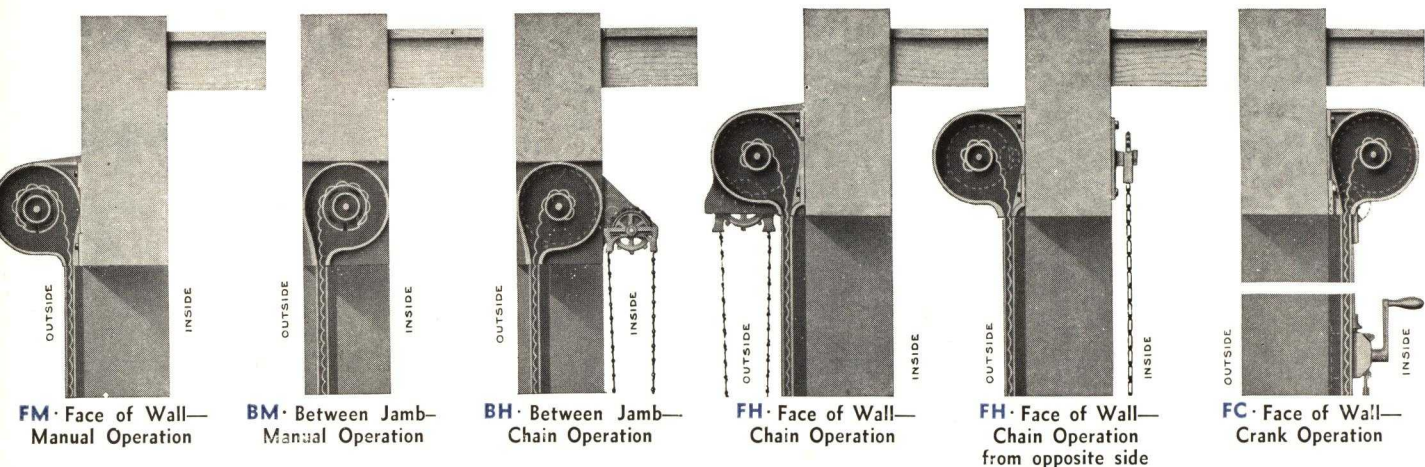
Mounted on the outside of the bracket. Easily accessible. Kinnear counterbalance is so designed that the initial tension can be increased or decreased by use of this wheel, which is mounted on the tension rod. It is of heavy, cast iron construction and locked to the bracket after adjustments are made.



17 • HIGH QUALITY BEARINGS—Standard Kinnear Equipment

To facilitate long life and smooth, easy operation, bearings placed at both ends of the barrel which supports the curtain are self-lubricating graphite bearings or grease-sealed precision ball bearings, depending upon requirements.

TYPES OF INSTALLATIONS *and* CLEARANCES



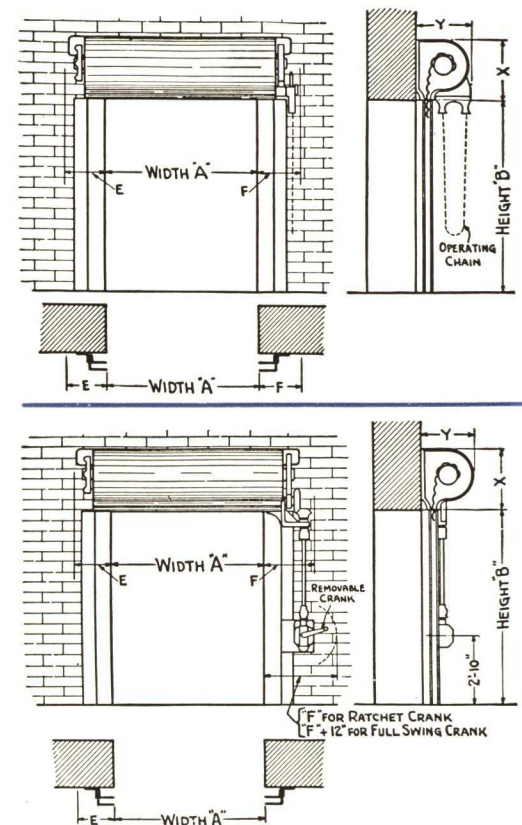
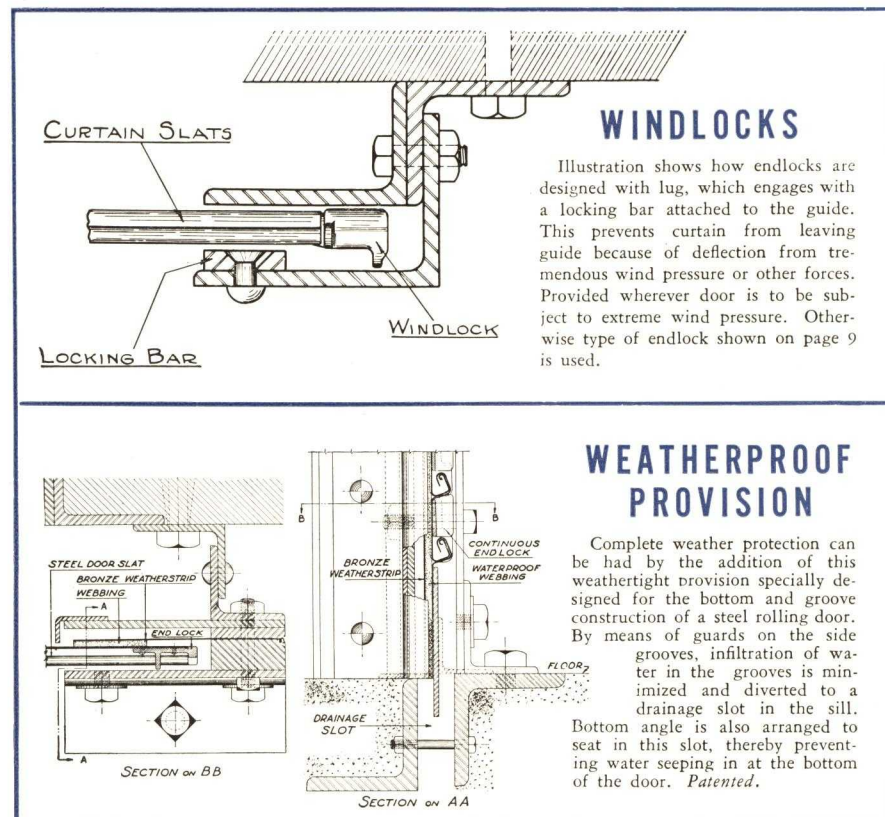
METHODS OF INSTALLATION

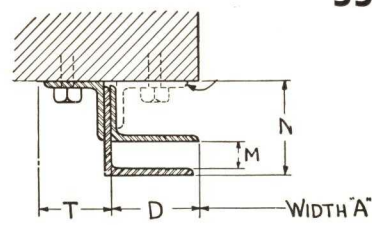
The six installations illustrated above are the more common normally controlled methods employed. However, as each door is especially assembled for your closure problem, it is easy to call in, at no obligation, a member of the Kinnear Engineering staff to cooperate with the Architect and Engineer during the designing period of the job. Often it is possible to make valuable suggestions leading to the concealing of all working parts of the door making the curtain when in the closed position, the only visible part.

When the coil is mounted on the face of the wall, as in the case of old buildings and where headroom is ample, the brackets and coil are entirely above the bottom of the lintel and the edges of the guides are flush with the face of the opening jambs. Where headroom is limited, the door is then mounted in the opening, in which case the brackets and coil are located on the jambs or in reveals provided in the jambs.

NOTE: In reading the clearance dimension tables, for doors of intermediate sizes use clearance dimensions listed for next larger width or height.

Slat No. 2 used on doors of sizes listed above heavy line. Slat No. 4 and 10 used on doors of sizes listed below heavy line. For slat specifications, see construction detail on page 7.





FM-10
MANUAL OPERATION · FACE MOUNTING

Height E, ft.	6		7		8		9		10		11		12		
Width A, ft.	X	Y	E	X	Y	E	X	Y	E	X	Y	E	X	Y	E
3, 4	13	12	6	14	13	6	14	13	6	17	16	6	17	16	6
5	13	12	6	14	13	6	14	13	6	17	16	6	17	16	6
6	13	12	6	14	13	6	16	15	6	17	16	6	17	16	6
7	13	12	6	14	13	6	16	15	6	17	16	6	19	18	6
8	13	12	6	14	13	6	16	15	6	19	18	6	19	18	6
9, 10	13	12	6	16	15	6	18	17	6	19	18	6			
11	13	12	6	16	15	6	18	17	6	19	18	6			
12	13	12	7	16	15	7	18	17	7	19	18	7			

CLEARANCES FOR CURTAIN GUIDE

Width A, ft.		D, in.	M, in.	N, in.	T, in.
Slot No. 2	to 7 incl.	2	$\frac{7}{8}$	$3\frac{1}{2}$	$2\frac{1}{2}$
	over 7 to 11	$2\frac{1}{2}$	$\frac{7}{8}$	$3\frac{1}{2}$	$2\frac{1}{2}$
	over 11 to 14	3	$\frac{7}{8}$	$3\frac{1}{2}$	$2\frac{1}{2}$
Slot Nos. 4 and 10	to 14 incl.	$2\frac{1}{2}$	$1\frac{1}{8}$	5	$2\frac{1}{2}$
	over 14 to 17	3	$1\frac{1}{8}$	5	$2\frac{1}{2}$
	over 17 to 22	$3\frac{1}{2}$	$1\frac{1}{8}$	5	$2\frac{1}{2}$
	over 22 to 24	4	$1\frac{1}{8}$	5	3
	over 24 to 32	6	$1\frac{1}{8}$	6	4
	over 32 to 40	8	$1\frac{1}{8}$	6	4

Note: Schedule above gives guide clearances required and slats required for doors of various widths. For slat detail, see page 7.

NOTE: For doors of intermediate sizes, use clearance dimensions listed in either table for next larger width or height.
Slat No. 2 used on doors of sizes listed above heavy line. Slats Nos. 4 and 10 used on doors of sizes listed below heavy line.

BM-10

MANUAL OPERATION · UNDER LINTEL MOUNTING

Height B, ft.	6	7	8	9	10	11	12
Width A, ft.	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F	X Y E F
3, 4	14 11 3 4	15 13 3 4	15 13 3 4	17 15 3 4	18 16 3 4	18 16 3 4	18 16 3 4
5	14 11 3 4	15 13 3 4	15 13 3 4	17 15 3 4	18 16 3 4	18 16 3 4	20 18 3 4
6	14 11 3 4	15 13 3 4	17 14 3 4	17 15 3 4	18 16 3 4	20 18 3 4	20 18 3 4
7	14 11 3 4	15 13 3 4	17 14 3 4	17 15 3 4	19 17 3 4	20 18 3 4	20 18 3 4
8	14 11 3 5	15 13 3 5	17 14 3 5	19 17 3 5	19 17 3 5	20 18 3 5	20 18 3 5
9, 10, 11	14 11 3 5	17 14 3 5	18 16 3 5	19 17 3 5	19 17 3 5	20 18 3 5	20 18 3 5
12	14 11 5 17	14 4 5 18	16 3 5 18	19 17 4 5	19 17 4 5	20 18 4 5	20 18 4 5

BH-20 CHAIN HOIST TYPE · UNDER LINTEL MOUNTING

Height B, ft.	8				9				10				11				12				13				14				15				16			
Width A, ft.	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
6, 7	13	10	4	5	14	11	4	5	14	11	4	5	14	12	4	5	16	13	4	5	17	14	4	5	17	14	4	5	17	14	4	5	17	15	4	5
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19, 20	17	14	6	8	18	15	6	8	18	15	6	8	19	16	6	8	19	16	6	8	22	19	6	8	22	19	6	8	22	19	6	8	22	19	6	8
21, 22	17	15	6	8	18	15	6	8	18	15	6	8	20	18	6	8	22	19	6	8	22	19	6	8	22	19	6	8	23	20	6	8	23	20	6	8
23	17	15	7	9	18	15	7	9	18	15	7	9	20	18	7	9	22	19	7	9	22	19	7	9	22	19	7	9	23	20	7	9	23	20	7	9

FH-20 CHAIN HOIST OPERATION · FACE MOUNTING

Hgt. B, ft.	8		9		10		11		12		13		14		15		16		17		18		19		20		21		22		23		24							
Width A, ft.	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F				
6, 7, 8, 9 10, 11 12 13	12	13	6	7	13	13	6	7	13	13	6	7	14	13	6	7	15	15	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7	16	17	6	7
	12	13	6	7	13	13	6	7	13	14	6	7	14	16	7	15	17	6	7	16	17	6	7	16	18	6	7	16	15	6	7	16	15	7	8	16	15	7	8	
	13	14	7	8	13	14	7	8	13	14	7	8	14	16	7	15	17	8	16	17	7	8	19	19	7	8	19	19	7	8	19	19	7	8	19	19	7	8		
	14	14	7	8	14	16	7	8	15	17	7	8	16	15	7	8	16	15	7	8	16	15	7	8	16	15	7	8	16	15	7	8	16	15	7	8				
14	16	17	6	7	16	16	7	16	17	6	7	17	17	6	7	18	18	6	7	19	18	6	7	21	20	7	8	21	20	7	8	21	20	7	8	21	20	7	8	
15	16	17	7	8	16	18	7	16	17	7	8	17	17	7	8	18	18	7	8	19	18	7	8	21	20	7	8	21	20	7	8	21	20	7	8	21	20	7	8	
16	16	17	7	8	16	18	7	16	17	8	18	18	7	8	19	18	7	8	21	20	7	8	21	20	7	8	21	20	7	8	21	20	7	8	21	20	7	8		
17	16	15	7	8	16	17	6	7	16	17	8	18	17	6	7	18	17	6	7	19	17	6	7	21	20	7	8	21	20	7	8	21	20	7	8	21	20	7	8	
18	16	15	7	8	16	17	6	7	16	17	8	18	17	6	7	18	17	6	7	19	17	6	7	21	20	7	8	21	20	7	8	21	20	7	8	21	20	7	8	
19	16	15	7	8	16	17	6	7	16	17	8	18	17	6	7	18	17	6	7	19	17	6	7	21	20	7	8	21	20	7	8	21	20	7	8	21	20	7	8	
20	16	15	7	8	16	17	6	7	16	17	8	18	17	6	7	18	17	6	7	19	17	6	7	21	20	7	8	21	20	7	8	21	20	7	8	21	20	7	8	
21	16	15	7	8	16	17	6	7	16	17	8	18	17	6	7	18	17	6	7	19	17	6	7	21	20	7	8	21	20	7	8	21	20	7	8	21	20	7	8	
22	16	15	7	8	16	17	6	7	16	17	8	18	17	6	7	18	17	6	7	19	17	6	7	21	20	7	8	21	20	7	8	21	20	7	8	21	20	7	8	
23	16	15	8	9	17	17	8	17	17	8	19	18	8	9	18	18	8	9	19	18	8	9	21	20	8	9	21	20	8	9	21	20	8	9	21	20	8	9		

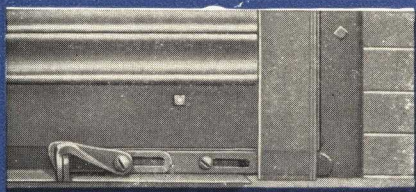
FC-20 CRANK OPERATION · FACE MOUNTING

[illegible]

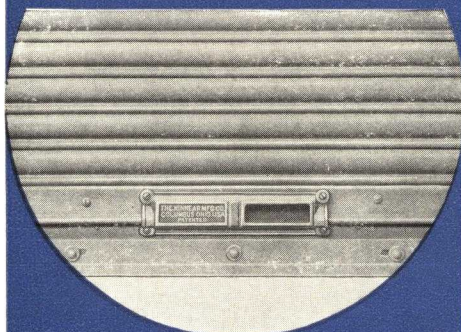
DIMENSIONS ABOVE ARE FOR GENERAL REFERENCE ONLY AND NOT FOR CONSTRUCTION PURPOSES

OPERATORS, LOCKS, WICKETS *and* MOVABLE POSTS

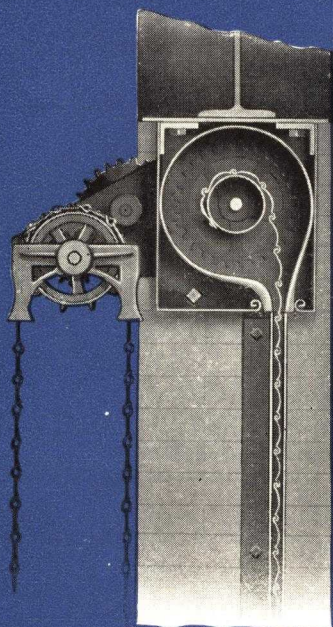
FOR MANUAL, CHAIN, CRANK *or* MOTOR OPERATION



Locking arrangement on manually operated doors.



Operating handle in bottom bar



above . . . Gearing arrangement for chain operation.

right . . . Gear box and lock provision on crank operated doors.

MANUAL OPERATION

For smaller doors or shutters mounted on face of wall or on the jambs or in reveals provided in jambs up to 12 feet high or wide with maximum area of 100 sq. ft., convenient lifting handle may be provided on the bottom plate as shown in picture to the left. Locking of manual operated doors is accomplished by padlocking the slide bolt (see picture to left) which contacts a stop in the guide, to the clip welded on the bottom plate. This can be arranged for locking on either or both sides of the door.

HOIST OPERATION

For large doors, hand chain, sprocket and gear may be provided with maximum pull of 35 pounds. Can be arranged for operation from either side of wall. For locking against operation, a keeper that is applied to the jamb, to which operating chains can be padlocked, is furnished.

CRANK SHAFT OPERATION

Where preferred, doors may be operated by hand crank, shafting and gear on door side of wall, both sides of wall or only on side opposite. Crank is detachable to prevent door from being operated. However, locking is accomplished by placing a padlock through one of the holes on the wheel placed above the crank box (see picture below). A lug on the crank box casting engages with the lock and prevents the shaft being turned.

MOTOR OPERATION

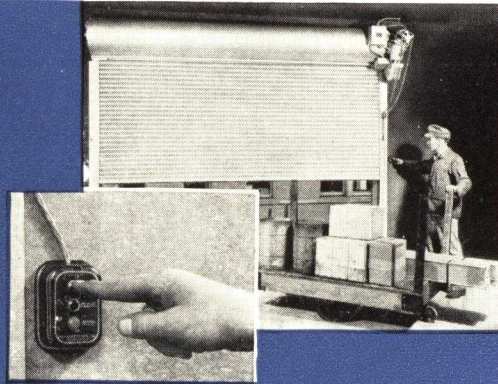
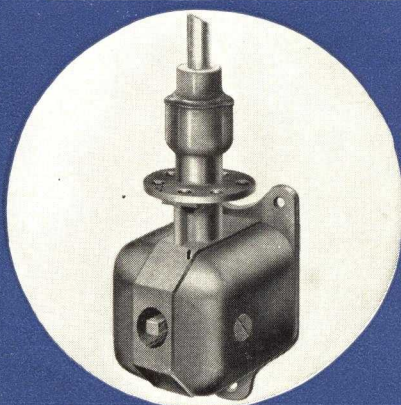
Motor operation is highly recommended as the most economical and convenient method of operating large Kinnear Rolling Service Doors . . . the saving in labor, time and heat alone will pay substantial dividends on the initial investment. For complete information see pages 14 to 16.

INTERMEDIATE MOVABLE POST

Very wide openings can frequently be more conveniently closed by a number of doors than by a single large one, using between the doors movable posts, illustrated on page 13, with the edges constructed to form double grooves. Hinged to the bracket, these posts are swung up out of the way when the doors are open. Ordinarily, the posts swing perpendicularly to the plane of the curtain but can be arranged to swing obliquely; slide to the side of the opening by a trolley on a horizontal overhead track; or other methods suited to the individual needs. Details on special arrangements will be submitted upon request.

WICKET OR PASS DOOR

The wicket or pass door (see illustration on page 13) provides an entrance without raising the major door. It is an ideal arrangement where there is no access to the building other than by the main opening. The wicket is built of an angle frame covered with a steel plate and equipped with heavy strap hinges and massive latch and lock. It is hung on a frame hinged to the side guide. The frame is constructed of angles forming grooves in which the rolling door travels. When the rolling door is raised, the wicket door and frame are swung back against the wall.



Motor operator.

Architects' Specifications

FOR KINNEAR STEEL ROLLING DOORS AND OPERATORS

STEEL ROLLING SERVICE DOORS

OPENINGS—Shall be equipped with Kinnear Steel Rolling Doors.

CURTAIN—Shall be of interlocking slats, rolled not drawn, formed in easy curves without sharp bends, from open hearth steel gauge (*see note below*). Slat to be of section sufficiently large to give curtain strength to safely resist a wind load of 20 pounds per square foot. For doors exceeding 25 feet in clear width or 15 feet clear height if door exceeds 22 feet in height, curtain shall be provided with lugs as windlocks to engage bars in guides and to lock the curtain against wind pressure. Each alternate slat shall be fitted with malleable endlocks $\frac{3}{8}$ inch thick. Bottom bar to be two angles placed back to back.

Note. The gauge of the slats to be specified according to chart:

Height		8' 0"	12' 0"	28' 0"
Width	33' 20' 13' 6"	22 U.	S. Gauge	25' 18' 12' 6"
	25' 20' 13' 6"	20 U.	S. Gauge	
	18' 20' 13' 6"	18 U.	S. Gauge	
	15' 20' 13' 6"	18 U. (with windlocks)	S. Gauge	

GALVANIZING—To be hot process, free from blisters and other imperfections, with a high grade pure zinc coating.

COUNTERBALANCE—Curtain to be coiled on a pipe of size sufficient to carry the door load with a deflection not to exceed .03 inches per foot of opening width, and to be evenly balanced by helical springs contained in pipe.

COIL BRACKETS—To be of high grade gray iron or steel plate designed to house ends of the coil.

HOOD—The coil to be housed with a sheet metal hood No. 22 U. S. gauge for doors over 20 feet wide and No. 24 U. S. gauge for narrower sizes.

GUIDES—Built of structural steel to form a slot of sufficient depth to retain curtain in guides against heavy wind pressure, and for doors requiring windlocks, guides must be provided with anchors for windlocks.

ALTERNATES FOR STANDARD SERVICE OR MOTOR OPERATION

Standard Service

OPERATION—TO BE—(A) Manually by means of handles on bottom bar. (B) Hand chain, sprocket and gear; maximum allowed pull 35 pounds. (C) Crank, shafting and gear; maximum exertion on crank 20 pounds.

GEAR—To be of best grade gray iron, cast teeth machine-moulded from machine-cut patterns, except machine-cut teeth on motor operated doors.

Motor Operation

OPERATION—Doors to be operated by means of an electric motor. The control circuit shall be closed by means of push buttons and automatic limit switches will break circuit at termination of travel. Door to be stopped at intermediate points by stop button from where it can then be operated in either direction.

MOTOR—To be high starting torque elevator or hoist motor, raising or lowering curtain at approximately .67 feet per second.

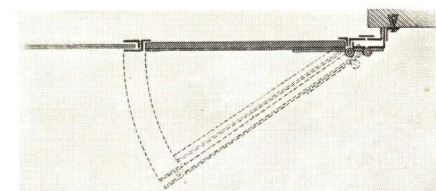
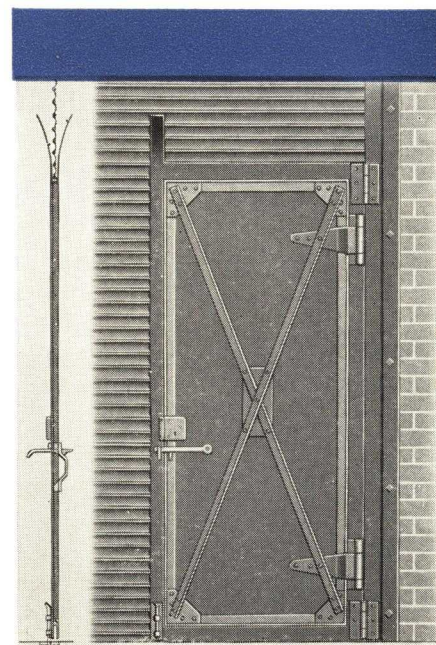
REDUCTION GEAR—Of the power unit shall be machine-cut gear completely housed and running in oil bath.

EMERGENCY OPERATION—A control for automatically engaging a sprocket and chain and releasing the brake, shall be operable from the floor. A device which shall automatically prevent the motor from operating until emergency sprocket is disengaged shall be provided. Emergency operation shall not affect timing of limit switch.

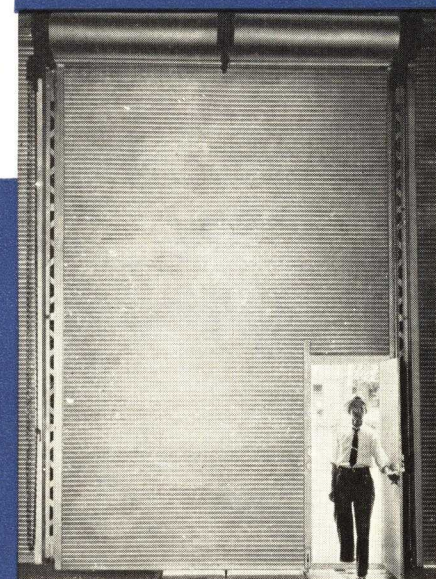
CONTROL SWITCHES—Shall consist of 3 push-button switch "open," "close" and "stop"; remote control magnetic enclosed switch panel for reversing motors, and automatic limit switch.

ERECTION—All doors shall be erected by the manufacturer or his authorized representative and shall be guaranteed for a period of one year from the date of completion of erection that any part defective in material or workmanship will be replaced without charge to the customer.

WIRING—Wires, wiring, conduit, fuses and service switches are not furnished or erected by Rolling Door Contractor, but are to be installed with the control switches by others, according to diagrams furnished by door contractor.

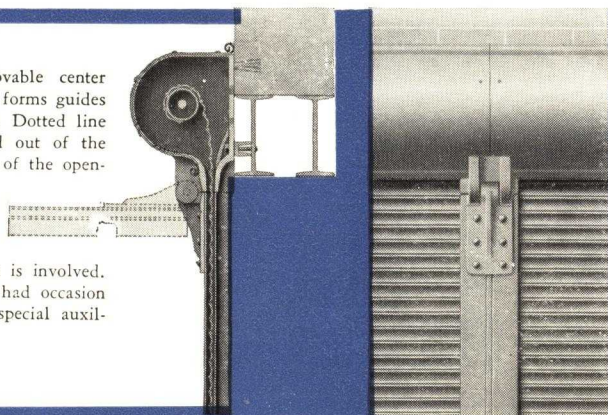


above and below . . . Illustrates how the wicket or pass door functions and is incorporated in a Kinnear Steel Rolling Door.

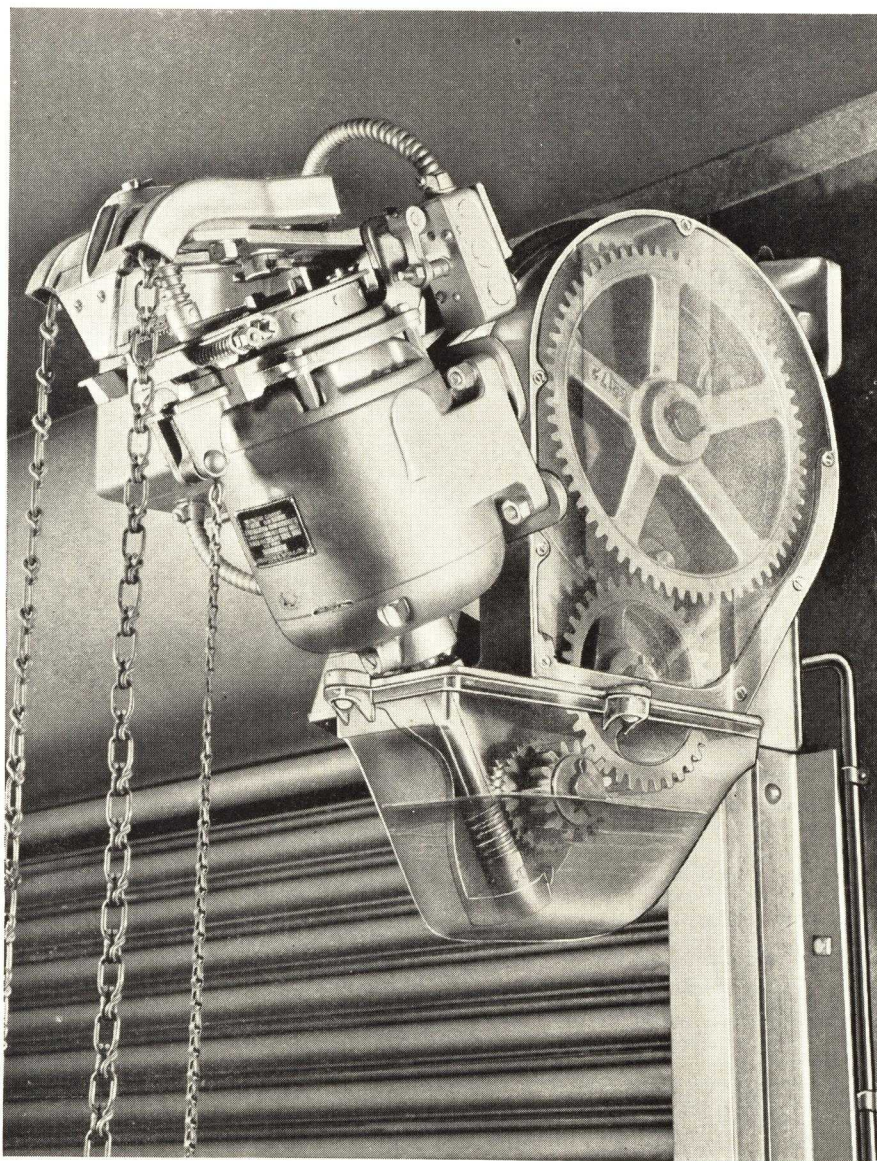


Shows how the movable center post, when in position, forms guides in which door operates. Dotted line shows how it is raised out of the way when entire width of the opening must be cleared.

This further illustrates the advisability of calling in Kinnear when a special problem is involved. In the past, they have had occasion to design innumerable special auxiliary devices.



KINNEAR *Power Units and Safety Device*



Type "A" Application—Bracket Mounting

Rolling Doors offer their greatest economy and convenience when equipped with Kinnear Power Units—compact, rugged and dependable electric Motor Operators individually adapted to any rolling door. Controlled by the desired number of conveniently located push-button control stations, Kinnear Motor Operated Doors are quickly opened or closed . . . the saving in labor, time and heat paying substantial dividends on the initial investment. Because time saved is money made! Though it is the most practical to install the complete equipment, door and operator, at one time, this power equipment is so designed that existing manually operated Kinnear Doors can be economically motorized at any time.

OPERATION

Operation of the door is accomplished by a momentary contact of the "OPEN" or "CLOSE" button on the operating switch. At the termination of the door travel, a limit switch automatically sets the brake and stops the motor. The door can be stopped at any intermediate position by pushing the "STOP" button, from which position it can be either opened or closed.

As will be noted in the following pages, Kinnear Power Units embody many improved features not to be found in any other equipment on the market . . . One of prime importance is the Emergency Manual Operation fully described in the following paragraph.

EMERGENCY MANUAL OPERATION

Interruption of current is always a possibility. But such interruptions are neither annoying nor expensive with Kinnear Motor Operators.

Emergency manual operation is accomplished through auxiliary chains, extending from the power unit to a point easily accessible from the floor level. By pulling down on these chains, the emergency chain operator is engaged, an electrical interlock actuated, which prevents electrical operation while the chain operator is engaged, and the brake is automatically released. By pulling down on the small release chain, the door and power units are easily returned to normal electrical operation.

This method is simple, positive, and eliminates entirely the element of danger present in units not equipped with this feature.

IMPROVED FEATURES

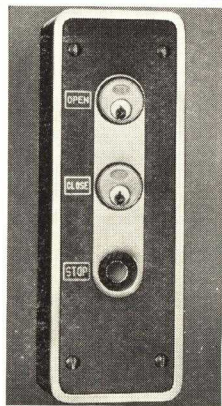
1 • Integral Construction . . . With integral, unit construction, there are fewer moving parts and no misalignment, which insures greater efficiency, quieter operation and easier erection.

CONTROL STATIONS

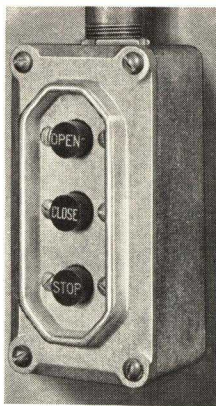
While practically any type of automatic control switch can be applied to Kinnear Motor Operated Doors, the most popular type control is the standard three-button control, which is illustrated at the right. It is a rugged, heavy-duty control, equipped with three push buttons, labeled, "OPEN," "CLOSE," and "STOP."

Where it is desired that only authorized persons operate the door, a control station having the open and close button key-operated can be supplied. This is illustrated at the left.

As Kinnear can supply other types of controls, consult them when other equipment is desired.



Key Operated



Push Button

QUICK, POSITIVE, RELIABLE . . . with FINGER TIP CONTROL

Saves Labor, Time and Heat on New or Existing Rolling Doors

2 • High Quality Gears . . . Worm gears are of chilled nickel bronze, while worms are of polished and hardened nickel steel. All gears are machine cut. Where chain drives are employed, they are high grade roller chains.

3 • Quality Bearings . . . Good bearings are liberally used in this unit; precision ball bearings; bronze bushings with lubrication facilities and grease seals; and bronze and graphite oilless bearings.

4 • Adequate Oiling . . . Large sealed oil reservoirs insure adequate oiling for parts receiving the greatest wear, with a minimum of attention.

5 • Special Motor . . . Motor is especially designed with torque outputs matched to door load requirements.

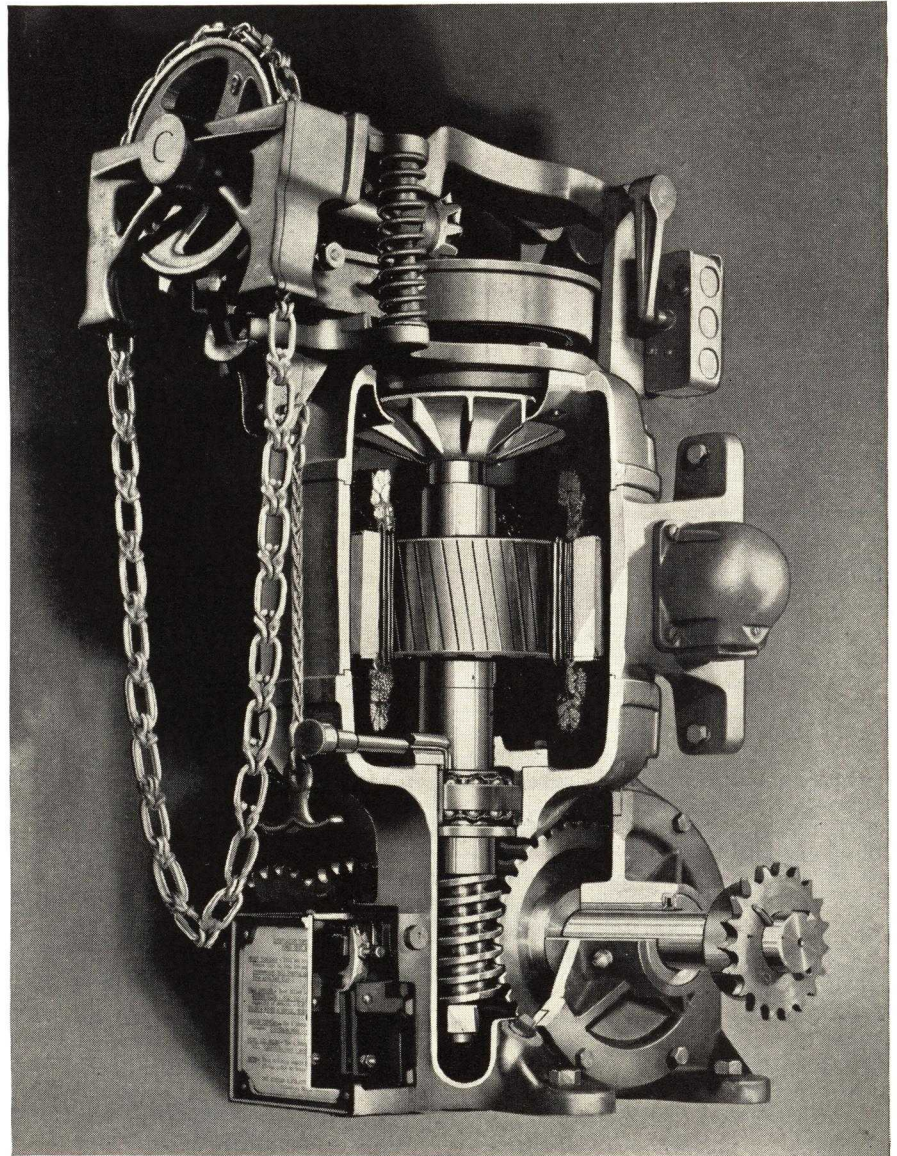
6 • Especially Engineered . . . Every Kinnear Unit is especially designed and built to suit the particular door it is to operate.

7 • Backed By Experience . . . The Kinnear Unit is based on Kinnear's years of experience in pioneering and specializing in the field of UPWARD ACTING Doors.

TYPES OF APPLICATIONS

Type A or Bracket Mounting—A rugged, neat, compact unit which is available for any current characteristics. It is the achievement of thorough designing and high quality. All mechanism—motor, reduction gearing, magnetic brake, limit switch, emergency manual operation and reversing panels are arranged to require remarkably little side clearance. It takes practically no more room than a manually operated door. Built in two sizes only. The smaller with special $\frac{1}{2}$ H. P. motor is limited to doors not exceeding 15 ft. high, or 12 ft. 6 in. wide and having maximum area of approximately 140 sq. ft. of No. 22 U. S. gauge curtain. The larger with 1 H. P. is limited to doors not exceeding 18 ft. high or 20 ft. wide having maximum area of practically 210 sq. ft. No. 20 U. S. gauge curtains.

Type B or Wall Mounting Application has been made remarkably flexible. Experiences have already proved that it lends itself to 57 different variations of mounting. The three details given on page 16 are the most typical applications and are shown for illustrative purposes only. It is recommended that a Kinnear Engineer be consulted prior to determining whether or not the particular opening has sufficient clearances available for this type of installation of the Kinnear Motor Operator. With Kinnear's nationwide list of users, it is very possible that you can be cited to an actual installation comparable to your own, in your immediate vicinity.



Type "B" Application—Wall Mounting

NEW "SAFETY DEVICE"

STOPS AUTOMATICALLY—REVERSES OPERATION

Here's another outstanding Kinnear development which adds materially to the safety of Motor Operated Doors, particularly when they are arranged for operation by means of remote control stations. It may be applied to any Kinnear Door and practically eliminates the possibility of injury to persons or cars in case the door is carelessly closed by attendants who fail to note, or cannot see, whether or not the opening is completely cleared when they push the control button.

A compressible, air-containing weatherstrip is placed along the entire length of the bottom edge of the door. In case the door contacts an obstruction upon closing, it compresses this weatherstrip, thereby forcing air through an impulse switch which causes the door to either stop its closing travel, or immediately revert to its fully open position, depending upon the method of connection to the door control circuit. The slightest pressure on the weatherstrip insures positive action.

Right:

Illustrates how the door is stopped automatically and without injury to the car when a Kinnear Motor Operated Door is equipped with the Kinnear Safety Device.

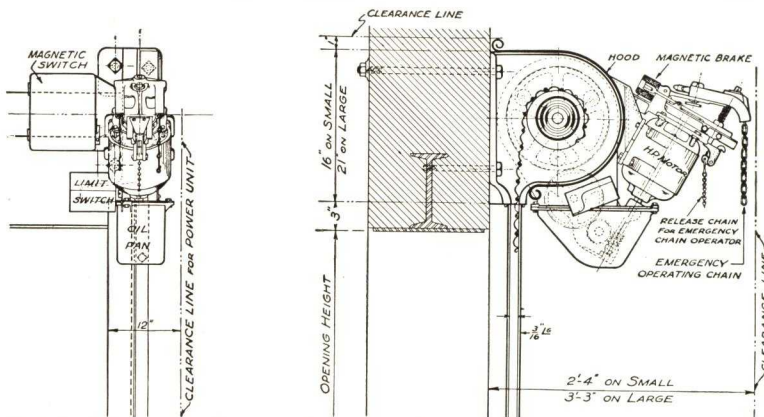


THE ORIGINATOR OF THE INTERLOCKING SLAT DOOR

KINNEAR
ROLLING DOORS

Bulletin No. 23

APPLICATIONS *and* MOUNTING DETAILS of POWER UNITS



NOTE: Clearances given are for estimating purposes only. They are only approximate, varying somewhat in each case, because every Kinnear Motor Operated Door is especially engineered for the individual requirement.

SUGGESTED SPECIFICATIONS

Door will be operated by electric motor of a high-starting torque type which will raise or lower the curtain at approximately .67 feet per second. The control circuit shall be closed by means of push buttons, and automatic limit switches shall break the circuit at termination of travel. Door to be stopped at intermediate points by "STOP" button from which it can be operated in either direction. Operator must be provided with an emergency control for automatically engaging a sprocket and chain and releasing a brake so that the door can be operable from hand chains accessible from the floor level. This control must embody a device which will automatically prevent the motor from operating while emergency manual operator is engaged. Emergency operation will not affect the timing of the limit switch.

All doors should be erected by manufacturer or authorized representative, and shall be guaranteed for a period of one year from the date of completion of erection that any part defective in material or workmanship will be replaced without charge to the customer. Door contractor will provide wiring diagrams but will not furnish or install wires, wiring, conduit, fuses or service switches.

FLEXIBLE

As every Kinnear Power Unit is especially designed and built to exactly suit the particular door it is to operate, experience has already proved that they lend themselves to 57 different variations of mounting.

This unusual flexibility has been developed only by the vast knowledge stored up from years of experience in doors and door control, and accurate and ingenious designing.

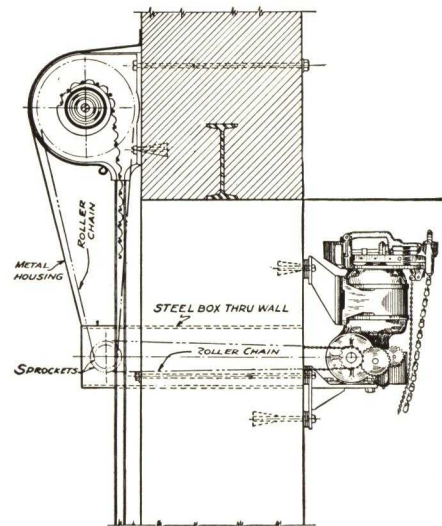
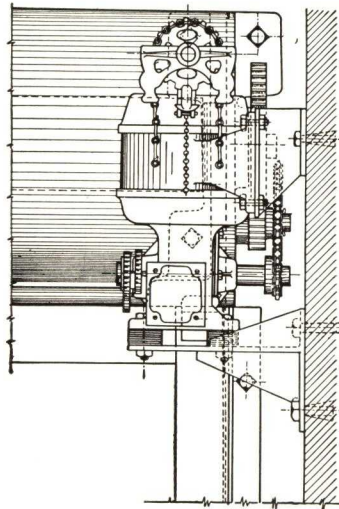
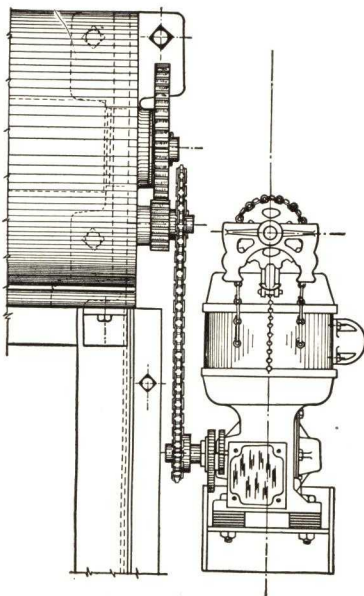
CONSULT NEAREST KINNEAR ENGINEER

Without obligation call on the nearest Kinnear Engineer to give you the advantage of his specialized knowledge, training and experience. He will give you the best application for your opening and check clearances. It is very possible that he can cite an actual installation comparable to your own in your vicinity from Kinnear's nation-wide list of users.

GENERAL

Complete current characteristics should accompany all requests for quotations. The wire, conduit and fuses which the installation of a power operator necessitates are not furnished or installed by THE KINNEAR MANUFACTURING COMPANY, but are to be provided by others in accordance with wiring diagrams supplied by Kinnear.

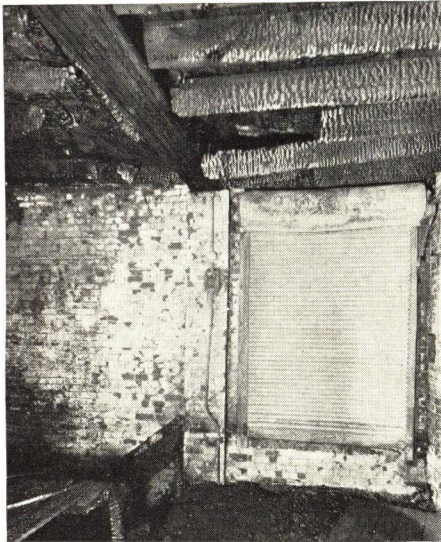
For electric operating equipment for the sectional upward-acting type of door, see RoL-TOP Motor Operators described on page 31.



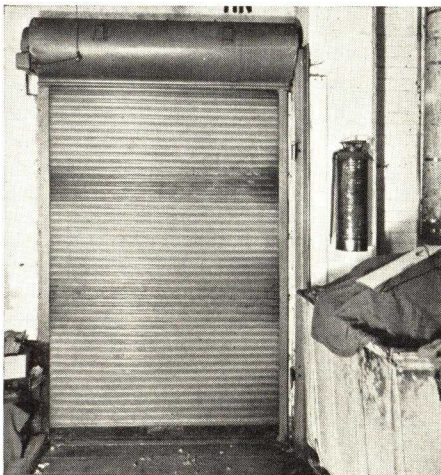
WHERE CONDITIONS REQUIRE, SHAFT & GEARS CAN BE SUBSTITUTED FOR THE CHAIN DRIVE.

"AKBAR" *Steel Rolling* FIRE DOORS

**LABELED BY NATIONAL BOARD OF FIRE UNDERWRITERS FOR
AUTOMATIC CLOSING IN CASE OF FIRE**



WHERE THE FIRE WAS . . .



OPPOSITE SIDE OF WALL



For Openings in Fire Walls, Vertical Shafts, Exterior Walls, Corridor and Room Partitions, in Warehouses, Factories, Department Stores and Other Industrial and Commercial Buildings . . .

ALL THE ADVANTAGES OF KINNEAR SERVICE DOORS

Akbar is particularly desirable for school buildings, hospitals, infirmaries or any other type of building housing people, because the safety device or governor controls the downward travel of the door in automatic closure; thus eliminating the element of accidental damage. Also, the counterbalance in this type of door is not affected in automatic closure, permitting the door to be quickly and easily opened after automatic closure in case of necessity. While this allows for an emergency exit, the door will not remain open and will continue to close until the link lever is reset.

Akbar is a Super Fire Door that is distinctly a Kinnear product, and sold only by Kinnear or through authorized representatives. It is designed primarily for fire protection purposes for openings that require Underwriters' labeled equipment and where insurance rates are a consideration. But it is also a service door, available for service purposes at all times, which affords maximum service door economies. Through the incorporation of various special Kinnear features automatic closure of Akbar is both positive and controlled. It is a silent guardian against fire that can be built to fit practically all classes and sizes of openings in either old or new buildings.

Nothing is more inducive to the rapid spread of fire than drafts which carry the flame through passageways and window openings. Kinnear Fire Doors offer an automatic closure for such openings . . . an inexpensive form of insurance against the numerous losses caused by serious fires. Their effectiveness as a fire guard has been proved in major conflagrations throughout the country . . . Kinnear equipped buildings being the only ones standing in otherwise completely demolished areas.

MAJOR FEATURES OF "AKBAR"

- 1 • Automatic closure is positive from any open position, the curtain being driven by powerful motor spring which not only starts but actually drives the curtain to a closed position.
- 2 • Improved barrel lock prevents further rotation of barrel when curtain is in a closed position.
- 3 • A safety device, or governor, controls downward travel of curtain in automatic closure. This device is a protection to human life and eliminates the possibility of accident, also the impact on sills, rebound and the jamming of slats which is common to gravity closing doors.
- 4 • Complete counterbalance is maintained in automatic closure. Doors can be raised with sufficient ease and will close again unless reset. A feature distinctive to the Akbar Door is that there is no possibility of people being trapped behind the door.
- 5 • The inner hood, or baffle plate, operates automatically in case of fire, closing the space between the hood and coil when door is in closed position and effectively preventing the passage of flame or smoke from one area to another.
- 6 • Akbar types can be quickly and easily reset after automatic closure, because the release of the automatic mechanism does not disturb the counterbalance spring. The link lever is merely reset and the door raised to the open position. This automatically restores tension on the auxiliary or push-down spring, and prepares the door for both normal or automatic operation. Because of this ease of resetting, it is a simple matter to frequently test an Akbar Door without trouble or expense.

METHODS OF OPERATION AND INSTALLATION

While provided with mechanism for automatic closure, Kinnear Fire Doors may be arranged for various methods of operation, when also being used for service purposes. They are, namely: manual push-up, chain hoist, or crank hoist.

INSTALLATION

As illustrated, page 22, Kinnear Fire Doors can be mounted on the face of the wall with brackets and coil entirely above the bottom of the lintel, or in the opening, in which case the brackets and coil are located on the jambs or in reveals provided in the jambs.

Where an opening requires a door on both sides of the wall, and it is desirable to mount the mechanism, between the jambs, the coils are placed either opposite each other or one above the other, depending upon the thickness of the wall.

If Kinnear Engineers are given the opportunity to work with the Architect and Contractor during the designing of the building, it is frequently possible to completely conceal all working parts of the door except fusible link and lever.

KINNEAR CONSTRUCTION

"AKBAR" THE POSITIVE AUTOMATIC CLOSING FIREGUARD

WHY AKBAR HAS NO EQUAL

In general appearance and principle of operation, the Kinnear Akbar Fire Door is similar to the Steel Rolling Service Door. But, in addition, they are provided with mechanism for positive, automatic closure in case of fire, as well as embodying numerous other construction features which make them a foremost fire protective device. The careful purchaser will find a study of the following points and the illustration on the opposite page, descriptive of an Akbar Manual Automatic Door for interior service (Class A, B and C) of exceptional interest.

1 • BRACKETS High test gray iron, providing a high factor of safety. Integral cast bracket mouth and stops give smooth operation, eliminating excessive drag of curtain on stops.

2 • HOODS Neatly formed from hot galvanized sheet metal of No. 24 U. S. gauge, fitted to give tight enclosure to coil. Reinforcing beads and flanges prevent deflection.

3 • CURTAIN Composed of interlocking slats of hot galvanized copper-bearing steel and not less than No. 20 U. S. gauge on class A, B, and C doors; and No. 22 U. S. gauge on Class D doors. Slat is designed to have a high crown to provide rigidity. Hinging centers so arranged to give free action to the curtain and to properly nest when coiled on the barrel.

4 • SPRING BARREL To encase counterbalance mechanism. Made from heavy steel tubing or pipe of thickness and diameter particularly designed to carry the curtain load and minimize deflection, thereby preventing binding in barrel bearings. Main bearings in supporting barrel are roller bearings.

5 • COUNTERBALANCE Composed of helical springs wound from especially heat-treated steel and tempered with oil. Counterbalance, individually tailored and tested on each job.

6 • RINGS Rings of malleable iron of special involute shape, designed to coil the curtain with an uniformly increasing diameter. Size adaptable to provide an initial diameter sufficient to insure uniform and constant counterbalance for all points of the door travel.

7 • SHAFTING OR TENSION ROD Of sufficient size to carry the torsional load of the spring counterbalance and of cold rolled polished steel, in order to eliminate friction in all bearings.

8 and 9 • BARREL LOCKS The weight of the curtain is balanced by springs, but when the curtain is down in the closed position, it is also supported by the barrel lock, in order to eliminate the danger of the curtain collapsing in case the temper of the spring is lost from the excessive heat of a fire.

10 and 11 • AUXILIARY RETAINING WHEELS These wheels are attached to the tension shaft (16) of the auxiliary spring (15). This spring (15) can, therefore, function only when the wheels (10 and 11) are free to turn after being released for automatic closure.

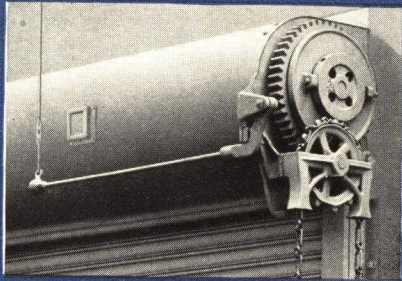
12 • SAFETY GOVERNOR This governor retains the wheels (10 and 11) and is itself held in place by the release levers (13 and 14). When these levers release the governor it permits the wheels to revolve only at a safe speed. Therefore, the force of the auxiliary spring (15) is controlled, thus eliminating the danger of personal injury to persons accidentally in the opening, and closing the door without impact on the floor.

13 and 14 • RELEASE LEVERS The automatic closing mechanism is retained by these levers. All contact points are either covered or made from non-corrodible metals, in order to eliminate any possible freezing together. The lever (14) is held up by fusible links (25) which release at a temperature of 160 degrees F.

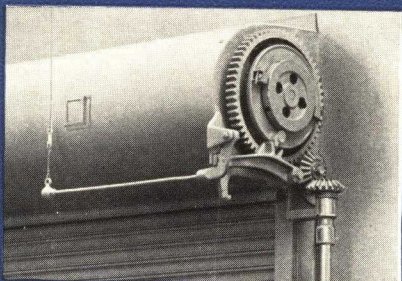
15 and 16 • AUXILIARY SPRING AND TENSION ROD This spring is anchored to a tension rod, which is in turn held in place by the auxiliary wheels (10 and 11). It always carries stored-up energy sufficient for completely and positively closing the door from any position in the opening when automatically released. Independent of the counterbalance spring, the counterbalance is unmoled when door is automatically closed.

17 • BARREL PLUGS These close the ends of the barrel, carry the springs and are of heavy cast-iron, especially designed for holding the ends of the spring and eliminating the usual excessive strain at the spring ends.

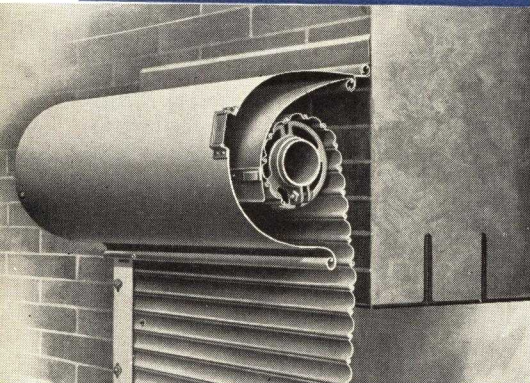
18 • ADJUSTING WHEEL This is connected to the tension rod (7) carrying the counterbalance spring and attached to the bracket opposite the one carrying the automatic mechanism. The tension of the counterbalance spring is controlled by this wheel, permitting adjustment of the door's operating balance.



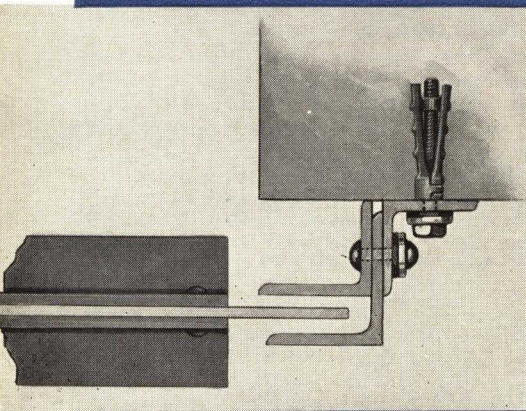
Mechanism of the chain hoist Akbar



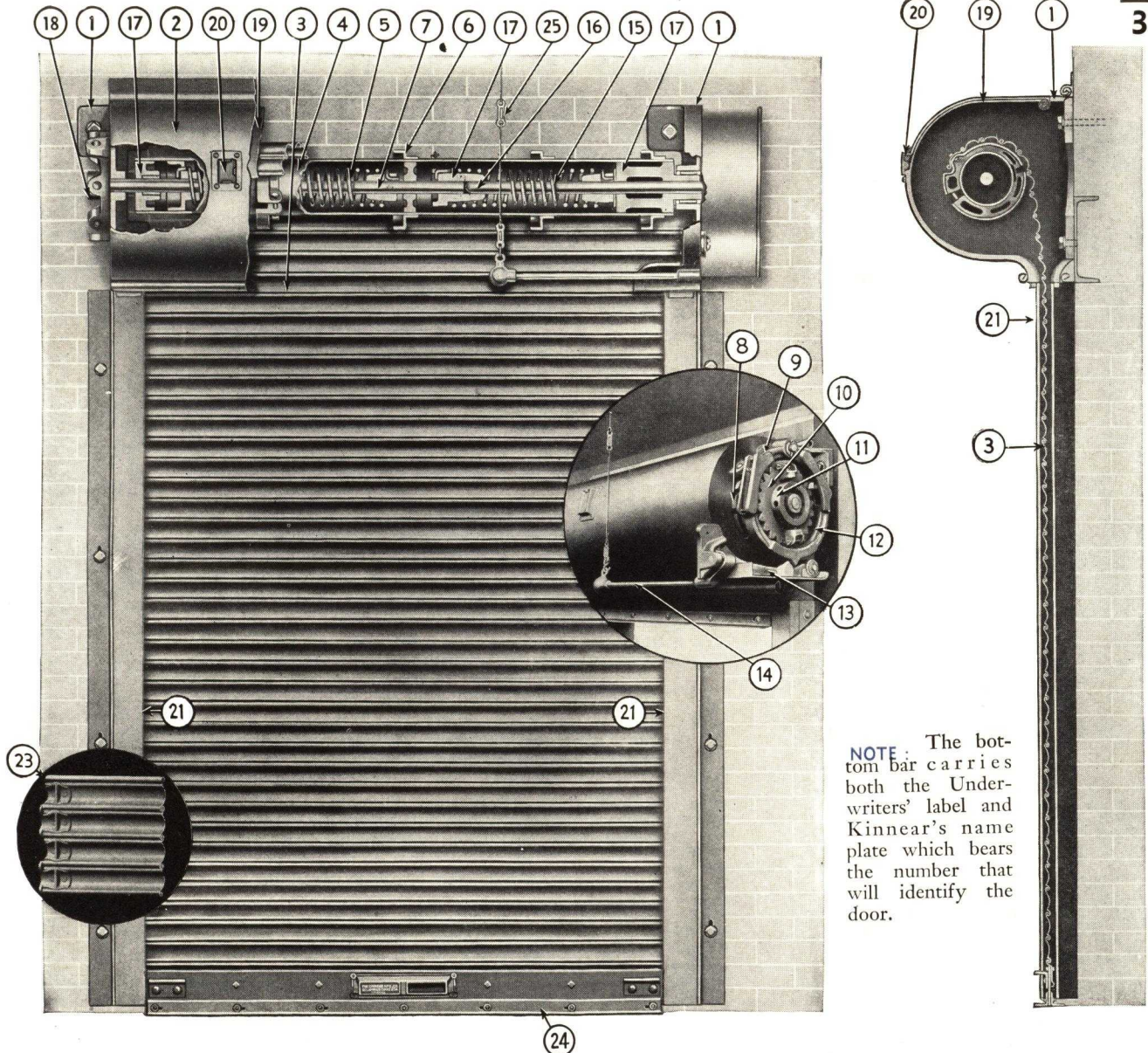
Mechanism of the crank hoist Akbar



Auxiliary hood or barrel shield



Two of the provisions for expansion in Akbar construction



NOTE: The bottom bar carries both the Underwriters' label and Kinnear's name plate which bears the number that will identify the door.

19 • DROP HOOD OR BAFFLE A metal shield of the same gauge as the hood is attached to the main hood by a continuous beaded joint, permitting the shield to hinge over the curtain coil. This shield forms the drop hood and is held up out of the way by a fusible link attachment (20). In case of fire, the link melts and the drop hood drops on the coil and becomes a baffle against passage of smoke and hot gases around through the bracket.

20 • HOOD FUSIBLE LINKS These links hold the drop hood or baffle out of the way during normal operation and are so distributed to provide necessary alignment of the hood. Fusible at 160° F.

21 • GUIDES Fabricated from structural steel of at least $\frac{3}{8}$ in. thickness. Slotted holes are provided for the rivets holding angles or plates together and for the bolts securing guide to the wall. Heat destructible washers are placed underneath the heads of the rivets and bolts, thus providing means for expansion and eliminating the danger of buckling in case of fire. The depth of the grooves is increased to accommodate the increase in width of openings.

22 • CLEARANCE Sufficient clearance is provided between ends of curtain and back of guides and between all other operating parts, to accommodate an expansion for temperatures up to and including 1800° F.

23 • END LOCKS These are placed on every slat and are made of malleable iron, shaped to close the concave ends of slats and to prevent the passage of hot gases and smoke around edge of curtain. These end locks retain slats in place, maintain alignment and protect the slats against abrasion in guides.

24 • BOTTOM BAR Designed to reinforce the bottom of the curtain and made of two angles and a flat plate. Provided with handles for raising the door and

with stops for retaining it when open, in an exact position against the coil bracket and free for a direct start in closing automatically in case of fire. Slide bolt locks, as used on steel rolling service doors, can be furnished on these bottom bars when specified.



25 • AUTOMATIC FUSE UNIT This is the fusible link that holds the door in readiness in case of fire and when exposed to a temperature of 160 degrees F., disintegrates, releasing the mechanism that automatically closes the door. By the use of two of these links on the mechanism, every possibility of operating failure is eliminated.

UNDERWRITERS' LABELING REQUIREMENTS

UNDERWRITERS' LABELS

Kinnear Fire Doors and Shutters are inspected by the Underwriters' Laboratories, Inc., and when built within size limits, listed below, bear the required label. While the Underwriters' Label is the assurance of an acceptable and rated fire guard, it is not an indication of maximum quality, as set forth in the following quotation taken from their code book: **PRODUCTS OF THE MANUFACTURERS LABELED AND LISTED AS MENTIONED HEREIN ARE NOT NECESSARILY EQUIVALENT IN QUALITY OR MERIT; THE LABELING AND LISTING INDICATING ONLY COMPLIANCE WITH UNDERWRITERS' STANDARDS.**

In making comparisons, this point should be considered, as Kinnear Doors embody refinements that are unique and which increase their value and utility.

Since fire protection regulations vary in different localities and the existence of automatic sprinkler systems often modify door requirements, it is advisable to consult the rating bureau having jurisdiction to ascertain the exact type of installation that will be required. However, the following will cover the ground in the majority of cases. The chart illustrates the different situations in which the various label classifications are required.

EXPLANATION OF CHART — TYPES OF LABELS

The following gives a more complete explanation of the chart, illustrating where different class labels are required and indicating the specific Akbar model that should be used in each situation . . .

Class A Labels Necessary for openings in fire walls. Opening must not exceed 80 sq. ft., the width or height not to exceed 12 ft.

Class B Labels Necessary for openings in vertical shafts, such as elevator shafts. Size limitations the same as in Class A.

Class C Labels Necessary for openings in corridors or room partition walls. Size limitations the same as in Class A.

Class D Labels Necessary for openings in exterior walls. Openings must not exceed 100 sq. ft., width and height not to exceed 12 ft.

As Kinnear Fire Doors of large size are built according to the same standards, the Underwriters will inspect and issue an oversize label on construction (with exceptions) for doors not exceeding 24 ft. in width or height.

As requirements vary in different localities, the local Inspection Bureau should be consulted. Kinnear Engineers will, of course, work closely with you and the Inspection Bureau and gladly submit detailed recommendations. This engineering assistance is only part of the complete service at your disposal when you carry "Kinnear" in your specifications.

Situation D. In the exterior walls D's are windows exposed to adjoining risks or in the court, to the other sections of the building. These should be protected preferably with Kinnear Superior Window Shutters described on Page 21 of this bulletin. Openings D are exposed to adjoining risk which should be equipped with Akbar Model FHD or FCD on openings exceeding 80 sq. ft. in area, and Model FMD on those smaller. For condition calling for between-jamb mounting use Model BHD or BCD in the former situation and BMD in the latter.

Situation B. Are in vertical shafts (elevator, lowerator, escalator and stair well). In fireproof buildings they should be equipped with Akbar Model FCB on openings exceeding 80 sq. ft. in area and Model FMB on those smaller. In non-fireproof buildings requiring between-jamb mounting, substitute B for F in the first letter of the model given above. We do not recommend rolling doors for stair wells, as a hinged door swinging out should be used if possible.

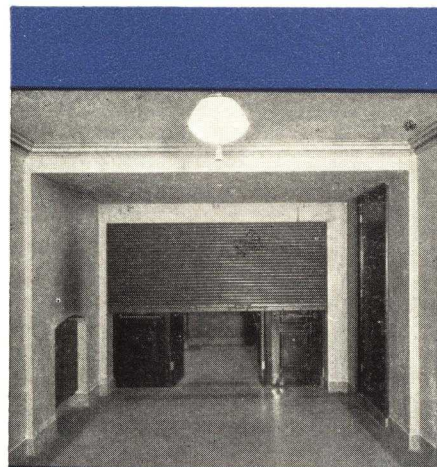
Situation A. Are where Kinnear steel rolling doors approved for fire wall openings should be used. Where openings in fireproof buildings exceed 80 sq. ft. in area, use Akbar Model FHA or FCA. For smaller size use FMA. In non-fireproof buildings requiring between-jamb mounting substitute B for F in the first letter of the model given above.

Situation Z. Is peculiar in that the elevator shaft is in the fire wall and the following applies:

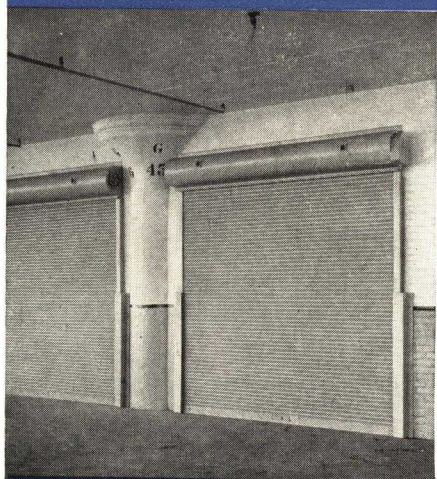
1. **On Standard Shafts**—Each opening in standard shafts communicating with more than one building or section of a building shall be provided with a fire door for Class A or B situations.

2. **On Sub-Standard Shafts**—Each opening in sub-standard shafts communicating with more than one building or section of a building shall be provided with an approved fire door for Class A or B situations, and in addition, each opening into the shaft, through the fire wall shall be provided with an approved door for Class A situations. Thus, two doors are required for each opening in the fire wall.

NOTE: In Class A, B or C situations doors mounted on the face of the walls should usually be confined to fireproof buildings where there is little, if any, danger of the collapse of the building and injury to the door from falling materials. It is recommended that the approved method of installation for a given situation be discussed with the local Inspection Bureau.



above . . . Illustrates how mechanism is concealed in a between-jamb mounted Akbar.



above . . . A standard face-of-wall mounted Akbar.

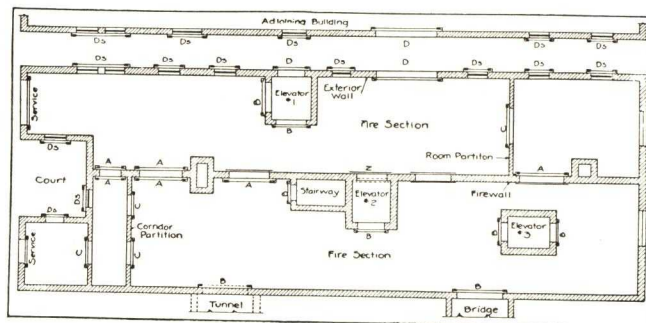
KEY TO AKBAR MODELS

- F—Face-of-wall mounting.
- B—Between-jamb mounting.
- M—Push-up type operation.
- S—Super-imposed bracket arrangement.
- H—Chain type of operation.
- C—Crank type of operation.
- R—Rewind method of operation.
- W—Wrench wind-up operation.
- T—Arrangement for operation through the wall.

Label classification designated, as follows, by the *last* letter of Model number.

- A—Class A Label.
- B—Class B Label.
- C—Class C Label.
- D—Class D Label.

Kinnear also manufactures other styles of Steel Rolling Fire Doors that are endorsed by the Underwriters and are practical for certain conditions. Therefore, be sure to call Kinnear for consultation before considering a less satisfactory type of fire door or window shutter.



"SUPERIOR" *Steel Rolling* WINDOW FIRE SHUTTERS

LABELED "CLASS D" BY NATIONAL BOARD OF FIRE UNDERWRITERS FOR AUTOMATIC CLOSING OF EXTERIOR WALLS IN CASE OF FIRE

Superior Fire Shutters are substantially the same in design as the Kinnear Akbar Fire Doors, except that they are not constructed for service raising and closing. They are provided with the safety governor regulating the closing speed so as to eliminate all personal danger hazards and destructive impacts on the window sill. Provision is made for periodic testing. By the tripping of a release chain accessible from the inside wall, the shutter is closed the same as if it were automatically closed in case of fire. It can then be raised to the open position by a gearless rewind mechanism and a hand crank easily accessible from the floor. Crank to be removed when not in use.

To insure positive starting, a powerful push-down spring gives the curtain a hammer starting blow of approximately 200 inch-pounds simultaneously with fusing the releasing link.

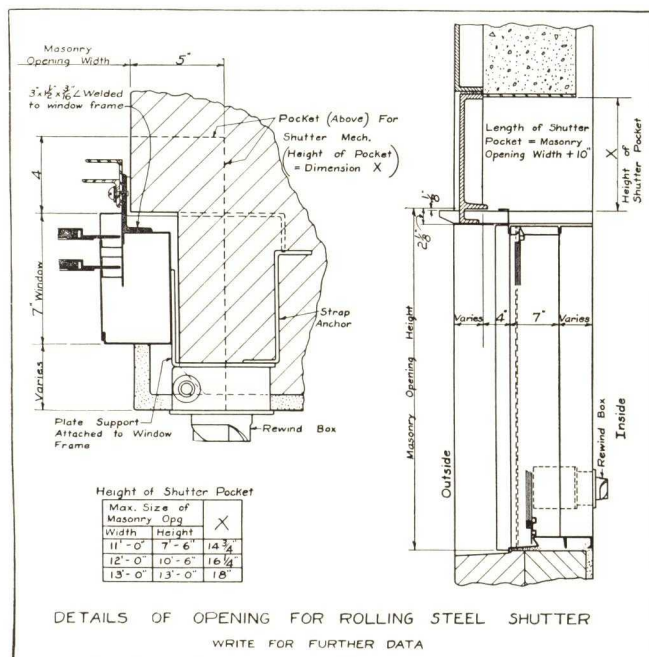
Superior Fire Shutters are constructed to the standards of the Underwriters and labeled for exterior window openings not exceeding 100 sq. ft. in area; or more than 12 ft. in width or height. True to its name this is a superior device embodying the same skilled workmanship and high quality materials as found in other Kinnear equipment.

As can be seen from the illustrations the Superior Fire Shutters can be almost completely concealed, particularly when they are installed at the time the building is constructed. For application on old buildings, the coil and brackets are mounted on the outside face of the wall, above the lintel.

OUTSTANDING FEATURES

To assure years of dependable, positive fire protection, "Superior" Shutters have the following unique features: (1) To insure positive closure, a powerful push-down spring gives the curtain a hammer-like starting blow simultaneously with fusing of release link; (2) They are set to remain normally open but can be tested as frequently as desired by means of a releasing device which releases link-lever exactly the same as in automatic closure; (3) "Superior" Shutters can be closed at any time by simply removing the releasing chain from keeper which is located on inside face of wall; (4) To raise shutters a re-winding device is located on the inside face of wall with outlet for insertion of crank. By turning crank, shutter is raised and tension is automatically restored on push-down or motor spring. The counter-balancing spring is never affected by testing or automatic closure and once set there is no need for readjusting. Simply drop curtain and raise it as frequently as desired by following the above instructions.

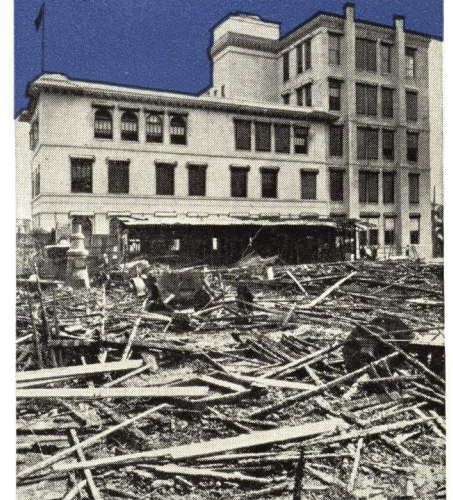
NOTE: The Superior Fire Shutters are ideal also for dark rooms, such as X-ray rooms in hospitals, etc. Many of them are at this time being used for that purpose. Special recommendations will be submitted upon request.



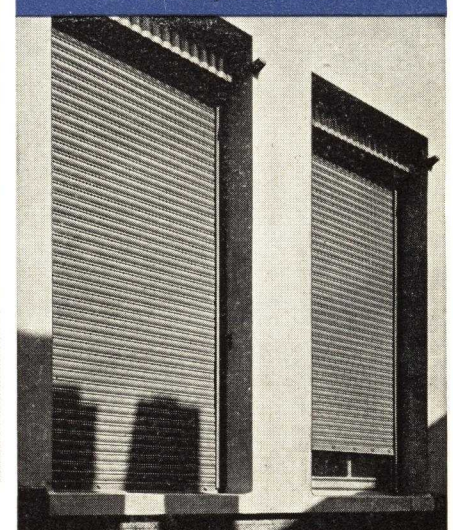
A Springfield, Illinois building that was saved by Kinnear Rolling Shutters.



The Hollywood Telephone Exchange was equipped with Kinnear Rolling Shutters.



Illustrates how the mechanism of Kinnear Shutters may be concealed.



Architects' Specifications

FOR KINNEAR AUTOMATIC STEEL ROLLING FIRE DOORS *and* WINDOW SHUTTERS LABELED BY NATIONAL BOARD OF FIRE UNDERWRITERS

OPENINGS—Shall be equipped with Kinnear Steel Rolling Automatic Fire Doors of the Akbar Construction.

LABEL—All doors to bear the label of the National Board of Fire Underwriters.

Note: The National Board of Fire Underwriters label and classify the Akbar Doors as Class "A" for fire walls, "B" for vertical shafts, "C" for corridor and room partitions and "D" for exterior walls, where the opening does not exceed in area 80 sq. ft. for Class "A", "B", "C", doors and 100 sq. ft. for Class "D" doors, or 12 ft. in width or height. Openings exceeding these dimensions in size and not exceeding 24 ft. 0 in. in either dimension are furnished with Underwriters' Oversize Label.

OPERATION—All doors to be automatic closing in the event of fire. Doors not exceeding 8 ft. high or 80 sq. ft. in area can be operated by means of handles on the bottom bar; but larger sizes shall be operated through reduction gear by hand chain (or crank).

AUTOMATIC CLOSING DEVICE—To be thermally controlled by means of a fusible link. The door shall be forced to a closed position by an auxiliary spring in spring barrel which is inoperative during normal operation and released by thermal control without affecting the permanent adjustment of the counterbalance spring.

COUNTERBALANCE—Curtain to be evenly balanced by helical springs contained within spring barrel. Counterbalance to be permanently maintained, and doors shall operate easily, normally and be readily operable after automatic closure.

SAFETY DEVICE—To be an automatic governor of escapement type inoperative

during normal operation but which shall so control the speed of the curtain during automatic operations as to prevent injury to persons accidentally under the door.

CURTAIN—To be of Kinnear interlocking slats rolled from copper bearing steel with no sharp bends and hot galvanized. The ends of the slats to be fitted with endlocks $\frac{3}{8}$ in. thick. Gauge of metal and type of endlocks as established by National Board of Fire Underwriters for the specified class risk. Gauge of metal to be No. 20 U. S. gauge for Class "A", "B", and "C" doors and No. 22 U. S. gauge for Class "D" doors.

BRACKETS—To be high grade iron with roller or ball bearings in bracket for revolving end of barrel.

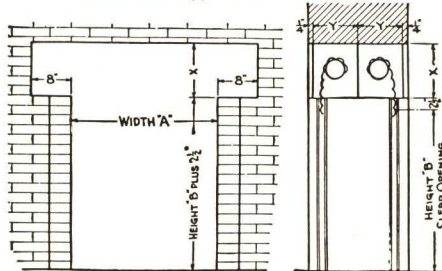
GUIDES—To be of structural steel $\frac{3}{8}$ in. thick arranged for expansion at all rivet and bolt connections.

HOODS—The coils to be enclosed with sheet metal housing of No. 24 U. S. gauge. For interior wall doors hoods to be furnished with a drop hood thermally controlled, closing against the coil when automatically released, but not interfering with coil during normal operation.

PAINT—All parts of the door except mechanism to be given one shop coat of red oxide; the mechanism to be dipped in flat black.

ERECTION—All doors shall be erected by the manufacturer or his authorized representative and shall be guaranteed for a period of one year from the date of completion of erection, that any part defective in material or workmanship will be replaced without charge to the customer.

Hand Lift Type : Under Lintel

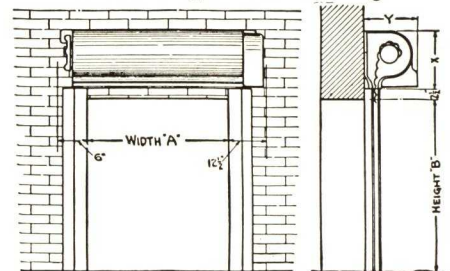


CLEARANCES

HAND LIFT TYPE : UNDER LINTEL

Height B, Ft.	6		7		8		9		10		11		12	
Width A, Feet	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
3, 4	17	13	17	13	17	13	17	13	18	15	18	15	20	17
5	17	13	17	13	17	13	17	13	18	15	20	17	20	17
6	17	13	17	13	17	13	17	13	18	15	20	17	20	17
7	17	13	17	13	17	13	17	13	18	15	20	17	20	17
8, 9	17	13	17	13	17	13	17	13	18	15	20	17	20	17
10	17	13	17	13	17	13	17	13	18	15	20	17	20	17

Hand Lift Type : Face Mounting

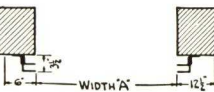


HAND LIFT TYPE : FACE MOUNTING

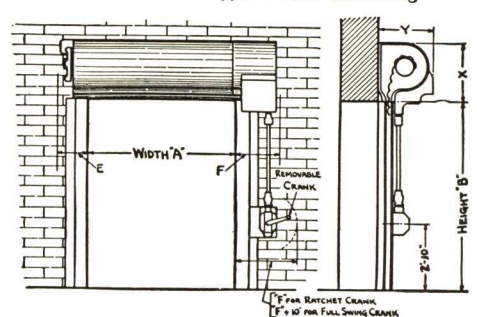
Height B, Ft.	6		7		8		9		10		11		12	
Width A, Feet	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
3	15	16	15	16	15	16	17	18	17	18	18	18	18	18
4	15	16	15	16	15	16	17	18	17	18	18	18	19	19
5	15	16	15	16	15	16	17	18	17	18	19	19	19	19
6	15	16	15	16	15	16	17	18	19	19	19	19	19	19
7	15	16	16	16	16	16	18	18	19	19	19	19	19	19
8, 9	15	16	16	16	18	18	18	18	19	19	19	19	19	19
10	15	16	18	18	18	18	18	19	19	19	19	19	19	19

Note: Hand lift types not recommended for sizes exceeding 80 sq. ft. in area.

Note: For doors of intermediate size, use clearance dimensions listed for next larger width or height. Slat No. 2 used on all door sizes listed on this page. For slat detail see page 7.



Crank Shaft Type : Face Mounting



CRANK SHAFT TYPE : FACE MOUNTING

Hgt. B, ft.	6				7				8				9				10				11				12			
Width A, ft.	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
5, 6, 7, 8	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12
9	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12
10	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12
11	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12	17	17	9	12
12	17	17	10	13	17	17	10	13	17	17	10	13	17	17	7	13	17	17	7	13	17	17	7	13	17	17	7	13

CHAIN HOIST TYPE : FACE MOUNTING

Hgt. B, ft.	6				7				8				9				10				11				12			
Width A, ft.	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
5, 6, 7	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9	17	20	9	9
8	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10
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10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10
11	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10	17	20	9	10
12	17	20	10	10	17	20	10	10	17	20	10	10	17	20	7	10	18	21	7	12	18	21	7	12	18	21	7	12

DIMENSIONS ABOVE ARE FOR GENERAL REFERENCE ONLY AND NOT FOR CONSTRUCTION PURPOSES

KINNEAR *Steel Rolling* GRILLES

PROTECTION . . . with AIR, LIGHT, VISION and VENTILATION

For Interior and Exterior Use on Concessions, Store Entrances and Windows, Vaults, Corridor Openings, Courtyards, Loading Platforms and Other Openings In Monumental, Industrial and Commercial Buildings.

Nothing in the category of protection so completely combines all the principles of efficient, reliable and attractive design essential in planning up-to-date buildings, of every class, as the Kinnear Rolling Grille. Operating on the same principle as the Steel Rolling Door, described on pages 6 to 13, the Kinnear Rolling Grille is a permanently installed and attractively designed barrier that is remarkably strong when closed and locked but out of sight when opened. Coiling above the opening and perfectly spring counterbalanced, it saves floor and wall space and can be raised or lowered rapidly and easily.

NOTE: The illustration below shows the sturdy construction of the grille and how it is locked in heavy steel jamb grooves. Also note the unique, positive cylinder locking arrangement.



THE ORIGINATOR OF THE INTERLOCKING SLAT DOOR

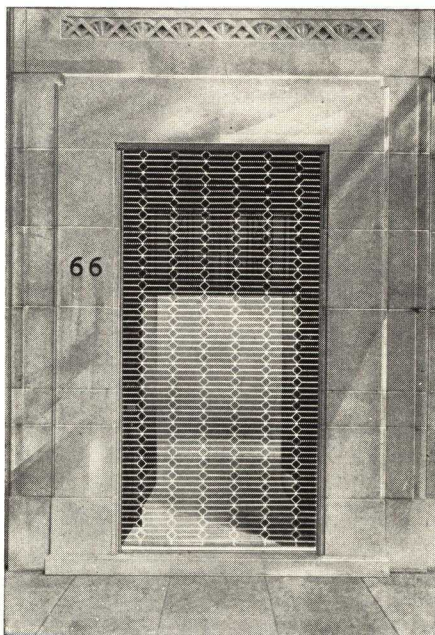
KINNEAR
ROLLING DOORS

23

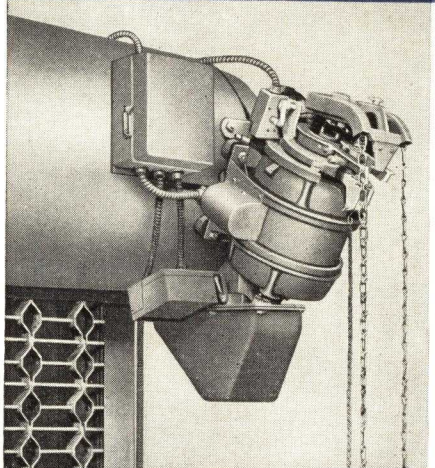
Bulletin No. 23

Rolling GRILLES . . . ROLL UP LIKE A WINDOW SHADE

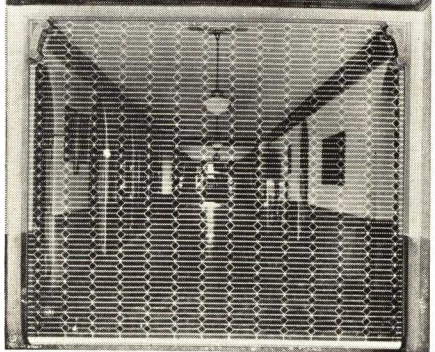
Built in Steel, Stainless Steel, Bronze and Aluminum



A grille in entrance way of a commercial building.



A Kinnear Power Operator applied to a Kinnear Grille.



A corridor closed off with a Kinnear Grille

CONSTRUCTION

Built of various metals and attractively designed, the Kinnear Rolling Grille will harmonize with any style architecture. The grille proper is of remarkable strength and artistically designed of $\frac{1}{8}$ in. round steel bars spaced close enough to prevent the admittance of a man's hand or large projectiles. For locking in closed position a lock is furnished.

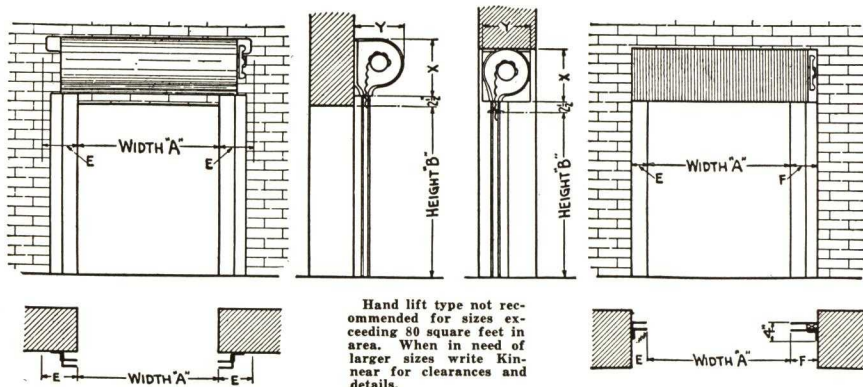
It coils on a heavy pipe or barrel above the lintel and is locked in and travels in steel guides mounted on the side of the opening. Helical springs enclosed in the pipe or barrel provide accurate counterbalance. For housing the barrel and coil a neat hood of suitable metal is furnished.

The Rolling Grille is ruggedly built throughout, of the finest materials obtainable. Every part is designed to give maximum wear. It is a protective device that will last a lifetime, with a negligible maintenance cost.

METHODS OF INSTALLATION AND OPERATION

Similar to the Kinnear Rolling Door the Kinnear Rolling Grille may be mounted on the face of the wall with brackets and coils entirely above the bottom of the lintel and with edges of guides flush with the face of opening jambs; or where headroom is limited and grille cannot be installed on the face of the wall, it may be mounted in the opening. In this latter case, the brackets and coil are mounted under the lintel with brackets and guides mounted in reveals in the wall. (See page 10.)

Methods of operation available for the grille are likewise similar to the Steel Rolling Door, namely manual mechanical by hand chain or crank and motor. For further details see page 12.



Height B, ft.	6				7				8				9				10				11				12			
Width A, ft.	3 to 12				3 to 12				3 to 12				3 to 12				3 to 10				3 to 8				3 to 7			
Code	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F	X	Y	E	F
Face of Wall	16	15	4		16	15	4		18	17	5		18	17	5		19	18	6		19	18	6		21	19	6	
Between Jambs	16	15	3	4	17	15	3	4	18	16	3	5	19	17	3	5	19	18	3	5	19	18	3	5	21	19	3	5

DIMENSIONS ABOVE ARE FOR GENERAL PURPOSES ONLY AND NOT FOR CONSTRUCTION PURPOSES

SUGGESTED SPECIFICATIONS

Grille to be of the Kinnear Rolling Type, coiling above the lintel in 24 U. S. gauge galvanized steel hood, on heavy steel barrel journaled in cast iron brackets and traveling in guides mounted at the sides of the opening. Barrel to encase steel, helical oil tempered counterbalance spring with necessary factor of safety. Grille proper to be composed of horizontal $\frac{1}{8}$ in. round steel bars, spaced not to exceed $1\frac{1}{2}$ in. apart, joined by octagonal pressed steel links at intervals of approximately $8\frac{3}{8}$ in. End links to be engaged in guides fabricated of heavy structural steel members, in manner to prevent grille from leaving guides under excessive pressure.

RoL-TOP . . . THE SECTIONAL UPWARD-ACTING DOOR

For Residential and Commercial Garages and For Commercial and Industrial Buildings.

GENERAL DESCRIPTION

Like other Kinnear Doors, the RoL-TOP Door opens upward, affording maximum convenience, efficiency and permanence of service, combined with the advantage of the admittance of light. Attractively paneled wood sections, or copper bearing steel panels which have been given a heavy protective zinc coating by the hot dip process, are hinged together and fitted at both ends with heavy duty ball-bearing rollers. By means of these rollers, which operate in steel tracks or guides mounted on the jamb and extending horizontally back from the lintel, the door rolls to the overhead position. One or more springs, (see DeLuxe and Standard Models) connected to the door by Trulay plow steel cable, accurately counterbalance the door. A special sealing device and heavy cylinder lock make the door weather-tight and burglar-proof. It can be arranged for operating manually, mechanically or electrically. Sections can be either solid or arranged for glass. The door throughout is built to the highest standards of workmanship and materials.



USES

It is ideally suited for old or new residence garages, service stations, warehouse service doors, factory receiving platforms, boathouses and other buildings. The clean cut straight line design of the Steel RoL-TOP harmonizes with almost any architecture. Although the conventional wood panel can be used with almost any mode of architecture, special designs can be worked out to meet individual tastes.

ADVANTAGES

The advantages of RoL-Top are numerous. It raises over snow, ice and swollen ground. Never sags, sticks or binds. Out of the way of wind or car, staying where it's PUT. Lends itself to all styles of panel designs. Saves wall and floor space, permitting cars and other objects to be placed within a fraction of an inch of the door. It opens easily, rapidly and smoothly. Strong, rugged construction insures permanence and insignificant maintenance.

SIZES AND LIMITATIONS

Practically all RoL-TOP Doors are custom built for the individual job, thereby making it possible to supply them in any size within limits of sound engineering. With the following exceptions, all RoL-TOP Doors of special or large size are built according to the specifications of the DeLuxe Model described on pages 26 and 27. The "Standard Model" Wood RoL-TOP (see page 29) is furnished in any size from 8' x 7' to 12' x 10', and in widths up to 16' when height does not exceed 8'.

As for the "Standard Model" All Steel RoL-TOP, it may be furnished in sizes up to 14' 2" wide, when height does not exceed 7' 6"; or 12' 8" when height does not exceed 9'; or 10' 8" when height does not exceed 10' 6".

The "Junior" Model Wood RoL-TOP, being designed for low cost residential work is furnished only in the stock sizes shown on page 28.

In addition to this wide range of sizes, Kinnear also offers numerous auxiliary units, which make the RoL-TOP Door adaptable to practically any opening.

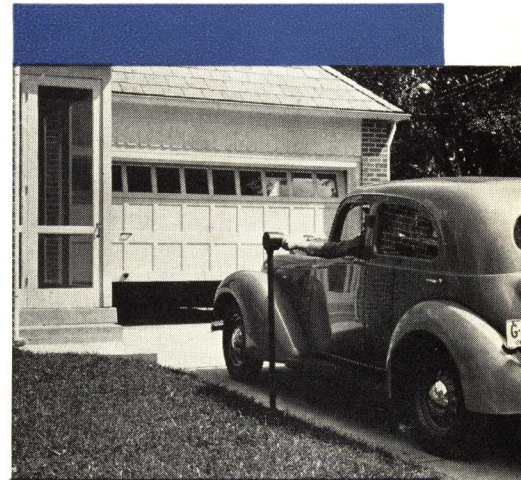
Electric Operation

PUTS MAGIC IN YOUR DOOR

Puts Magic in Your Door! There's practically no other way to describe the complete convenience the RoL-TOP Motor Operator provides when used with the Kinnear RoL-TOP Door. With a touch of a button or the turn of a key which may be located at any strategic point, the door opens or closes smoothly and automatically. As can be quickly seen from the description on page 31, it is a simply and sturdily built unit that conforms to Kinnear's customary high quality standards.

See Page 31.

Sections are Fabricated in
WOOD
STEEL or
OTHER ALLOYS

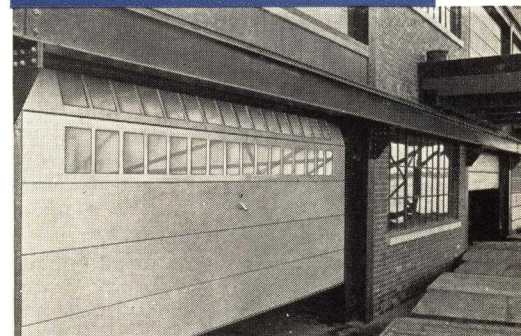


The modern home demands the convenience and neat appearance of The RoL-TOP Door.



Space economy and convenience of RoL-TOP Doors ideal for lubricatorium.

Below: The All-Steel RoL-TOP Door is built to withstand the hard usage



All Steel RōL-TOP

A GALVANIZED STEEL DOOR BUILT FOR YEARS OF HARD SERVICE

WEATHER-PROOF • FIRE-PROOF • BURGLAR-PROOF • WEAR-PROOF

plus

ALL THE ECONOMIES OF UPWARD ACTION, THE COMPLETE DOOR SERVICE AND THE 9 MAJOR DOOR REQUIREMENTS

KINNEAR RōL-TOP

VITAL TO LASTING

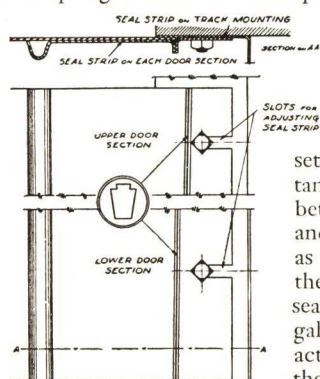
1 • TORSION SPRING COUNTERBALANCE The DeLux Model RōL-TOP, which is illustrated on this and the opposite page is counterbalanced by the famous Kinnear

Single-Shaft Torsion Spring mechanism . . . a proved principle of counterbalance that has been used for over forty years on other types of Kinnear Rolling Doors. One or more oil-tempered torsion springs on a solid steel shaft is held anchored in a fixed safe position—between the back end of the horizontal tracks or over lintel. The bottom of the door is connected to this shaft by a heavy plow-steel Trulay cable operating over ball-bearing sheaves and large diameter scored drums. This is a neat, compact counterbalance that insures absolute synchronized action . . . a uniform tension on both sides of the door at all times—quiet and smooth in operation—eliminates the possibility of the door binding in the tracks—and by one adjustment the tension on the spring can be set with precision. This feature alone contributes greatly to the

dependability of RōL-TOP under the severest kind of use. For counterbalance alternates see pages 28-29.

2 • KEYSTONE SEAL RōL-TOP is made weather-tight by means of an ingenious "Keystone" sealing arrangement that forms a snug fitting double contact between the door and the jamb. Jamb strips are so

set as to taper toward each other at the bottom. The distance between them at the bottom is less than the distance between them at the top. Each edge of the door is tapered and rabbeted to match these seal strips, the result being that as the door closes it seals and wedges itself tightly between these seal strips in exactly the same manner that a Keystone seats in an arch. The jamb seal strips are made of No. 16 gauge galvanized steel angles. This arrangement gives the door free action because the instant the door is raised a space between the door and the strip develops and steadily increases. It also

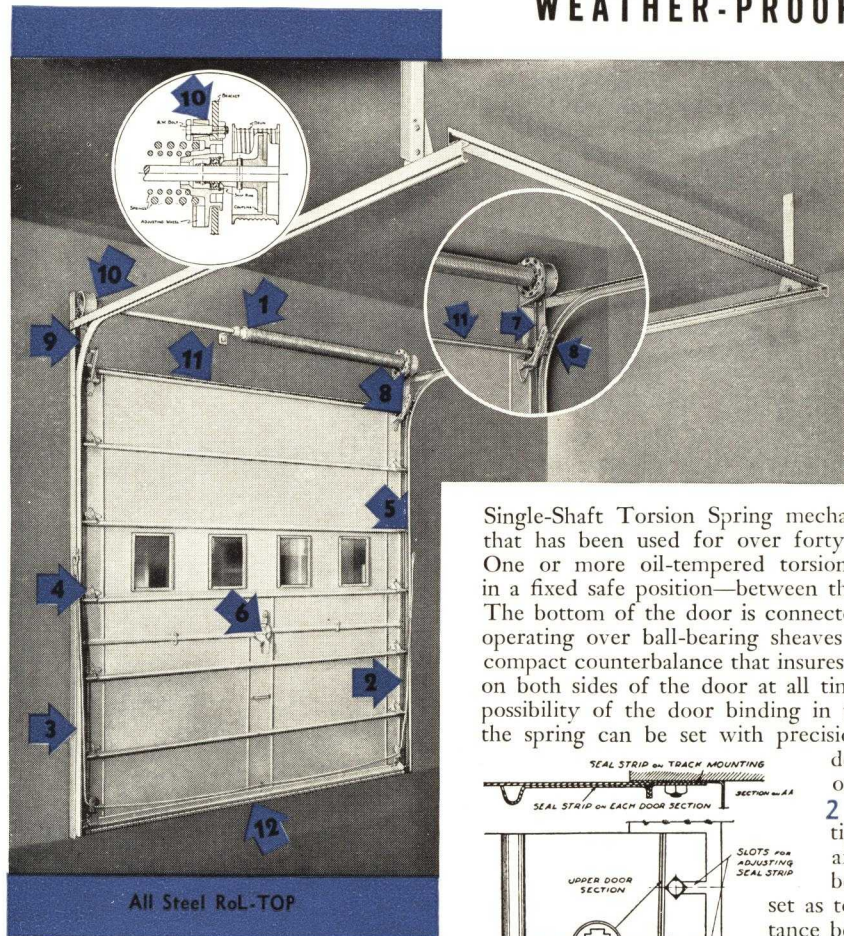


retains the door in alignment on the edges, insuring the tightest kind of a seal.

3 • CONTINUOUS ANGLE MOUNTED TRACKS The strong steel tracks are mounted on the jamb with a continuous steel angle, providing a permanent, solid jamb foundation for the door. Eliminating vibration. Making erection still easier. Neat and clean-cut looking. Actually provides a strong frame upon which the door is lined up and firmly held.

4 • HEAVY DUTY HARDWARE Rugged, durable, malleable iron or pressed steel hardware is bolted to the door sections with through carriage bolts (no screws). It easily carries all the strain applied to the door. Rigid and resists breaking and bending! It is given a heavy protective finish. Here is door hardware that will endure years of the hardest type of treatment.

5 • BALL BEARING ROLLERS It is said that nothing rolls easier than a ball, which partially explains RōL-TOP's easy operation. RōL-TOP ball-bearing rollers are of special Kinnear design which laboratory tests show are especially durable. A one-piece solid steel case operating around a hardened steel race and sleeve and carried on a 1/2 in. fixed steel pin. A cylindrical head on the pin locks the roller in the track and to the hinge attachment . . . A free floating arrangement that facilitates operation and yet holds the doors securely and eliminates any chances of the door falling when in the horizontal position. Here is a roller that will withstand use and loads far in excess of any door demand.



All Steel RōL-TOP

GALVANIZED STEEL SECTIONS

Here are door sections that are in keeping with the trend toward steel—practically indestructible. New to the sectional door field, but an old and proven Kinnear principle of construction. Approximately 18 in. high (bottom section varies depending on height of door) and formed of copper bearing steel which is given a heavy protective zinc coating by the hot-dip galvanize process, they have an amazing initial strength. But in addition, to the end of each section, as well as to every point where hardware is applied, is welded an additional stiffener or pressed steel member. The strength and durability that results from this combination gives sections that will withstand wear and tear year in and year out—resist all kinds of weather—will not warp, come apart, swell, bind or split. Nothing ever before developed equals them for meeting all the demands of a thoroughly serviceable and modern appearing door.

Wood RoL-TOP

ALL STYLES OF PANEL DESIGNS . . . BUILT FOR YEARS OF GRUELING SERVICE
THE IDEAL GARAGE DOOR • CONVENIENT
EASY TO OPERATE

and

RECLAIMS USABLE SPACE,
EASY TO INSTALL IN
OLD OR NEW BUILDING,
AND WEATHER-PROOF

CONSTRUCTION CONVENIENCE

6 • STRONG CYLINDER LOCK A spring release slide bolt of heavy, rugged design, fitted with a standard make cylinder lock, provides a dependable burglar-proof locking device. It is key operated from outside. Also two or more doors are keyed alike unless separate keying is requested. At an extra charge lock cylinders can be furnished for keying with grand master keying system.

7 • PLOW STEEL CABLE The counter-balance shaft is connected to the door by means of $\frac{3}{8}$ in. to $\frac{7}{8}$ in. preformed plow steel cable. It has a safety factor from 12 to 20 and formed of preformed wire, it resists kinking, is safer and does not fray. A further example of RoL-TOP's high quality construction.

8 • SNUG FITTING CLOSING ARM The rollers carrying the top corners of the door are on an adjustable closing arm that hinges on the top corner casting. When the door is closed this arm forces the top section snug to the jamb by means of a lever action on the arc of the track . . . sealing the top of the door to the jamb. Weather-tight!

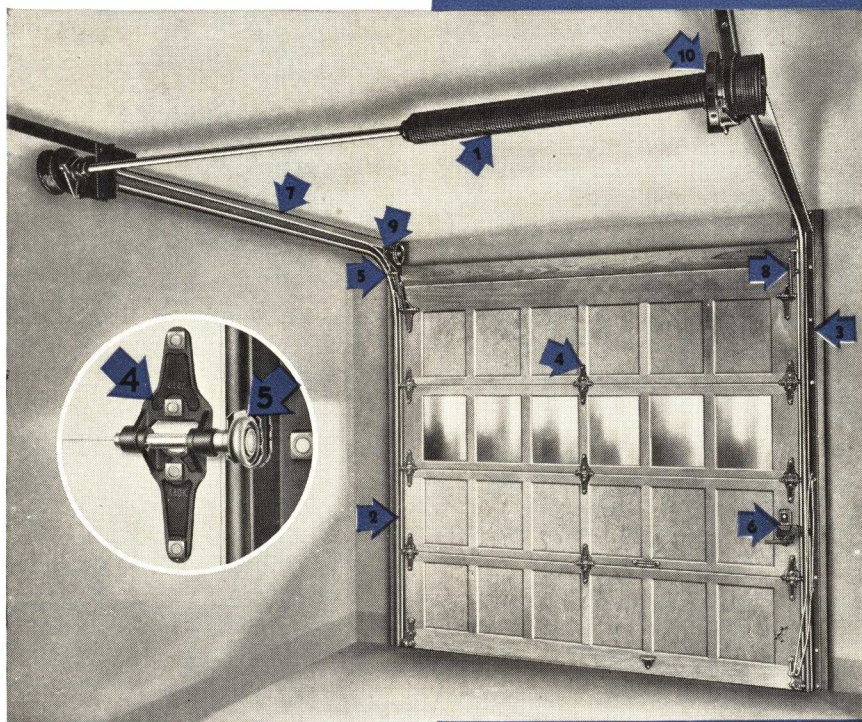
9 • RUGGED CORNER BRACKET A steel corner bracket carries cable sheave in perfect alignment, provides secure cable attachment and anchors the track bend. It also insures accurate placement of straight track members and holds track assembly rigid and in permanent alignment. Not affected by weather conditions.

10 • GREASE SEALED SHAFT BEARING The shaft which carries the torsion counterbalance spring operates freely on large, precision-type grease-sealed ball-bearings. Lubrication at this point is never required. Wear and friction at this point are permanently reduced to a minimum, adding more years of carefree service to the RoL-TOP Door.

11 • TOP WEATHERSTRIP For further weather-tightness, the All-Steel RoL-TOP has an adjustable weatherstrip at the top of the door that contacts the head and takes care of any slight variation between the lintel and the top section of the door.

12 • BOTTOM WEATHERSTRIP The bottom of the All-Steel RoL-TOP Door has a rubber weatherstrip protected with a steel strip and brass screwed to the bottom section. This seals any slight irregularities in the floor and prevents the elements entering.

13 • ADAPTABLE FOR MOTOR CONTROL It is more economical to install motor at the installation of a RoL-TOP Door. However, all models are designed so that at a later date automatic motor operator may be attached. Many architects leave proper clearance. See Page 31.



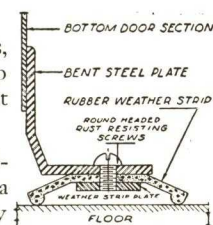
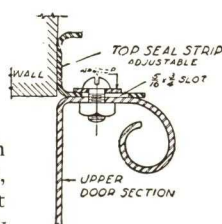
Wood RoL-TOP

WOOD PANEL SECTIONS

Sections are approximately 2 ft. high and panels approximately 12 in. wide, except on special orders. Sections ship-lapped and have graduated end rabbet to fit Kinnear's RoL-TOP Special "Keystone" type weather-proof sealing device.

Standard and special sizes not exceeding 8 ft. wide and 8 ft. high will be furnished with stiles and rails either $\frac{1}{4}$ or $\frac{1}{8}$ in. Sizes 15 ft. and 16 ft. wide by 7 to 8 ft. in height at $\frac{1}{8}$ in. thick, reinforced with Kinnear's special trussing members. Other special sizes exceeding 8 by 8 ft. are $\frac{1}{4}$ in. thick with all doors over 12 ft. 2 in. in width reinforced with Kinnear's special steel trussing bar which minimizes the natural tendencies of wood to warp and deflect, increasing door's life of service. Doors under 12 ft. 2 in. in width can be reinforced, if specified, at extra cost.

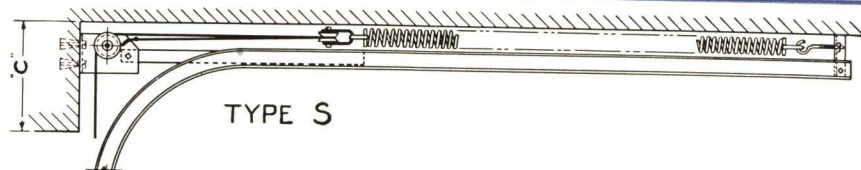
Stiles and rails of doors of standard design of finest quality kiln dried lumber with panels of $\frac{3}{8}$ in. three-ply fir. Frame and panels of special woods obtainable from mill stocks can be furnished if specified. Sections can be arranged for glass as specified. Also special paneling effects can be furnished to meet individual requirements.



KINNEAR ROL-TOP *for Lasting Satisfaction*

TYPE S

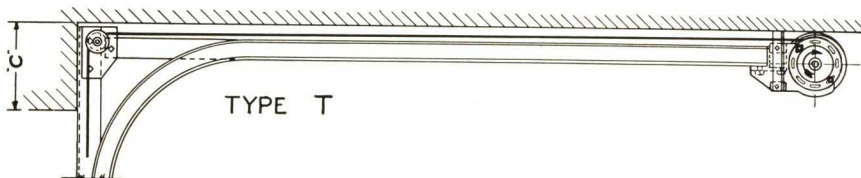
Two counterbalance stretch springs, exposed parallel along horizontal tracks. Each spring is connected to the side of the door by means of pliable plow steel cable. This is the type of counterbalance used in the Standard Model RoL-TOP described on page 29.



TYPE S

TYPE T

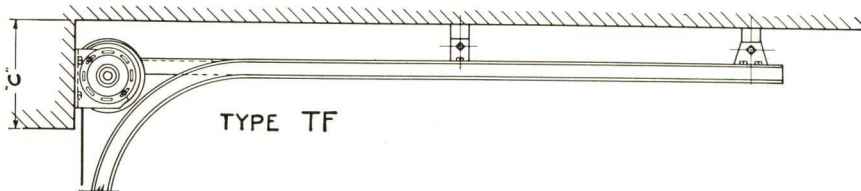
Single or multiple torsion spring counterbalance mounted around a solid steel shaft placed between horizontal tracks and winding up the lifting cables by means of scored drums on each end. Type used on the DeLuxe RoL-TOP Door described on page 27 (placed at back end of tracks except on chain operated doors and hi-lift lubricitorium doors).



TYPE T

TYPE TF

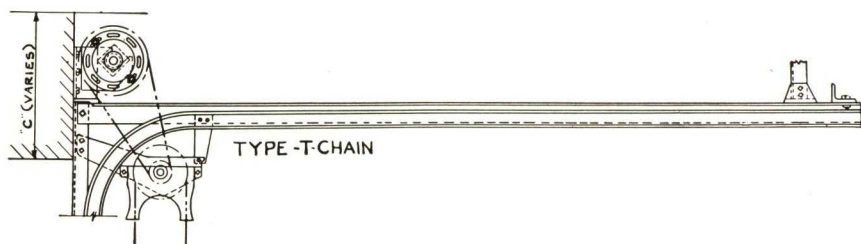
Single or multiple torsion spring counterbalance, same as Type T except that springs are mounted above lintel. This requires more clearance and head room. Illustrated on page 26.



TYPE TF

TYPE T — CHAIN

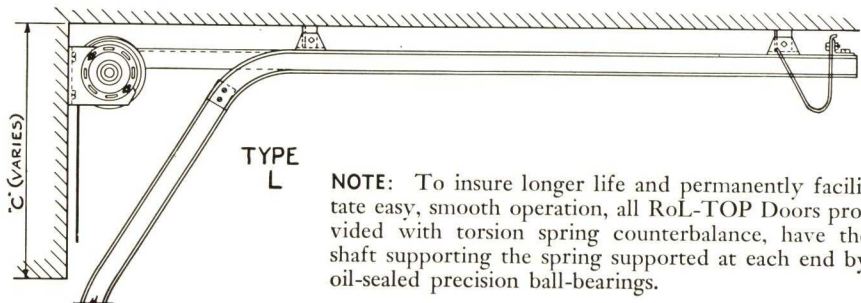
Single or multiple torsion counterbalance, same as Type TF but arranged for operation by chain hoist, in which case spring must be placed above lintel.



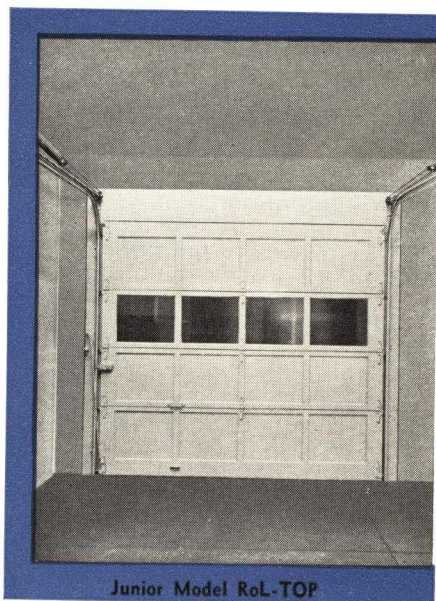
TYPE-T-CHAIN

TYPE L

Special location of tracks to give clearance for hydraulic lift, such as is necessary in service station use. Single or multiple torsion spring counterbalance, same as Type TF.

TYPE
L

NOTE: To insure longer life and permanently facilitate easy, smooth operation, all RoL-TOP Doors provided with torsion spring counterbalance, have the shaft supporting the spring supported at each end by oil-sealed precision ball-bearings.



Junior Model RoL-TOP

JUNIOR MODEL *A Low Cost Door*

The Junior Model RoL-TOP illustrated at the left is an unusually economical door ideally suited for today's low cost home. It operates and is counterbalanced in exactly the same manner as the "Standard" Model described on page 29. While it embodies Kinnear's high quality construction, various economies have been effected in its fabrication due to the fact that it is built only in sizes suited to the average residential garage opening, which permits lighter construction, as well as volume production. This is reflected in its low cost.

Though it has fewer panels than the other RoL-TOP Models its sections are neat and durably built of a select grade of lumber $1\frac{3}{8}$ in. thick, jointed and assembled with waterproof glue according to best mill standards. Panels are $\frac{1}{4}$ in. three-ply fir veneer. Hinges are stamped and formed of No. 13 U. S. gauge steel applied with through bolts. Double roller top corner support forces door snug to jamb. Cable is $\frac{5}{32}$ in. galvanized steel wire rope. Sheaves and rollers are Standard RoL-TOP ball-bearing. Lock has standard make cylinder with three keys. Tracks of .083 in. thick steel $1\frac{7}{8}$ in. inside depth and 1 in. wide. Hardware is given rust resisting coating and wood sections left natural. Sizes in which it is supplied are—

8'0" wide x 8'0" high
8'0" wide x 7'6" high
14'0" wide x 7'0" high

14'0" wide x 7'6" high
15'0" wide x 7'0" high
15'0" wide x 7'6" high

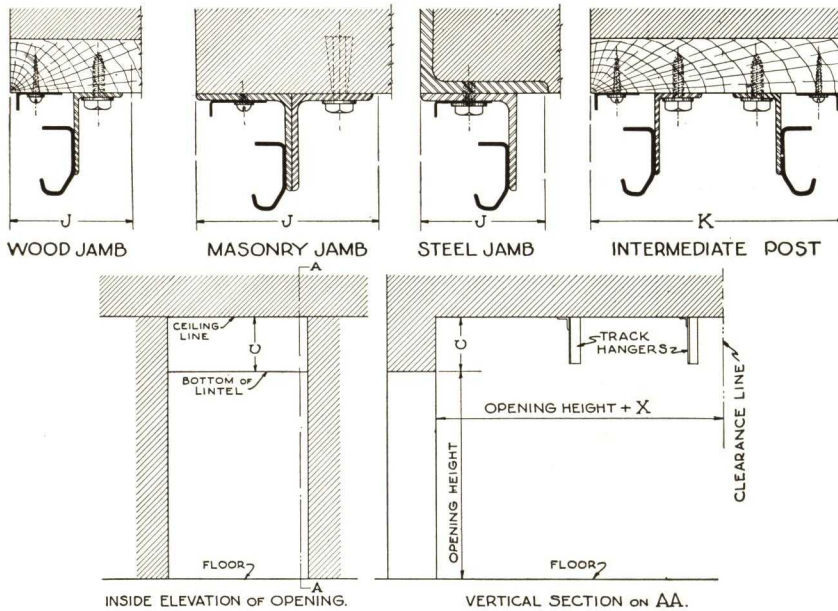
With this low cost door every home can now enjoy the convenience of an upward-acting garage door.

RoL-TOP Hi-Lift LUBRITORIUM DESIGN

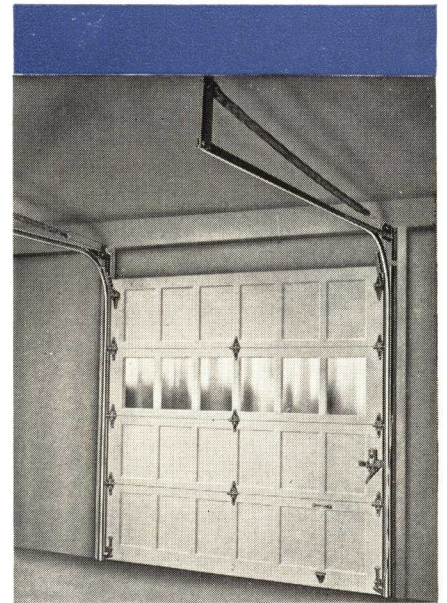
No door has been previously developed that is so practical for the modern service station or lubritorium as the All-Steel RoL-TOP Door. It provides all the features of operating efficiency required for this type of use, plus a new standard in durability. An almost indestructible ruggedness that means less service in repairs and a longer life!

The Hi-Lift Type RoL-TOP is required when the door is to be used in front of the hydraulic lifts in service stations, where the clearance from the floor to the bottom of horizontal tracks must be considerably greater than the door height. It is furnished in either the Wood or Steel RoL-TOP Construction.

RoL-TOP Doors are showmanship equipment that is almost essential to the modern lubritorium.



TYPE OF DOOR	WOOD RoL TOP DOORS								STEEL RoL TOP DOORS							
	2' TRACK 15° CURVE				3' TRACK 15° CURVE				2' TRACK 6° DRUM - 15° CURVE				3' TRACK 10° DRUM - 15° CURVE			
	J	K	C	X	J	K	C	X	J	K	C	X	J	K	C	X
S-STRETCH SPRING	4' 5"	5' 5"	13'	28"	5' 5"	6' 6"	15'	28"	4' 4"	4' 5"	14'	24"	5' 5"	6' 6"	14'	32"
T-TORQUE SPRING	4' 5"	5' 5"	12'	33"	5' 5"	6' 6"	15'	33"	4' 4"	4' 5"	14'	38"	5' 5"	6' 6"	14'	44"
TF-TORQUE FACE or WALL	4' 5"	5' 5"	17'	28"	5' 5"	6' 6"	24'	28"	4' 4"	4' 5"	21'	24"	5' 5"	6' 6"	24'	24"
L-HIGH LIFT	5' 6"	6' 6"	20'	VARIES	5' 6"	6' 6"	22'	VARIES	4' 4"	4' 5"	21'	VARIES	5' 5"	6' 6"	22'	VARIES
T-CHAIN-CHAINHOIST	4' 5"	5' 5"	20'	VARIES	5' 5"	6' 6"	20'	VARIES	4' 4"	4' 5"	8'	VARIES	5' 5"	6' 6"	22'	VARIES

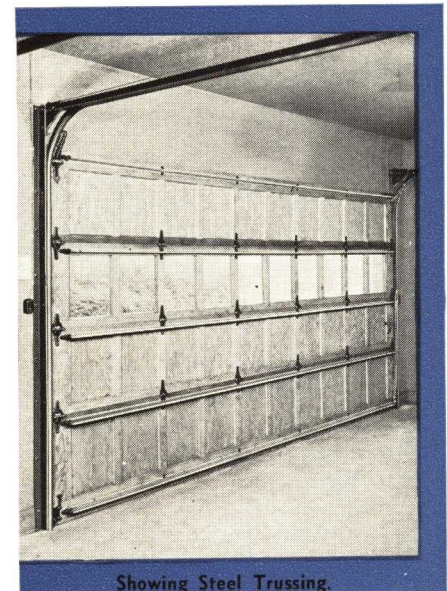


"Standard" Model RoL-TOP.

STANDARD MODEL

Where original low price is more important than added years of unusual service, the Standard Model RoL-TOP is offered. It operates in the same manner as the DeLuxe Model described on pages 26 and 27. Construction is similar, but counterbalance is accomplished by the conventional arrangement of two stretch springs placed parallel to the tracks. One spring is connected to each side of the door by means of pliable plow-steel cable. Hardware, angle-mounted tracks, sealing device and lock are the same as used on the DeLuxe Model.

The Standard Model is built in any size from 8 x 7 ft. to 12 x 10 ft. and also in widths up to 16 ft. when height does not exceed 8 ft.



Showing Steel Trussing.

AUXILIARY EQUIPMENT

Long experience in making doors to meet individual requirements has contributed to the designing of a number of auxiliary units for use with RoL-TOP Doors. Besides motor operators and controls, see page 31, and Lubritorium design described above, are many others. A few among these are:

Sliding Center Posts or Mullion for Wide Openings. An ingenious and dependable arrangement for using two or more doors in a single opening too wide for the practical application of one.

Wicket or Access Door. A small, strong and durable door built into the large door, designed so as to give the major door the maximum strength and service. It saves opening large door to allow pedestrians to enter.

Automatic Opener. A pull cord arrangement for raising a door automatically, without the use of motor, by an auxiliary spring. An arrangement with a distinct advantage for fire stations.

Chain Hoist. For operation of large doors by means of endless chain and reduction gearing. Standard on doors exceeding 16 ft. 2 in. in width or height or 160 sq. ft. in area.

Special data on these and other devices may be had by calling on Kinnear.

STANDARD TRUSS REINFORCEMENTS

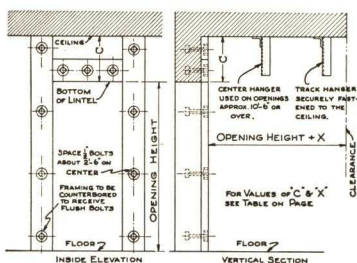
Though this extra quality feature is standard on all RoL-TOP Doors exceeding 12 ft. 2 in. in width, it is desirable auxiliary equipment the quality buyers will wish to consider for smaller doors. These special truss bars—two on the bottom section and one on each of the other sections—span the door, providing a remarkably strong, rigid structure when the door is either opened or closed. Being anchored to end castings, which are bolted with through bolts to the end stiles, they actually form a cradle of steel for taking the stress of the opening span. This arrangement minimizes the natural tendency for wood to warp and deflect. It also gives a high margin of safety for excessive wind pressure.

RōL-TOP Specifications . . . FOR RōL TOP DOORS

REMEMBER WHEN ORDERING

To insure against error, it is recommended that a sketch of the opening conditions (see below and page 29 for dimensional requirements) be furnished at the time of ordering, noting the width of the opening from jamb to jamb, height of the opening from floor to lintel, type of wall and jamb construction (if the recommended 2 x 6 in. timber framing is not used) headroom and side clearance available, desired clearance under the horizontal tracks and space back from face of wall available for horizontal tracks. Also note the number and location of sash sections (if one is sufficient it will be third from the bottom unless otherwise specified) whether the door is to be primed and if locks on two or more doors are to be keyed alike. If door is to be motor operated, give current characteristics.

Installation Clearances



RECOMMENDED PREPARATION OF OPENING

SCHEDULE FOR WOOD RōL-TOP DOORS

WIDTHS	HEIGHTS					
	UP TO 8'-2"	8'-3" TO 10'-2"	10'-3" TO 11'-2"	11'-3" TO 12'-2"	12'-3" TO 13'-2"	13'-3" TO 16'-2"
UP TO 12'-2" WIDE	A	B	C	D	E	F
12'-3" TO 14'-2"	A	B	C	D	E	F
14'-3" TO 16'-2"	A	B	C	D	E	F
16'-3" TO 18'-2"	A	B	C	D	E	F
18'-3" TO 20'-2"	A	B	C	D	E	F

SCHEDULE FOR STEEL RōL-TOP DOORS

WIDTHS	HEIGHTS					
	UP TO 8'-2"	8'-3" TO 10'-2"	10'-3" TO 11'-2"	11'-3" TO 12'-2"	12'-3" TO 13'-2"	13'-3" TO 16'-2"
UP TO 12'-2" WIDE	A	B	C	D	E	F
12'-3" TO 14'-2"	A	B	C	D	E	F
14'-3" TO 16'-2"	A	B	C	D	E	F
16'-3" TO 18'-2"	A	B	C	D	E	F
18'-3" TO 20'-2"	A	B	C	D	E	F

Shipping Data

Crated for shipment in sections with hardware and other materials except glass and the materials necessary for properly preparing the opening for application of the door. Shipped under the 3rd freight classification in LCL.

WOOD RōL-TOP DOORS

Door Sections

Door sections are approximately 2 ft. high and panels approximately 12 in. wide except on special orders. Sections ship-lapped and have graduated end rabbet to fit RōL-TOP "Keystone" sealing device. Standard and special sizes which do not exceed 8 ft. wide and 8 ft. high will be furnished with stiles and rails either 1 1/8 in. or 1 3/4 in. Sizes 15 ft. and 16 ft. wide x 7 ft. to 8 ft. in height are 1 1/8 in. thick, reinforced, with Kinnear special trussing members. Other special sizes exceeding 8 ft. by 8 ft. are 1 3/4 in. thick with doors over 12 ft. 2 in. wide reinforced with steel truss members. Stiles and rails of doors of standard design of finest quality kiln dried lumber with panels of 3/8 in. three-ply fir. Frame and panels of special woods obtainable from mill stocks can be furnished if specified. Sections can be arranged for glass as specified. Weight of glass affects counterbalance, therefore type of glass to be used should be specified. For uniform balance glass of double strength or lighter is preferred. Panels are framed with Ogee 1/8 in. moulding.

Counterbalance

Standard Model RōL-TOP is counterbalanced by two matched, pretested oil-tempered stretch springs of a high safety factor, one running parallel to each horizontal track and connected to the bottom of the door with pliable plow-steel cable operating over ball-bearing sheaves.

Deluxe Model RōL-TOP is counterbalanced with a single or multiple torsion spring mounted around a solid steel shaft. The spring is oil-tempered and of high safety factor. It operates the door through pliable plow-steel cable operating over ball-bearing sheaves and over large diameter scored drums at each end of the spring shaft.

Hardware

Moderate size doors equipped with 2 in. steel tracks. Large doors equipped with 3 in. steel tracks. All vertical tracks are mounted on a continuous angle iron, providing a rigid, solid, heavy duty member. Ball-bearing rollers, which travel in the tracks are built with a one piece solid steel case, which operates around a hardened steel ball-bearing race and sleeve. Operating on a shaft made with a shoulder and independent of the hinge, it is free-floating and yet locks the door securely in the tracks. Roller of 1 1/2 in. diameter with twelve 1/4 in. balls on small doors. For large size doors roller is of 2 1/2 in. diameter with ten 1/2 in. balls. All hardware applied to door is of heavy duty design of malleable iron or pressed steel and is given protective finish. A large cylinder lock of standard make in connection with slide bolt fitted with release spring. Also, unless specified to be keyed separately two or more doors will be keyed alike. Master keying can be furnished at slight additional charge.

Sliding Post Installation

Where all doors are under 16 ft. 2 in. in width, a minimum headroom of 20 in. is required. If any door is over 16 ft. 2 in. in width a minimum of 30 in. is necessary. Add 6 1/2 in. to the above clearances if motor operation is required. As the application of RōL-TOP is made more elastic by the use of various auxiliary units, for all of which clearances cannot be scheduled in this Bulletin, it is recommended that you write Kinnear for details whenever special applications are required. It is also advisable to write Kinnear to see if any special arrangements can be offered when clearances called for in the above schedule are not available.

Auxiliary Equipment

In addition to the Motor Operators and Sliding Center Posts mentioned elsewhere in this catalog, Kinnear has especially designed numerous other auxiliary units for use with RōL-TOP Doors. Briefly, a few of them are:

CHAIN HOIST—For operation of large doors by means of endless chain and reduction gearing. Standard on doors exceeding 16 ft. 2 in. in width or height or 160 sq. ft. in area.

WICKET DOOR—A small pass or entrance door built in a large size RōL-TOP. For convenient pedestrian access.

AUTOMATIC OPENER—For raising a door automatically by a pull cord. Especially suited for fire stations.

LUBRITORIUM DESIGN—Special counterbalance and track arrangement for carrying door sufficiently high to permit use of hydraulic lifts.

ALL STEEL RōL-TOP DOORS

Door Sections

Each section is approximately 18 inches in width and formed of heavy, copper bearing steel, given a heavy zinc coating by the hot dip process. A stiffener, or reinforcing member is welded to the end of each section and at points where hardware is applied. Sections may have louvers, or be perforated. Light sections can be arranged for glass as specified. Standard glass light is 10 inches wide by 13 3/4 inches high, or 20 3/8 inches wide by 13 3/4 inches high. Outside hardware galvanized. As new galvanizing will not hold paint as readily as when allowed to oxidize or weather a short time, the door is shipped in the natural galvanized finish. If immediate painting is desired the door should be painted with a high grade metal protective coating suitable for galvanized surfaces. To get the most satisfactory results, and to save time in field painting, a factory coat of paint, suitable to galvanizing, will be furnished at small additional cost, is highly recommended.

Counterbalance

See description of "Counterbalance" in specifications above, describing Wood RōL-TOP Doors.

Hardware

For specifications on tracks, rollers and hinges see "Hardware" given in above listing on Wood RōL-TOP Doors. Lock assembly is furnished with a standard make cylinder lock. Two or more doors are keyed alike. If master keying is desired, it must be specified when ordering and it will be furnished at small additional charge. No allowance will be made for lock which is supplied as standard. The type of jamb construction on which the door is to be mounted must be specified when ordering, if correct type of mounting bolts are to be supplied.

Finishing Trim

The All-Steel RōL-TOP is arranged for lapping the jamb. Therefore, if any finishing molds or trims are desired, they are to be supplied by the purchaser.

Sliding Post Installation

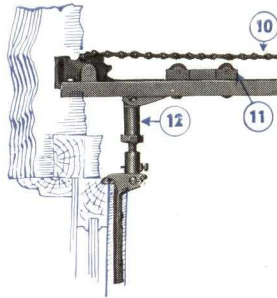
Where doors are mounted on 2 in. tracks, a minimum headroom of 19 inches is required. Where doors are mounted on 3 in. tracks, a minimum of 22 inches is necessary.

Auxiliary Equipment

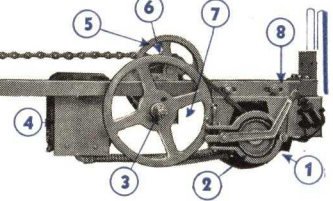
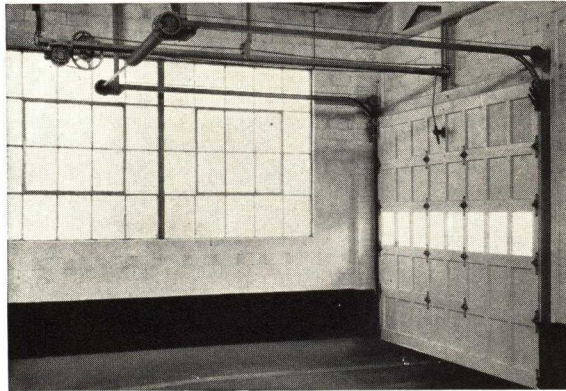
See specifications under Wood RōL-TOP given above (wicket doors an exception).

KINNEAR ROL-TOP *Electric* DOOR OPENER

OPENS OR CLOSES THE DOOR WITH EASE, SPEED AND SAFETY



SIMPLY AND ECONOMICALLY INSTALLED



13 QUALITY FEATURES

1. Electrically operated spring-set brake for positively stopping the door without shock to door or operator.
2. Standard make electrically reversible motor of $\frac{1}{4}$ to $\frac{1}{2}$ hp. depending upon door requirements.
3. Safety slipping clutch for allowing motor to run freely in case door operation is prevented by some obstruction.
4. Remotely controlled magnetic reversing switch for reversing operation of motor.
5. Steel cut gears connected by a square jaw clutch—dispensing with troublesome pin shearing.
6. Graphite and bronze oilless bushings minimizing wear and eliminating need for frequent servicing.
7. Accurately adjustable screw type limit switch.
8. Motor position adjustment for tightening tension on V-type driving belt.
9. Three button wall-mounted operating station.
10. Steel bicycle type roller chain connects driving mechanism to door draw-bar.
11. Roller chain take-up on roller traveler.
12. Special draw-bar for neutralizing the variable movement of the door.
13. Finger tip control.

A detachable connection for easily and quickly releasing the draw-bar from the door in case of current failure can be furnished at an extra charge.

CONVENIENT CONTROL



PUSH BUTTON SWITCH—Three button wall mounting momentary-contact operating switch supplied as standard equipment. $3\frac{1}{2} \times 2\frac{1}{2} \times 1\frac{1}{4}$ in. Small additional charge for extra switches. Can be operated by driveway plate or key operated post. In an emergency, "Stop" button

will break the circuit, but permits the door being started by a touch of the proper button.

DRIVEWAY POST—With this neat switch post located in the driveway, a Rol-TOP motor operated door can be opened or closed without leaving the car. Equipped with a lock, it can be operated only by those having a key.

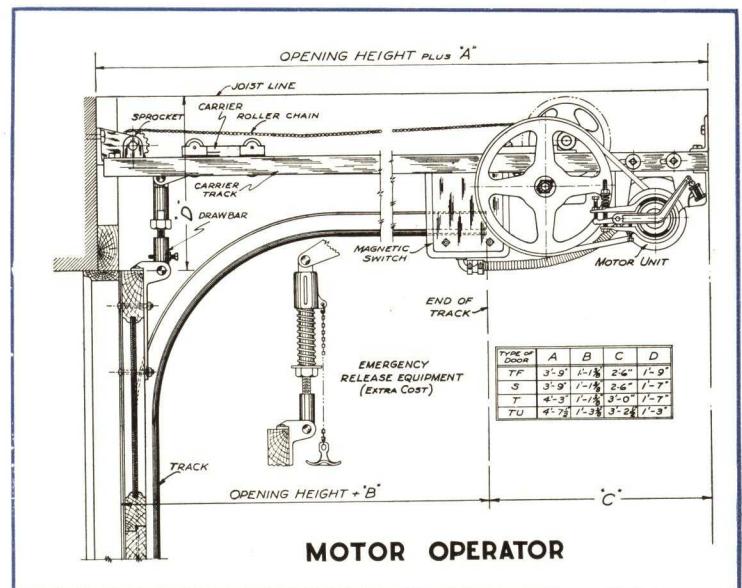
Kinnear is in a position to meet any individual or special requirements.



years, have built door operators. Equally suited for private garage or public building.

No detail has been spared to build in this unit the maximum in convenience and lasting service. Door operation is automatically controlled by limit switch and electrically operated spring-set brake. Operation is imparted to the door by means of an adjustable draw bar ingeniously designed to eliminate shocks. For the emergency, a slipping clutch allows the motor to run freely in case an obstructing object in the doorway stops the travel of the door. Compare these features alone, to the automobile you drive, and you'll quickly appreciate their importance to safety and dependability in door operator design. But added to these are also the ten other quality features illustrated.

The Rol-TOP Operator is built for any size door . . . the size of door determining the size of unit required. By having a magnetic switch, providing for the door being completely opened or closed by a momentary contact of the control switch, any of the control stations described at the left can be used with it.



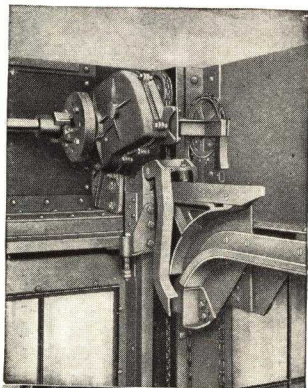
THE ORIGINATOR OF THE INTERLOCKING SLAT DOOR

KINNEAR
ROLLING DOORS

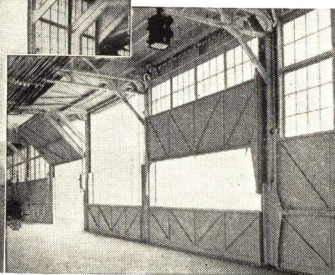
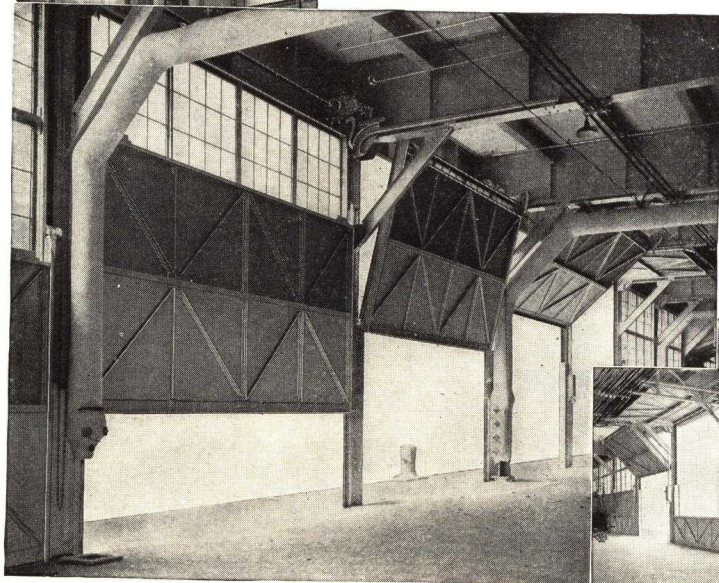
Bulletin No. 23

Special KINNEAR DOORS THAT SOLVE PARTICULAR PROBLEMS *and* REQUIRE SPECIAL RECOMMENDATIONS BIFOLDING

No. 3 BIFOLD . . . WEIGHT COUNTERBALANCED



A portion of the battery of Kinnear Bifolding No. 3 Doors installed in Pier 88, New York Harbor. Illustrates how the lower section of door may be disconnected to provide a barrier to the opening.



This door is particularly suited for openings 12 ft. or higher, where heavy construction is desirable. Permitting the use of sash sections, it provides heavy duty service as well as admittance of light. Though built in both wood or steel, they are generally used for freight sheds and piers, thereby making steel preferable. Constructed of two sections made up of heavy galvanized steel sheets applied with closely butted joints to an angle frame made of members 4 in. or larger. The lower section telescopes with the upper and then the two sections, as a unit, slide to the overhead position on heavy steel horizontal tracks. The door is counterbalanced by cast iron weights encased in the columns. Operation is usually by chain and reduction gearing. Through the use of high quality bearings in all bearing points, only a small amount of energy is required to start the door in motion.

Counterweights are connected to the door by block chain of high safety ratio, built of die formed links, producing not only a strong but also accurately running chain over the sprockets. To prevent the accidental drop of the door, in case of lifting-chain breakage, when operating such tremendous weight, an automatic safety lock is provided. A cam grip, which operates on an angle guide and is held open by the weight of the door, is closed by a heavy spring force. Should the lifting chain accidentally break, the cams will grip the angle guide and support the door in place. The action of this lock is similar to an elevator safety lock.

When the door is used on the upper decks of a pier it may be arranged to provide a barrier. The lower section of the door can be subdivided into two parts, the lower

part being about 4 ft. high and detachable from the upper part of the section. The door can be raised with the two parts operating as one section or the lower part can be detached and allowed to remain in the opening as a barrier or guard to prevent pedestrians from passing through the opening.

The chain sprockets are driven by the hand chain through spur gear reduction. These reduction gears are of steel, having machine-cut teeth and are enclosed in an oil-tight housing. All bearings supporting the counterweights

or doors, are supplied with grease-tight ball-bearings.

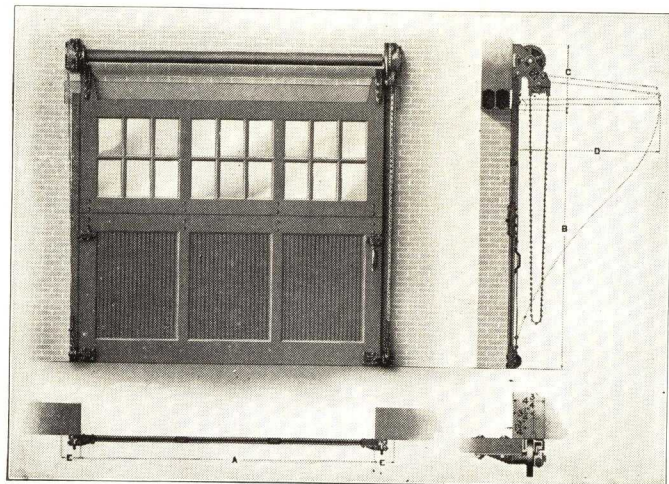
As the door is engineered for the individual job, write for special recommendations.

No. 5 BIFOLD . . . SPRING COUNTERBALANCED

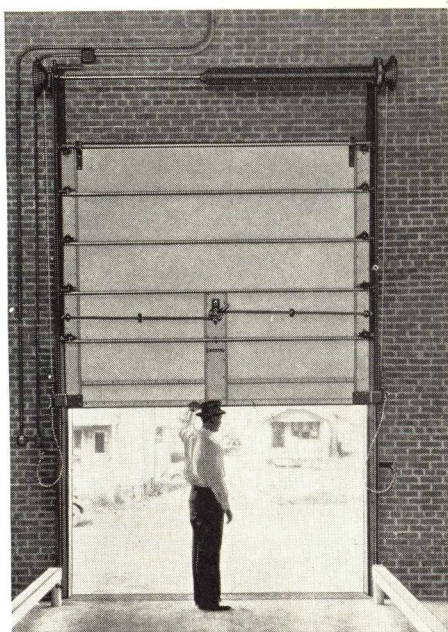
The Bifold No. 5 combines the qualities necessary for a heavy-duty, quick-acting, space-saving wood door with the advantages of minimum clearance requirements and a large sash area. When desired it can also be constructed of steel. It is composed of two leaves, or sections, hinged and pivoting from brackets at the top corners of the opening.

Attached to a torsion spring counterbalance shaft placed above the lintel by means of steel cable and traveling in steel jamb guides, it folds to a position above the opening. Because of its simplicity, it reduces maintenance to a negligible factor.

When you are considering the installation of Bifolding Doors, Kinnear Engineers will gladly submit recommendations for your particular needs.



VERTICAL SLIDING ROL-TOP



PRACTICAL VARIATION

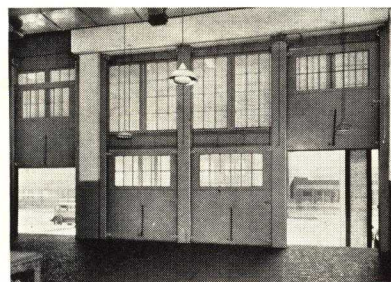
Another unusually practical variation of the All-Steel RoL-TOP Door, when sufficient available headroom permits its use! As its name implies, the Vertical Lift RoL-TOP raises vertically. Providing all the advantages of upward-action with heavy, durable construction, facilities for light sections or windows and maximum compactness at an economical price, makes it a door that is preferred for many industrial applications.

With the one exception that it travels upward in vertical tracks secured to the wall, instead of overhead tracks, it is identical in operation, method of counterbalance and heavy-duty rugged construction, to the DeLuxe Model or Type T All-Steel RoL-TOP fully described on pages 25 to 30.

Since the torsion spring counterbalance mechanism is placed on the wall below where the door extends when open, the Vertical Lift RoL-TOP requires only a headroom of door height, plus 3 inches, with a 7 in. clearance at each side of door. For other specifications see page 30.

This is an ideal door in buildings where merchandise is to be piled high and close to the door or where overhead equipment make it necessary to have all equipment close to the walls.

VERTICAL SLIDING DOORS



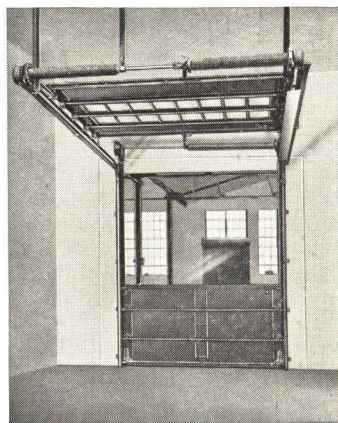
This is one of the Kinnear types suited for freight houses, piers and warehouses. The door comprises two or more sections consisting of a trussed frame covered with sheet metal or corrugated iron, hung independently with chains connected with counterbalance weights. Operated by means of endless chain and suitable reduction gearing. Where doors are mounted on steel columns, guides and weight boxes may be incorporated as a part of the column.

When a door of this type is desired, write for more complete information.

(Doors can also be furnished in wood.)

BARRIER ROL-TOP

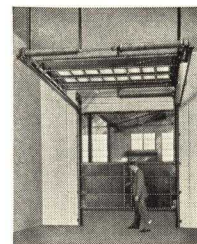
DISCONNECTED LOWER SECTION PROVIDES A BARRIER



The new Barrier RoL-TOP is an adaptation of the All-Steel RoL-TOP that is ideal for any commercial or industrial opening located at street level or points where there is a hazard to employees or the public. By the release of a simple catch, the lower two or three sections of the door can be disconnected from the upper sections. When it is desired to clear up the opening for the admittance of air and light, the upper unit can be raised in the same easy, convenient manner as an ordinary RoL-TOP Door, allowing the lower unit to remain in the opening as a barrier against the passage of cars or people through the opening.

In general construction the Barrier RoL-TOP is similar to the DeLuxe Model RoL-TOP described on pages 25 to 30. It is built in any size and with any number of sections arranged for sash. Counterbalance is of the safety torsion spring type. The shaft for counterbalancing the lower unit is placed over the lintel. For the upper unit, a shaft containing two torsion springs arranged in an ingenious manner for effecting perfect counterbalance is located at the back end of the horizontal tracks. This arrangement of counterbalance is coordinated so that the door can be opened easily as a single unit, or so that the upper unit can be raised or lowered independently.

This door is the outgrowth of a demand Kinnear has found prevalent. During their long years of experience they have been frequently called upon to design special doors that would provide this two-fold service. Now, the purchaser of one door or hundreds of doors can have this convenience without bearing the cost of special development work. Of course, even now each door is built for the individual job, so if you have openings involving a hazard, or where you wish to prevent trespassing, ask for recommendations.

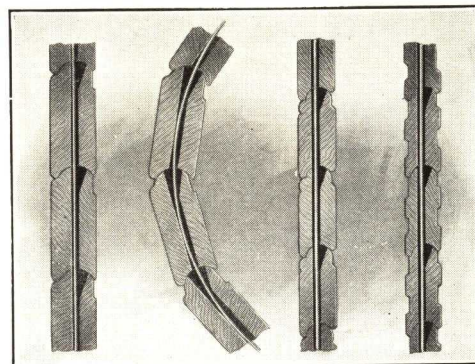


WOOD ROLLING DOORS and PARTITIONS

For Separating Classrooms, Departments, Etc.

Kinnear Wood Rolling Doors and Partitions are the same in principle of operation as the Steel Rolling Door with all mechanism concealed. Slats may be made of wood to harmonize with interior finish. Posts between partitions may be removed. Is especially built in any size for either interior use or exterior situations where chemical action is liable to deteriorate metal such as around chemical plants and roundhouses. Slats of long leaf pine, cypress, quartersawn oak or birch are assembled on phosphor bronze tapes in the manner illustrated, so that during flexure of the curtain there is no danger of pinching the tapes.

Slats No. 24 and 26 are for interior use and No. 27 is for exterior use. They are given a preservative coat when used for exterior openings. Like the Steel Rolling Door described on pages 6 to 13, this door or partition can be installed either between the jamb or on the face of the wall. Upon request, Kinnear Engineers will gladly submit detailed recommendations.



No. 27

No. 27

No. 26

No. 24

KINNEAR DOORS THE PRACTICAL SOLUTION *for* SPECIAL USES DESIGNED *and* BUILT *by* EXPERIENCED *and* SPECIALIZED ENGINEERS



KITCHENETTE OR STORAGE COMPARTMENT

With space at a premium in apartment house design, Kinnear Interlocking Steel Rolling Doors have an important place; for closing off kitchenettes, dressing compartments, and storage compartments. Coiling above, with all mechanism concealed from sight, they require no usable space and are neat when opened or closed. A special flat-surfaced slat, permitting any type of decorative finish, is used. Counterbalanced with a spring, they open or close with almost the ease of operating a window shade. They can be made as an integral part of the kitchen cabinets or installed in reveals provided in the building walls. The illustrations show one of 179 Kinnear Doors, 5 x 7 ft. in size, installed in the Tudor Apartments, in New York City. Both the owners and the tenants of the building have expressed considerable enthusiasm over the convenience of these doors.

Though the general design of Kinnear Doors for this purpose is described elsewhere in this catalog, write for special recommendations when considering this type of equipment.

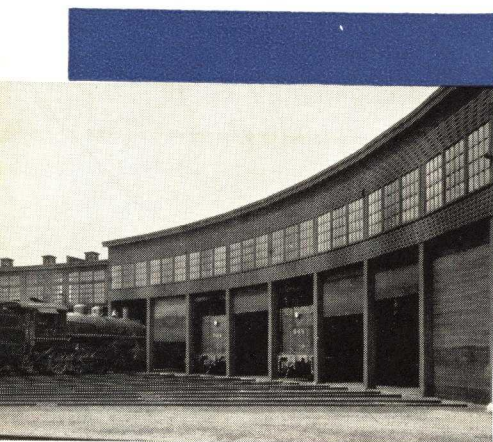
If Kinnear Engineers have the opportunity to work with the architect at the time the building is designed, every detail of the installation can be most practically worked out.



MARINE DOORS

While previously used in numerous ways by the marine industry, the design of Kinnear Doors readily suggests itself for many new and practical adaptations to marine use. This is particularly true with the more rigid requirements that are being established for fire protection in ship construction. Having proved their merit as a positive fire guard on commercial and industrial establishments, they are excellent for the protection of ship passageways, stairways and elevator shafts. They prevent drafts which cause the spread of fire, and also are built to withstand intense heat. By the use of a powerful pushdown spring, their automatic closure is made positive. A safety governor regulates the closing—thus preventing injury to persons in the opening when the door is closed. Counterbalanced at all times, a person can manually raise them to make a quick exit.

The fact that Kinnear recently equipped the hangars on Government airplane carriers with specially built doors 38 ft. 8 in. x 17 ft. in size—doors to withstand tremendous water and wind pressures—illustrates in a small way the ability of Kinnear to cope with various marine problems. Write for special recommendations.



ROUNDHOUSE DOORS

Because of their convenience and saving in space, Kinnear Interlocking Slat Rolling Doors are ideal Roundhouse Doors. Built either in wood, such as described on page 33, or of aluminum interlocking slats, they withstand hard usage as well as withstand the effects of the chemicals present in the atmosphere near a roundhouse.

The illustration at the left shows part of 8 Kinnear Doors, 12 ft. 5 in. x 17 ft., recently installed at Lima for the New York, Chicago and St. Louis Railroad company. These are built of cypress and operated by chain and reduction gearing.

In the modernization of railroad equipment, Kinnear Doors should be carefully investigated, not only for roundhouse use but also freight sheds, stations, and yard buildings.

TRUCK DOORS

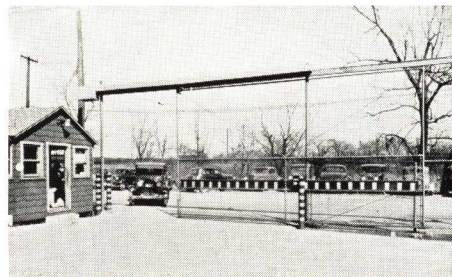
Kinnear Steel Rolling Doors are ideal for numerous styles of trucks. Rolling up in a small compact coil, they are out of the way and allow the truck to run close to the loading platform.



Spring counterbalanced, they open or close easily and quickly. When closed, they seal the opening against the elements and dirt. Built of steel, they withstand hard usage, and are burglarproof and fireproof. In case of accidental damage, one or more of the slats can be quickly replaced.

Kinnear Engineers can design a Steel Rolling Door to exactly suit your truck door needs.

KINNEAR ELECTRIC GATE OPERATOR



The Kinnear Gate Operator is a very practical industrial adaptation of Kinnear's in building power operating equipment. It provides for operating the sliding type of industrial gate from one or more remote control stations. Gate watchman can be given other duties, or gate can be controlled by other office employees located within view of the gate.

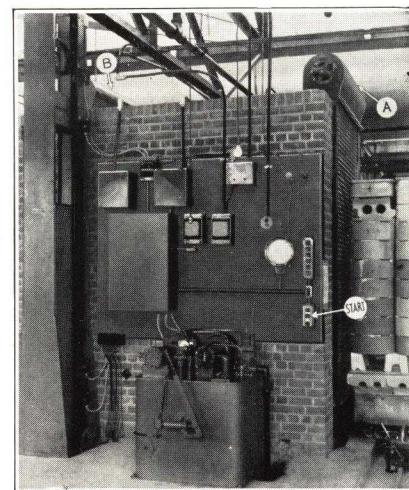
For further information on the adaptation of this operator to a particular problem, write Kinnear.

CORE OVEN DOORS

The practicability of Kinnear Steel Rolling Doors for core oven use as well as Kinnear's ability to cope with difficult problems can be illustrated by a brief description of this pottery kiln installation. The picture shows the charging end of a pottery kiln. It is provided with two Kinnear Core Oven Doors, so arranged as to form an airlock, thereby making it possible to make the charging operation entirely automatic. Kinnear also furnished the complete electrical control.

The operating cycle is briefly as follows: The attendant presses the "Start" push button—door "B" closes and the pusher equipment returns to pick up the ingoing car. When door "B" reaches its closed position, door "A" opens, allowing the pusher to pick up the loaded car by the front end. The car is then pulled into the vestibule and immediately door "A" closes. As soon as door "A" closes, door "B" opens and the car is pushed into the kiln. This permits approximately one and one-half cars more per day to be run through the kiln as well as reducing the loss from warped ware, and so is quickly paying for this Kinnear installation.

If you have any similar problems, Kinnear will be glad to study the conditions and submit complete and detailed layouts and recommendations. Our specialized door experience insures practical solution.



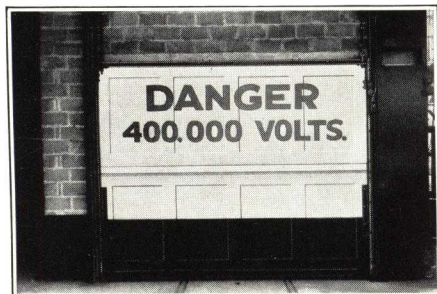
X-RAY VAULT DOORS

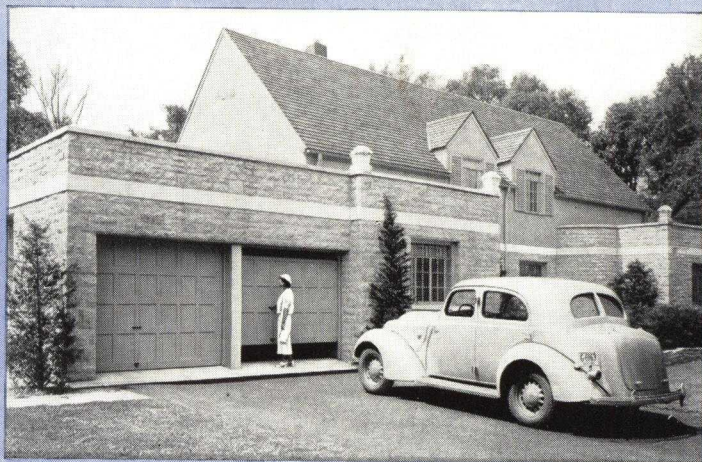
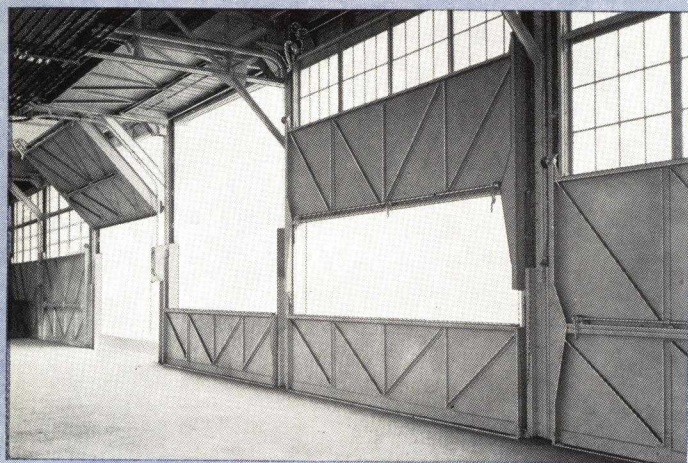
The door illustrated is a special Kinnear Door installed for the American Manganese Steel Company, Chicago, Illinois, for covering an opening in a large X-Ray vault where large steel castings are inspected with X-Ray. The situation required particular attention. In order to insulate the door against the penetration of the X-Ray, the door required a covering on the inside of lead $\frac{3}{8}$ in. thick. This lead covering was mounted on a wood door of a solid thickness of $2\frac{1}{4}$ in. The total weight of this door and covering was approximately 4500 pounds. The size of the opening was 12 ft. high.

The door is raised in thirty-five seconds and lowered in approximately the same time.

The operation is effected by winding $\frac{3}{8}$ in. steel cables, which were attached to the door over a large drum driven by electric motor, through gear reduction housed in an oil-tight box. This operator is provided with a dual control, which gives protection against the door over-running and striking either the bottom of floor slot or the stops at the top.

In addition to this type of door, Kinnear Steel Rolling Doors are ideal for X-Ray rooms in hospitals, photographic dark rooms, etc. They provide a device for quickly sealing any opening against light.





The Kinnear Organization is International. With an Office or Agent located in all principal cities, there is always a trained Kinnear Engineer Representative close at hand. Call for his specialized door services. There's no obligation, and if he is unable to answer your questions, he will gladly come to "Door Headquarters" and get the information you need. No problem is too difficult for Kinnear's experienced door engineers and they will design and build any kind of Upward-Acting Door for any kind of opening . . . offering the efficient solution to your individual door problems.

The **KINNEAR** MANUFACTURING COMPANY

**820-870 Fields Avenue
Columbus, Ohio**

PACIFIC COAST FACTORY — SAN FRANCISCO, CALIFORNIA

BRANCH OFFICES

NEW YORK, N. Y., 30 Rockefeller Plaza

CHICAGO, ILL., 1919 Randolph Wells Bldg

WASHINGTON, D. C., 410 Bond Building

BOSTON, MASS., 6 Jersey Street

PHILADELPHIA, PA., 1321 Arch Street

DETROIT, MICH., 7710 Woodward Avenue

NEW ORLEANS, LA., 529 Hibernia Bank Bldg.

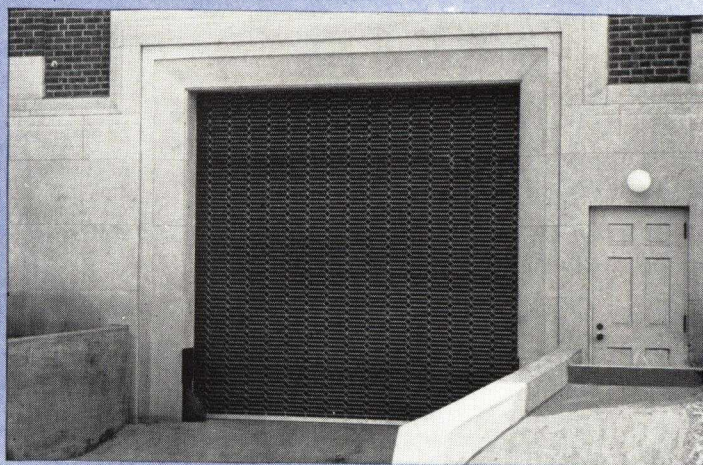
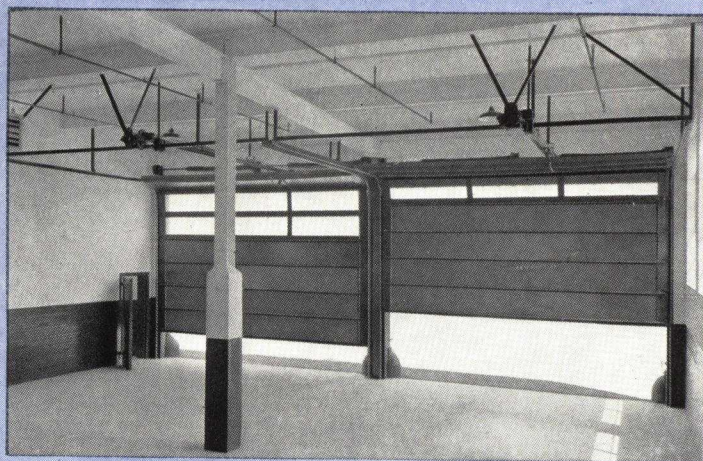
CLEVELAND, OHIO, 7704 Carnegie Ave

CINCINNATI, OHIO, 2335 Reading Road

BALTIMORE, MD., 210 Fidelity Building

PITTSBURGH, PA., 1822 Oliver Building

AGENTS IN PRINCIPAL CITIES



THE R. C. MAHON COMPANY

Manufacturers of Rolling Steel Doors, Shutters and Grilles

8650 Mt. Elliott Ave., DETROIT, MICH.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

For Other Mahon Pages, see File Index

MAHON ROLLING STEEL DOORS MEET EVERY REQUIREMENT UNDER ANY CONDITION

Mahon Rolling Steel Doors are manufactured from the highest grade materials obtainable. They are produced in many labeled and non-labeled types to meet every requirement of industrial or commercial use.



modate the many door sizes and the various types of operators.

The weight of the shutter curtain is counterbalanced by means of coil springs located inside the roller shaft. The tension of these springs is adjustable to provide perfect balance.

This feature, particularly important in manually operated doors, safely maintains the position of the shutter curtain at all times, and, in the case of electrically operated doors, relieves the load on the operating mechanism.

STANDARD DOORS

Mahon Standard (non-labeled) Rolling Steel Doors are made with specially designed interlocking slats rolled from copper bearing electro-galvanized steel, aluminum or bronze. These slats are fitted with malleable iron end locks to insure perfect alignment and free, easy operation in the guides. The tubular roller shaft to which the shutter curtain is attached is exceptionally rigid, and operates in ball and bronze bearings fitted into the end brackets. End brackets are heavy gray iron castings. These are of numerous sizes and shapes to accom-



No. 1

No. 2

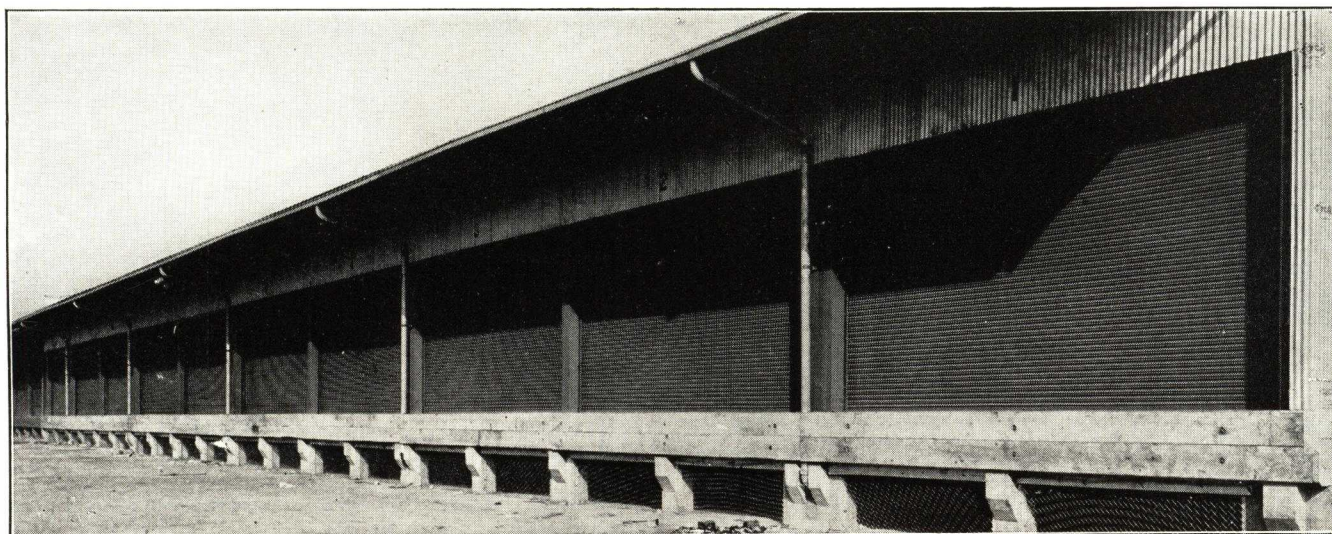
No. 3

Mahon Interlocking Slats

Above are illustrated the three interlocking slats used in the fabrication of Mahon Rolling Steel Doors showing the types of end locks used on Standard Doors

Installation

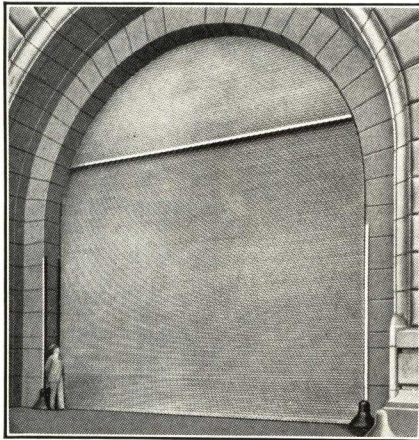
Mahon Rolling Steel Doors can be installed either on the face of the wall or in the door opening. Mounting on the face of the wall with guide channels clear of the door jambs is general practice. This method allows 100% clear opening and provides protection for the guides.



Mahon Rolling Steel Doors Installed in the Pere Marquette Freight Terminal, Detroit, Mich.

However, in many instances where headroom is limited, or other conditions prohibit "face of wall" mounting, Mahon Rolling Steel Doors can be installed in the door opening between jambs.

In "between jambs" installations the height of the door opening is decreased, due to the insertion of the roller housing below the lintel (the amount depending upon the size of the door opening) and the opening width is also decreased due to the insertion of the guide channels on the jambs.



Mahon Rolling Steel Door, 29x32 Ft.
One of thirty furnished for Pier No. 1,
San Francisco Harbor

These objections may be eliminated in new construction, where "between jambs" installations are desired, by including built-in guide channels and providing space for the roller housing and operating mechanism in the original plans.

Intermediate Hinged Posts

In some instances where unusually wide openings are desired, it is more economical to use two rolling steel

doors with an intermediate hinged post or removable post between. Mahon Rolling Steel Doors installed in this manner can be equipped with either mechanical or power operators, and can be made to operate simultaneously or individually as desired.

The intermediate post between doors can be released at the floor and removed or swung up clear of the opening after the doors are opened.

Wind Locks

Mahon Rolling Steel Doors of unusual width are fitted with wind locks to eliminate the possibility of the door pulling out of the guides due to excessive wind pressure.

Special end brackets and guides are provided to accommodate the wind lock lugs which are attached to the interlocking slats at intervals between the regular iron end locks.

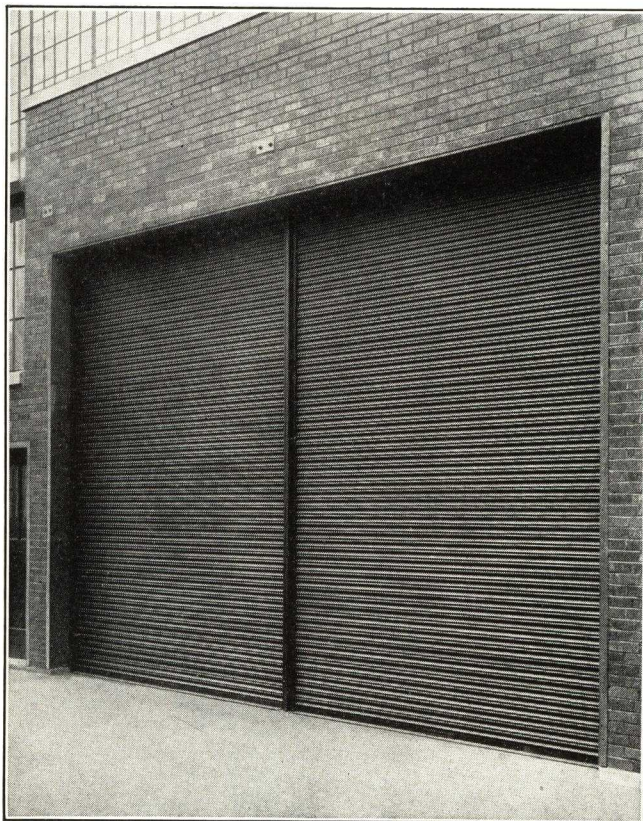
These wind locks are designed and installed so as to insure safe and easy operation even under extraordinary wind pressure.



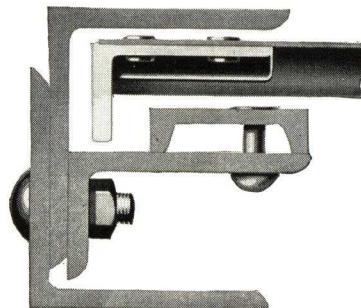
Mahon No. 1 Interlocking Slats
Showing application of Wind
Lock Lug



Mahon No. 3 Interlocking Slats
Showing application of Wind
Lock Lug



Typical Installation of Mahon Rolling Steel Doors with Intermediate Hinged or Removable Post



Cross Section of Guide Channel
Furnished with doors equipped with
Wind Locks



Guide Mouth of Special End Bracket
Furnished with doors equipped
with Wind Locks

OPERATION—MECHANICAL AND POWER OPERATORS

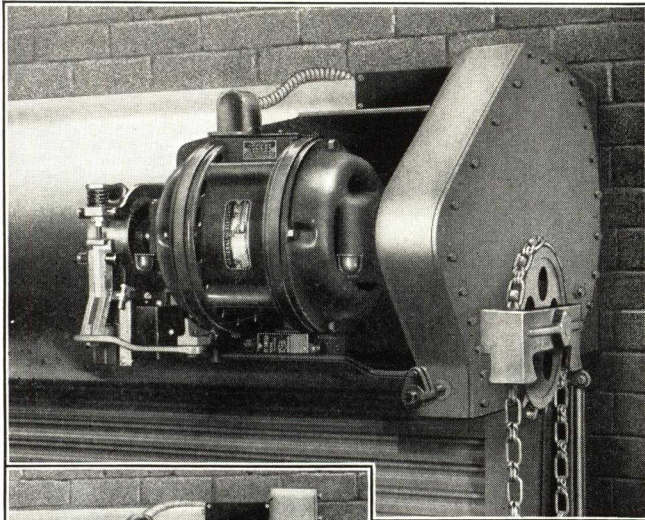
Mechanical Operation

Mahon Rolling Steel Doors can be furnished equipped with handles on the bottom rail, continuous chain-gear operator, hand crank operator, or power operating units.

Handles—Doors of moderate size equipped with handles on the bottom rail, for manual operation, are perfectly balanced by means of an adjustable counterbalancing mechanism. They can be easily opened or closed by one person.

Chain-Gear—The continuous chain-gear operator for medium sized doors consists of a continuous chain, sprocket, and a series of gears. When installed on Mahon Underwriters' Labeled Rolling Steel Doors, the chain-gear operator is equipped with an automatic release, which, in case of fire, disengages it simultaneously with the release of the automatic closing mechanism.

Hand Crank—The hand crank operator consists of a hand crank, gear box, shaft with universal joints, and a series of gears on the roller bracket. The crank can be located on either side of the wall, or, removable cranks can be furnished and the operator installed for operation of the door from both sides of the wall.



Mahon Standard Motor-chain Gear Operator

Two separate operators combined in one. Either motor unit or chain-gear unit can be engaged or disengaged by merely changing position of the throw-out lever which is located within easy reach from the floor. Motor, or any unit of power operator, may be removed for repairs without affecting chain gear operating mechanism.

Power Operation

The Mahon Standard Power Operator is mounted directly upon the end bracket of the roller housing. It is a combination power and manual chain-gear operator with a throw-out control lever, located within easy reach of the floor, by which the power operator is

immediately converted into a chain-gear operator for manual operation in case of failure in the electrical system.

This Mahon Standard Power Operator meets all requirements. It is so arranged in relation to the roller housing that no additional headroom is required, and it requires a minimum of side clearance outside the door guides.

It is very compact and consists of an electric motor, reduction gears, an interlock, an automatic reversing switch, control switches, a solenoid brake and a throw-out control which operates the interlock, releases the brake, and engages the chain-gear clutch for manual operation.

Control is by means of a push button switch, including "open" and "close" buttons, and an emergency "stop" button.

The door is set in motion by pushing either the "open" or "close" buttons, and is automatically stopped in the open or closed position by means of a limit switch and a solenoid brake. The door can be instantly stopped in any position by pushing the emergency "stop" button.

All wiring and conduit to be furnished by others, but must be installed in accordance with wiring diagram furnished by THE R. C. MAHON COMPANY.

Note: Requests for estimates or bids on power operated doors must include information as to type of current available.

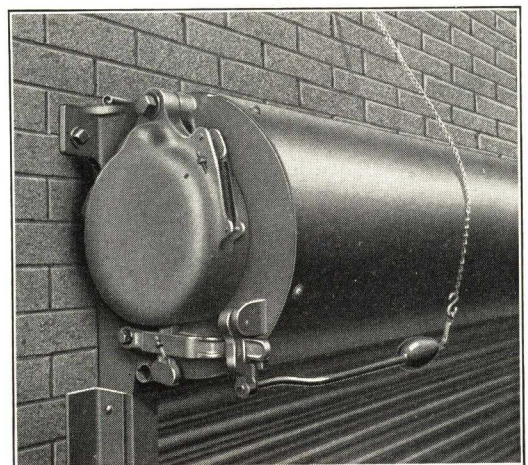
MAHON UNDERWRITERS' LABELED ROLLING STEEL DOORS

Mahon Underwriters' Labeled Doors are approved by the Underwriters' Laboratories, Inc., within certain limitations in total area as specified by the Underwriters for various opening classifications. These limitations are based on requirements of the Underwriters' Laboratories, Inc., and apply to all fire doors of this type.



Fusible Link

Type used on Mahon Underwriters' Labeled Doors to release the automatic closing mechanism in case of fire.



Mahon Governor and Release Device for Automatic Closing Mechanism

Used on Mahon Underwriters' Labeled Doors

Fire Wall Doors, Class "A"—Approved for fire wall openings not exceeding 80 sq. ft. in area.

Vertical Shaft Doors, Class "B"—Approved for vertical shaft openings not exceeding 80 sq. ft. in area.

Corridor and Room Partition Doors, Class "C"—Approved for corridor or room partition openings not exceeding 80 sq. ft. in area.

Exterior Doors, Class "D"—Approved for exterior wall openings not exceeding 100 sq. ft. in area.

Note: For Standard Label neither dimension of the above listed openings may exceed 12 ft. Mahon Rolling Steel Fire Doors, however, can be manufactured in strict accordance with the Underwriters' specifications and furnished with an Underwriters' "oversize" label for larger openings where fire protection is desirable or where insurance ratings are involved.

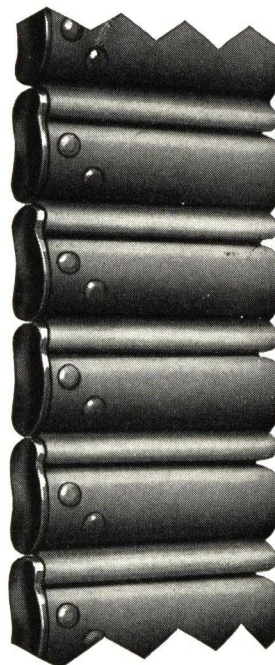
Operation

Underwriters' labeled rolling steel doors normally remain open. They are equipped with an automatic closing mechanism and release device which is actuated by fusible links in case of fire. These doors, however, can be operated in general service if desired, being fitted with handles on the bottom rail for manual operation, or equipped with a chain-gear operator for mechanical operation.

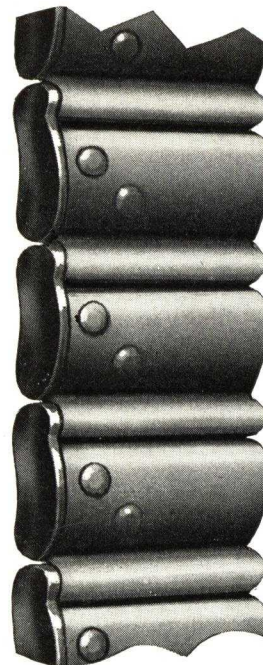
In the event of fire, the automatic closing mechanism is released by means of fusible links and the door closes. A flame-stop baffle plate, also released automatically, closes the space between the hood and the roller shaft preventing the passage of flames through the hood.

In the case of mechanically operated Underwriters' labeled doors, the chain-gear operator is automatically disengaged simultaneously with the release of the automatic closing mechanism.

Mahon Underwriters' Labeled Rolling Steel Doors can be quickly reset by one person and put in operation without delay after automatic closing.



**Mahon No. 2 Interlocking
Slats with Continuous
Malleable Iron End
Locks**



**Mahon No. 3 Interlocking
Slats with Continuous
Malleable Iron End
Locks**

Continuous End Locks are required by the Underwriters' Laboratories, Inc., on all Underwriters' labeled rolling steel doors for Class "A," "B," "C" and "D" openings



**Mahon Rolling Steel Door, Type 600-CHL Underwriters' Labeled Class
"A," "B," "C" and "D"**
Mounted on the face of the wall



**Mahon Rolling Steel Door, Type 300-ML Underwriters' Labeled Class
"A," "B," "C" and "D"**
Mounted in the opening between jambs

MAHON ROLLING STEEL GRILLES

Mahon Rolling Steel Grilles provide protection against trespassing or burglary without sacrificing daylight or ventilation. This product embodies the same basic operating principles and the same high quality materials and workmanship as Mahon Rolling Steel Doors. The grille proper can be manufactured in steel, bronze or aluminum from $\frac{5}{16}$ -in. round bars interconnected with strong pressed links $\frac{3}{4} \times \frac{1}{8}$ in. formed to produce a pleasing grille pattern.

The grille is attached to a rigid tubular roller shaft which operates in ball and bronze bearings fitted into the supporting end brackets. The weight of the grille is perfectly counterbalanced by means of adjustable coil springs located inside the roller shaft.

Adaptable to Many Uses

Mahon Rolling Steel Grilles lend themselves to many uses in almost every type of commercial or industrial building where positive protection is desired without sacrificing ventilation or daylight. They can be used to advantage in such buildings as commission houses handling perishable merchandise; concessions; stores with show windows and displays of valuable merchandise; schools, post offices, piers, terminals with shipping platforms, etc.

Installation

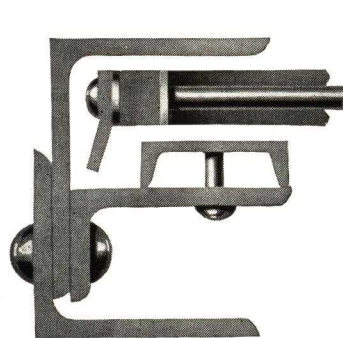
Mahon Rolling Steel Grilles, like Mahon Rolling Steel Doors, can be installed either on the face of the wall or in the door opening. Mounting on the face of the wall with guide channels clear of the door opening is general

practice. This method allows 100% clear opening and provides protection for the guides. In instances where headroom is limited or other conditions prohibit "face of wall" mounting, Mahon Rolling Steel Grilles can be installed in the door opening under the lintel with guide channels flush with the jambs.

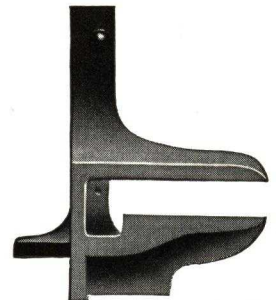
In new construction provisions for the roller housing can be included in original plans, in which case the housing can be installed flush with the wall.

Operation

Mahon Rolling Steel Grilles can be furnished with handles on the bottom rail for manual operation, or with chain gear, hand crank or power operating mechanism—the type of operating device is usually governed by the size of the opening or other conditions.

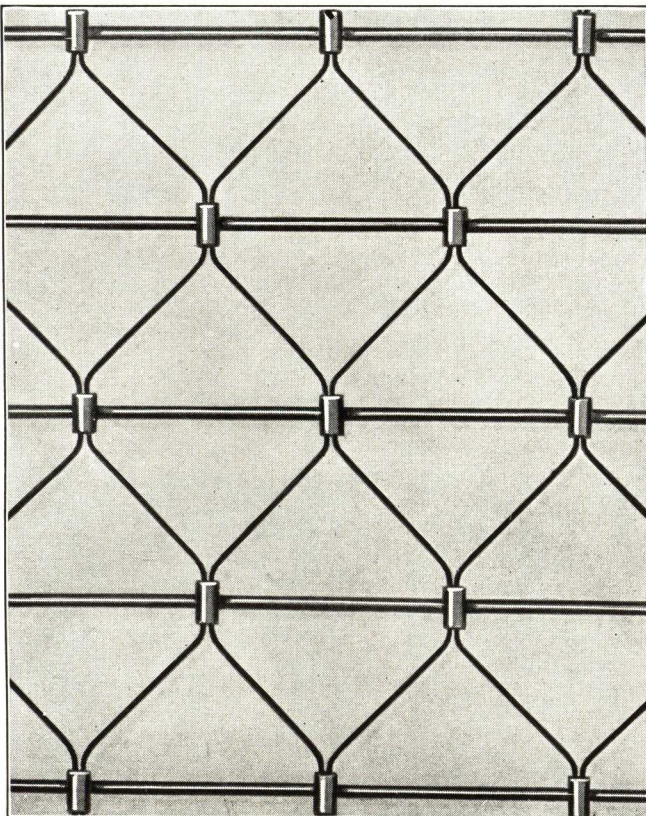


Cross Section of Guide Channel
Showing end locks on Mahon Rolling Steel Grilles

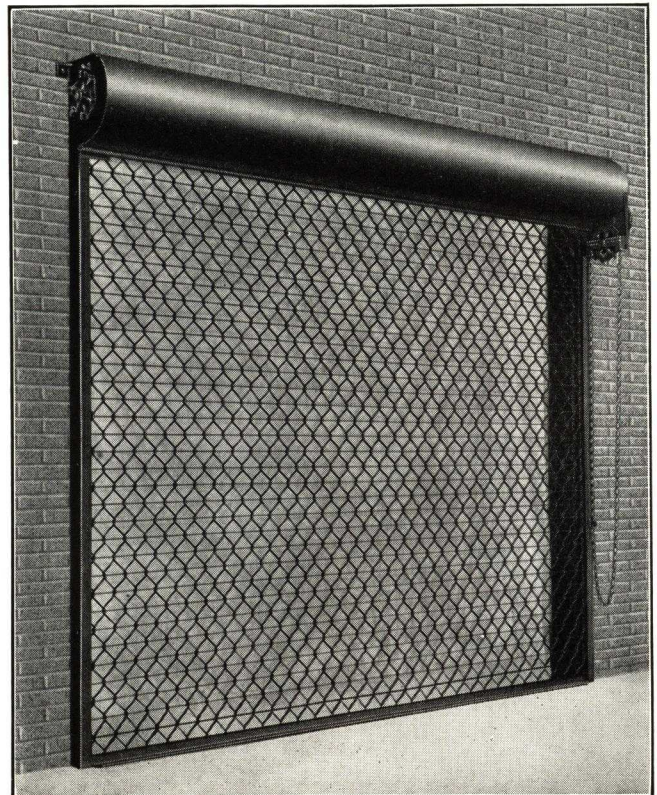


Guide Mouth of Special End Bracket

Furnished with Mahon Rolling Steel Grilles equipped with End Locks



Close-up of the Grille Proper Showing Arrangement of Connecting Links Which Form the Grille Pattern



Typical Installation of a Mahon Rolling Steel Grille Mounted on the Face of the Wall

THE MOESCHL-EDWARDS CORRUGATING CO., INC.

Manufacturers of Steel Rolling Doors

CINCINNATI, OHIO

Products

"MECCO" STEEL ROLLING DOORS.

Also manufacturers of "Mecco" Fireproof Hollow Metal Windows; "Mecco" Laundry Dryers.

For our page on Kalamein and Tin Clad Doors, see File Index.



Service Type Doors

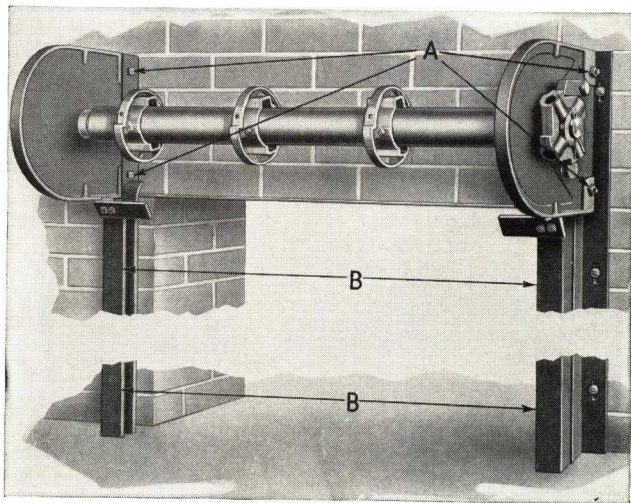
Service type rolling doors are designed for closure of openings requiring protection against the elements or intrusion. They may be had in all types of operation, and, while not sold as fire doors, they act as a fire retardant as all parts are of metal.

Underwriters' Labeled Doors

Inspected and labeled by Underwriters' Laboratories, Inc. and designed primarily for fire protection. They are also an effective easy operating closure for the opening.

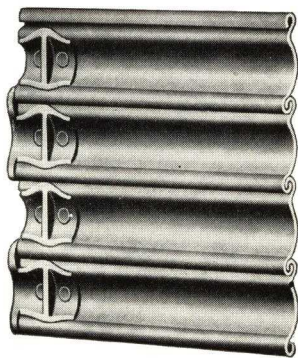
Exclusive Feature—Bracket Mounting

Brackets supporting the shaft are attached direct to the door guides at points "A." This exclusive Mecco feature insures perfect alignment of the shaft and curtain by the simple process of spacing the guides equidistant top and bottom as indicated at points "B."

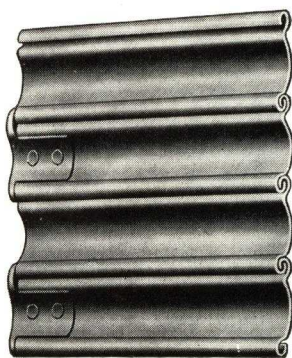


Curtains

Curtains of all Mecco Rolling Doors are made of interlocking slats of galvanized copper bearing open hearth steel—the steel proven to be of greatest rust-resisting properties in tests conducted by the American Society for Testing Materials. Slat are formed by modern rolling machinery in easy curves and bends that insure utmost strength and rigidity.



With Continuous End Locks



With Alternate End Locks

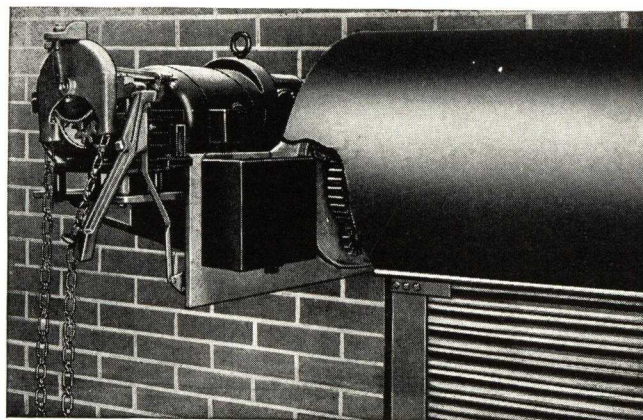
Slat No. 40

Electrical Operation

This type of door is particularly suitable for large entrance and exit doors for garages, track entrances, crane openings and all similar openings where it is necessary or desirable to operate doors electrically from a position close to or remote from the entrance.

The doors are usually provided with a single operating station, although multiple operating stations can be supplied where conditions make it necessary.

If the arrangement illustrated cannot be used, other motor applications to suit conditions can be provided.



Equipment Includes—Motor of sufficient capacity to move curtain in either direction at a speed of about 1 ft. per second. Especially designed to meet requirements of high starting torque and intermittent operation.

Fusible operation switches. Single station magnetic starting switches. Automatic limit switches arranged for universal adjustment and attached to reduction to provide accurate control.

Solenoid brake mounted on motor and shield.

Worm reduction gear with hardened steel cut worms and phosphor bronze gear.

Emergency hand chain operated from floor, automatically engaging chain and gear, cutting out current and releasing brake.

Door brackets designed to carry power unit.

Single enclosed push button control station with up, down and stop control. One station control is standard; additional stations may be added when required.

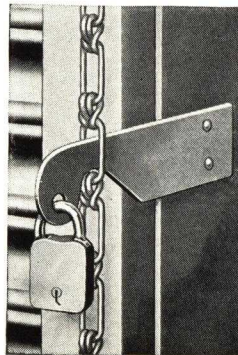
Wiring diagram.

Equipment Does Not Include: Wires, conduit, service switches, or fuses which are to be installed by others according to diagram furnished.

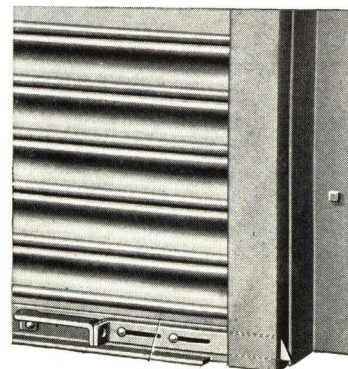
Chain and Padlock; Slide Bolts

Chain operated doors are provided with chain hook (as illustrated) for locking from interior or exterior.

Slide bolts (as illustrated) are used for locking manual or chain operated doors from interior.



Chain and Padlock



Slide Bolt

TYPES SERVICE OR COMMERCIAL (NON-LABELED) DOORS

IN TYPES AS NUMBERED FOR METHOD OF OPERATION AND MOUNTING AS LISTED

Type No.	Mounting	Operated by	Type No.	Mounting	Operated by
2	Face of wall	Manual	8	Between jambs	Chain
4	Between jambs	Manual	10	Face of wall	Crank
6	Face of wall	Chain	14	Face of wall (large size openings)	Chain
*7	Face of wall	Chain	*15	Face of wall (large size openings)	Chain

SPECIFICATIONS

Types Nos. 2 and 4

Curtain—To be formed of interlocking slots of No. 22, 20, or 18 U. S. Gauge Copper Bearing Steel, galvanized by the hot process, approximately $1\frac{1}{8}$ in. center to center with $\frac{1}{8}$ -in. depth of crown. The ends of each alternate slot to be fitted with a malleable reinforcement to prevent lateral movement and to serve as wearing surfaces in the guides. The upper edge of curtain to be attached to the spiral rings on shaft by bolts and the lower edge to bottom bar by rivets or welding.

Operation—By handle on bottom bar.

Bottom Bar—To consist of one steel angle $2\times 2\times \frac{1}{8}$ in.

Barrel—Steel pipe or tube with ends enclosed by cast iron collars with ball bearings and journaled on steel spindles of suitable diameter to maintain correct counterbalance.

Types Nos. 6, 7, 8, 10, 14 and 15

Curtain—To be formed of interlocking slots of No. 22, 20, or 18 U. S. Gauge Copper Bearing Steel, galvanized by the hot or electro process, approximately $1\frac{1}{8}$ in. center to center with $\frac{1}{8}$ -in. depth of crown, for doors not wider than 13 ft.—with slots of No. 20, 18 or 16 gauge copper bearing steel, approximately $2\frac{3}{4}$ in. center to center with $\frac{7}{8}$ -in. depth of crown for doors wider than 13 ft. The ends of each alternate slot to be fitted with malleable reinforcement to prevent lateral movement and to serve as wearing surface in the guides. The upper edge of curtain to be attached to the spiral rings on shaft

by bolts and the lower edge to bottom bar by rivets or welding.

Operation—By endless galvanized chain, sprocket and gear, or crank and gear.

Bottom Bar—To consist of one steel angle $2\times 2\times \frac{1}{8}$ in. with reinforcing angle $2\times 1\frac{1}{2}\times \frac{1}{8}$ in. on openings wider than 15 ft. 0 in.

Barrel—Steel pipe or tube with ends enclosed by cast iron collars with Hyatt roller or ball bearings journaled on steel spindles at each end and supported by bosses cast on brackets. Barrel shall be equipped with cast iron wheels of proper diameter to maintain a correct counterbalance.

Specifications Applying to All Types

Counterbalance—To consist of helical oil tempered steel springs, enclosed within a barrel and anchored to spindle. A charging ratchet for adjusting spring shall be attached to spindle.

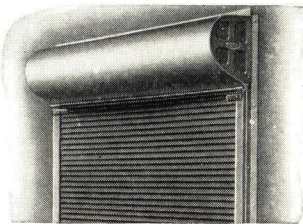
Brackets—High grade gray iron, web not less than $\frac{3}{8}$ in. and attached direct to guides.

Guides—To be composed of three angles of $\frac{1}{8}$ -in. steel securely riveted together to form a channel groove not less than $1\frac{1}{2}$ in. deep.

Painting—All parts to receive one shop coat metallic paint.

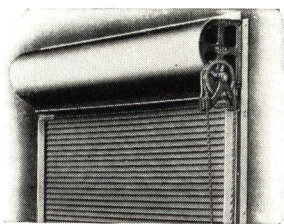
All doors shall be as manufactured by the MOESCHL-EDWARDS CORRUGATING CO., INC., of Cincinnati, Ohio.

SERVICE TYPE DOORS



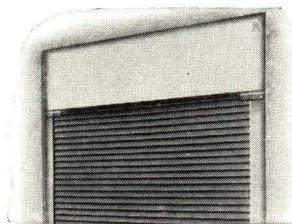
Type No. 2

Manually operated by handle on bottom bar. Adapted for openings not over 10x8 ft. Rapid in operation, working like a window shade. Door illustrated is mounted on face of wall



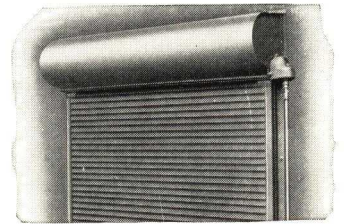
Types Nos. 6 and 14

Operated by chain and gear. Used where the height and area make a mechanically operated door desirable. All parts requiring lubrication are easily accessible



Type No. 4

Manually operated by handle on bottom bar. Mounted under lintel. Hood may be concealed by plaster or ornamental cover. Should not be used on openings over 10 ft. x 9 ft. 6 in.



Types Nos. 10 and 12

Crank and gear operated. Used on doors of any dimensions and may be supplied for operating on one or both sides of the wall—particularly adapted for the latter

Clearance Schedule

SYMBOLS

H Hood height.
A Width of regular guide.
F Space for automatic device.

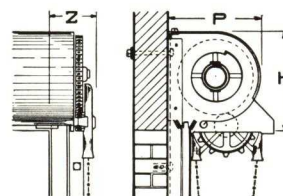
P Hood projection or thickness.
O Maximum swing of crank.
Z Space for crank or chain operator.

TYPE NO. 2

Opening width, ft.	A, in.	Opening height, ft.	H, in.	P, in.
4	$5\frac{1}{8}$	6	$12\frac{1}{2}$	$11\frac{3}{4}$
6	$5\frac{1}{8}$	7	$12\frac{1}{2}$	$11\frac{3}{4}$
8	$5\frac{1}{8}$	8	$13\frac{1}{2}$	$12\frac{3}{4}$
10	$5\frac{3}{8}$	9	$14\frac{1}{2}$	$13\frac{3}{4}$

TYPES NO. 6 AND 14

Opening width, ft.	A, in.	Z, in.	Opening height, ft.	H, in.	P, in.
10	$5\frac{1}{8}$	$6\frac{5}{8}$	7	$12\frac{1}{2}$	12
12	$5\frac{3}{8}$	$6\frac{7}{8}$	8	$13\frac{1}{2}$	13
13	$6\frac{1}{8}$	$7\frac{5}{8}$	9	$14\frac{1}{2}$	14
14	$6\frac{1}{8}$	$7\frac{5}{8}$	12	$15\frac{1}{2}$	15
15	$6\frac{1}{8}$	$7\frac{5}{8}$	14	$16\frac{1}{2}$	16

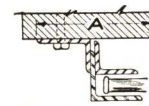


Chain Operated Door

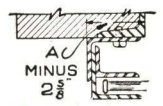
Showing where hood sizes are taken

TYPE NO. 4

Opening, height, ft.	H, in.	P, in.
8	$13\frac{1}{2}$	13
9	$14\frac{1}{2}$	13
10	$14\frac{1}{2}$	13



Regular Guide for Masonry

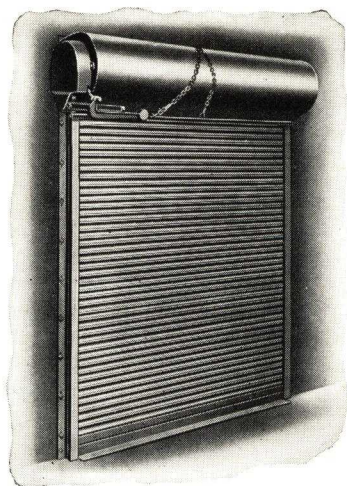


Guide for Structural Frame

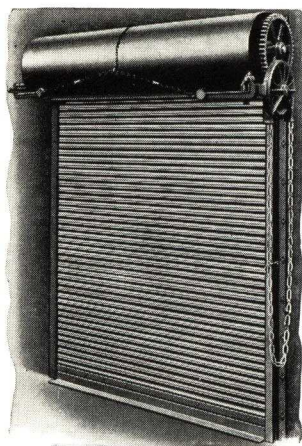
TYPE NO. 10

Opening width, ft.	A, in.	Z, in.	O, in.	Opening height, ft.	H, in.	P, in.
10	$5\frac{1}{8}$	$10\frac{7}{8}$	$18\frac{7}{8}$	7	$13\frac{1}{2}$	13
12	$5\frac{3}{8}$	$11\frac{1}{8}$	$19\frac{1}{8}$	8	$13\frac{1}{2}$	13
13	$6\frac{1}{8}$	$11\frac{7}{8}$	$19\frac{7}{8}$	11	$14\frac{1}{2}$	14
14	$6\frac{1}{8}$	$11\frac{7}{8}$	$19\frac{7}{8}$	13	$17\frac{1}{2}$	15
15	$6\frac{1}{8}$	$11\frac{7}{8}$	$19\frac{7}{8}$	15	$17\frac{1}{2}$	16

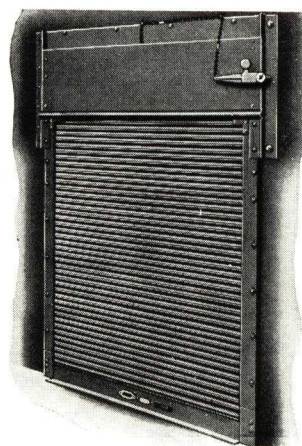
UNDERWRITERS' LABELED DOORS

**Types No. 100, 200 and 300**

Manually operated by handle on bottom bar. Mounted on face of wall. Types illustrated are automatic closing. May be operated from both sides of opening

**Types No. 103, 205 and 305**

Mechanically operated by chain and gear. Automatic closing. Mounted face of wall. Operation from chain side only

**Types No. 104, 210 and 310**

Manually operated by handle on bottom bar mounted under lintel with guides on face of wall. Types illustrated are automatic closing. Operated from both sides of opening

**Types No. 102, 206 and 306**

Mechanically operated by crank and gear. Mounted on face of wall. Types illustrated are automatic closing. May be operated from one or both sides of the opening

TYPES NO. 100, 200 AND 300

Opening width, ft.	A, in.	F, in.	Opening height, ft.	H, in.	P, in.
4	5 3/8	6 3/8	6	12 1/2	12
8	6 1/8	7 1/8	8	13 1/2	13
10	6 5/8	7 5/8	10	14 1/2	14
12	7 1/8	8 1/8	12	14 1/2	14

TYPES NO. 202 AND 302—NON-AUTOMATIC

Clearance required as above, except F
Clearances both sides shown under A

TYPES NO. 103, 205 AND 305

Opening width, ft.	A, in.	Z, in.	F, in.	Opening height, ft.	H, in.	P, in.
4	5 3/8	8 3/4	6 3/8	6	12 1/2	12
8	6 1/8	9 1/2	7 1/8	8	13 1/2	13
10	6 5/8	10	7 5/8	10	14 1/2	14
12	7 1/8	10 1/2	8 1/8	12	15 1/2	15
				14	15 1/2	15
				16	16 1/2	16

TYPES NO. 204 AND 304—NON-AUTOMATIC

All clearances required as above, except F
Clearance required plain end shown under A

TYPES NO. 104, 210 AND 310

Opening width, ft.	A, in.	Opening height, ft.	H, in.	P, in.
4	4	6	12 1/2	12
8	4 1/2	8	13 1/2	13
10	4 1/2	9	14 1/2	14
12	5	10	14 1/2	14
		12	15	15

TYPES NO. 212 AND 312—NON-AUTOMATIC

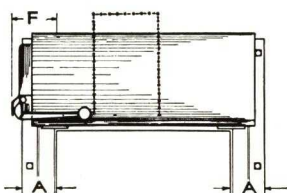
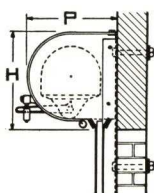
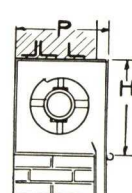
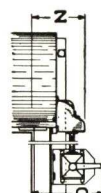
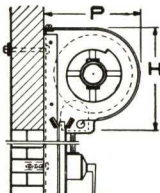
All clearances required as above, except backset
is 6 in. for all widths

TYPES NO. 102, 206 AND 306

Opening width, ft.	A, in.	Z, in.	F, in.	O, in.	Opening height, ft.	H, in.	P, in.
4	5 3/8	11	6 3/8	19 1/8	6	12 1/2	12
8	6 1/8	11 3/4	7 1/8	19 7/8	8	13 1/2	13
10	6 5/8	12 1/4	7 5/8	20 3/8	10	14 1/2	14
12	7 1/8	12 3/4	8 1/8	21 7/8	12	15 1/2	15
					14	15 1/2	15
					16	16 1/2	16

TYPES NO. 208 AND 308—NON-AUTOMATIC

All clearances required as above, except F
Clearance required plain end shown under A

**Manually Operated Automatic****Crank Operated****Under Lintel Door**

SPECIFICATIONS

Openings shall be equipped with steel rolling doors of interlocking slat type as manufactured by THE MOESCHL-EDWARDS CORRUGATING CO., INC., of Cincinnati, Ohio. Doors to be constructed in accordance with the following specifications:

Curtain—To be formed of interlocking slats of galvanized copper bearing steel of gauge required by Underwriters' Laboratories, Inc., the ends of each slat to be fitted with a malleable reinforcement to prevent lateral movement and to serve as wearing surfaces in the guides. The upper edge of curtain to be attached to the spiral rings on shaft by stove bolts and the lower edge to bottom bar by rivets.

Hood—To be formed from 24-gauge hot galvanized sheet steel, with automatic flame stop attached when required.

Counterbalance—To consist of helical oil tempered steel spring enclosed within a barrel and anchored to spindle.

Operation—Handles on bottom bar by chain and gear or crank and shaft.

Brackets—High grade gray iron, web not less than 3/8 in. and attached direct to guides.

Bottom Bar—To consist of steel angle of proper dimensions for reinforcing bottom of curtain.

Barrel—Steel tube with ends enclosed by cast collars fitted with ball or roller bearings, and journaled on steel shafting of suitable diameter and supported by flanges cast on or applied to brackets. Barrel shall be equipped with cast iron rings of proper diameter to maintain a correct counterbalance.

Guides—To be composed of three angles or two 1 1/8-in. steel plates securely riveted together to form a channel groove not less than 2 in. deep, proper depth to be determined by width of opening, arranged for expansion at all rivet and bolt connections.

Paintings—All parts to receive one shop coat of paint.

NORTH AMERICAN IRON & STEEL CO., INC.

Designers and Fabricators of Vertical Lift Doors and
Metalwork of All Types

TELEPHONE
SUnset 6-5302

116-136 57th Street
BROOKLYN, N. Y.

For our pages on Ornamental Iron and Flag Poles, see File Index

"NAISCO" VERTICAL LIFT DOORS

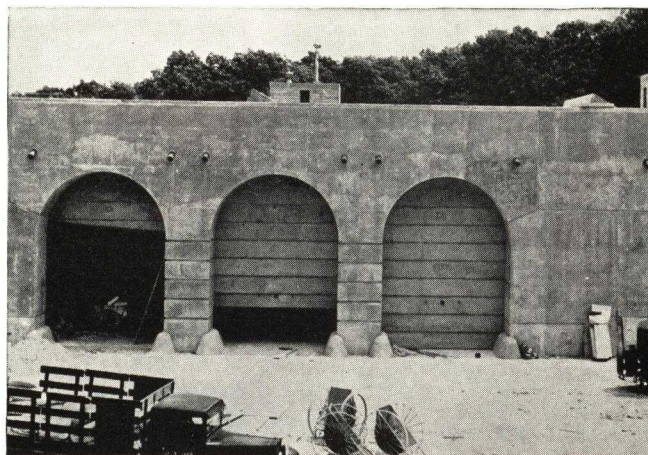
The "Naisco" Vertical Lift door is interesting to architects and engineers who require a door which combines the desirable features of durability, simplicity and exceptional strength. Durability is obtained because all parts are accessible for painting and because any metal may be employed in its construction.

The rugged simplicity of design appeals to architects and engineers.

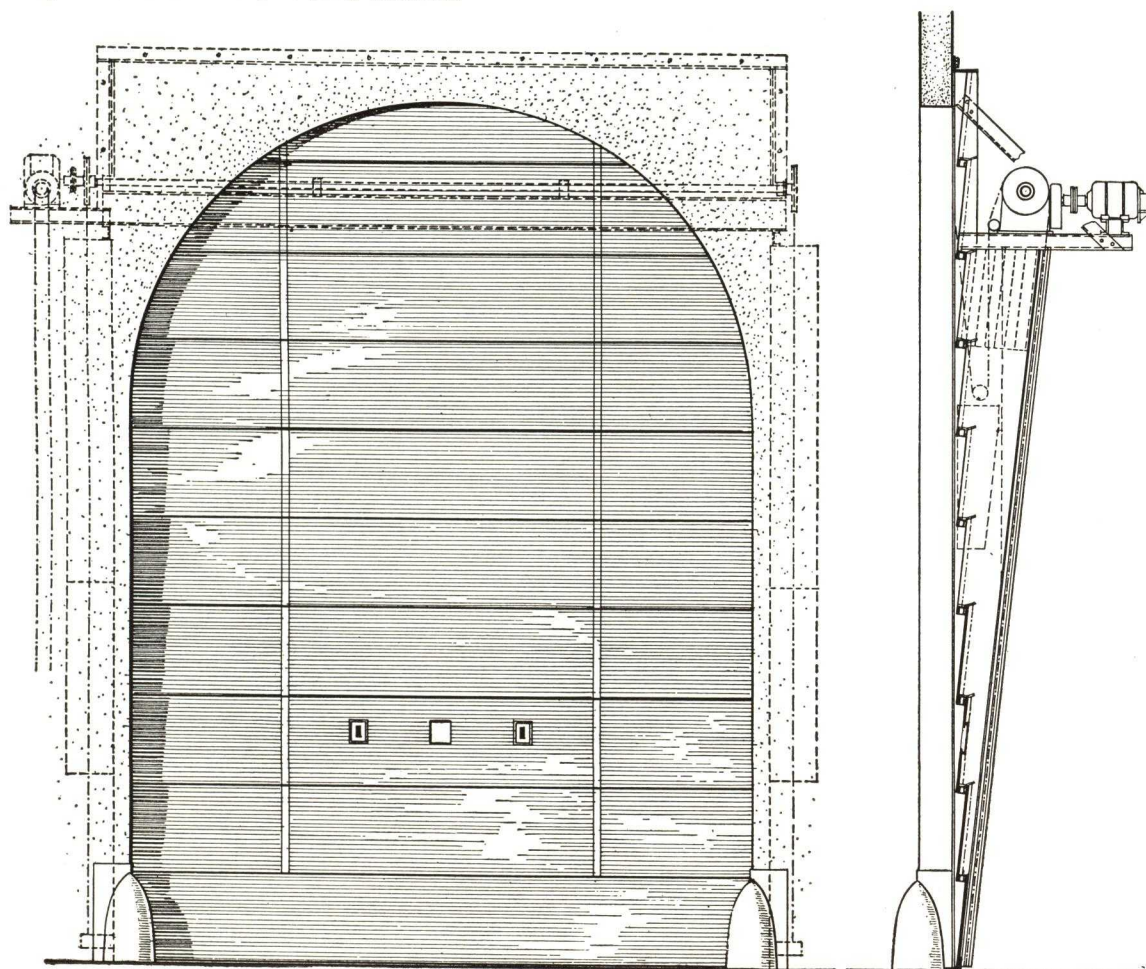
The great strength of these doors is due to the design of the leaves and to the fact that any gauge metal may be selected. There are no uncertain features incorporated in the construction; no springs are used and all operating mechanism is of simple, positive nature. The doors may be electrically operated as designed for the West Point Depository or manually operated as required by garages, warehouses, etc. The leaves raise into a space no larger than that required for a rolling shutter. It is important to note that the design of these doors may be varied to include windows, grilles or any special devices which may be desired. Doors may be made of any ferrous, non-ferrous or stainless material.

These doors can be supplied at a cost no more than that of rolling shutters, and many points of advantage should indicate their superiority.

Our Engineering Department invites inquiries and will be pleased to furnish any desired information, including estimates.



Bulletproof Doors at West Point Silver Depository



Elevation and Section of Electrically Operated Installation

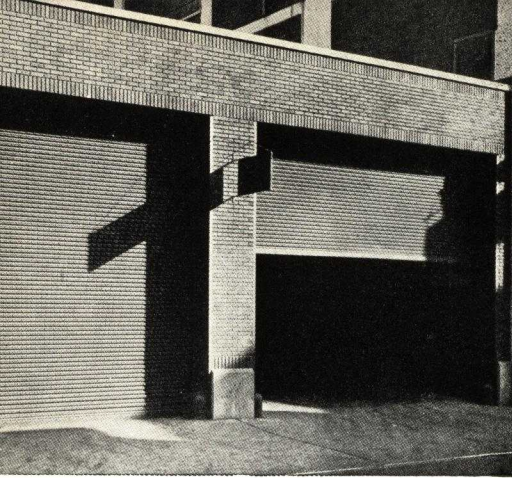
MEMORANDA



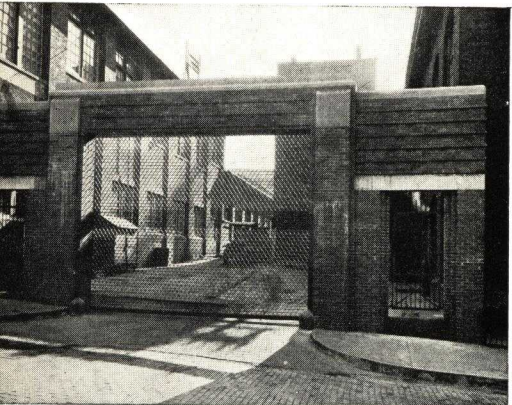
ROLLING STEEL DOORS
ROLLING STEEL GRILLES
ROLLING WOOD DOORS

Wilson

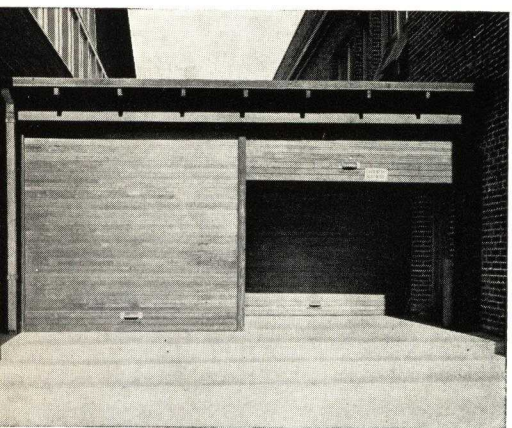
AIRKORE FIRE DOORS
ROLLING STEEL FRONTS
SECTIONFOLD OVERHEAD DOORS



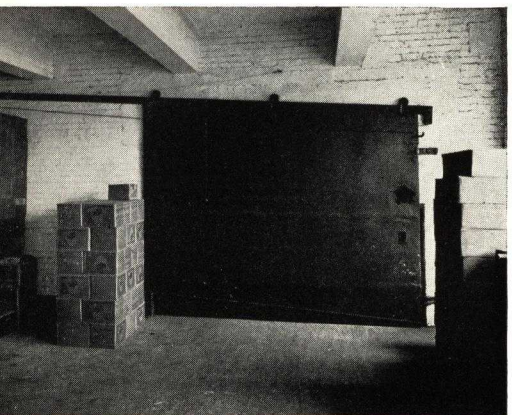
ROLLING STEEL DOORS



ROLLING STEEL GRILLES



ROLLING WOOD DOORS



WILSON DOORS

for INDUSTRIAL AND ARCHITECTURAL USES

Manufacturer of ROLLING STEEL DOORS Since 1876

Our founder, James Godfrey Wilson, in 1876 started to manufacture the first Wilson Rolling Steel and Wood Doors.

Since that time we have developed and manufactured the products as listed below. During this entire period we have accumulated a wealth of information on these products, which we are constantly endeavoring to use advantageously for our clients. Our Engineering Department is ready, at any time, to advise as to the type of installation which will most satisfactorily meet the requirements in question.

DOOR APPLICATIONS

ROLLING STEEL DOORS

For Protection Against Fire, Theft and Weather

Industrial Buildings	Museums
Warehouses	Department Stores
Freight Stations	Public Buildings
Piers and Docks	Hotels
Craneway Openings	Schools
Power Houses	Firewalls
Hangars	Elevator Shafts
Garages	Stairwells

ROLLING STEEL GRILLES

Protect Against Intrusion but Admit Light and Air

Concessions	Corridor Openings
Store Entrances	Vaults
Display Windows	Elevator Shafts
Storage Rooms	Skylights
School Buildings	Industrial Buildings
Nurseries	Commercial Buildings

ROLLING WOOD DOORS

Any Place Where Strong Acid or Oxidizing Fumes Are Present

Round Houses	Refrigerating Plants
Chemical Plants	X-ray Rooms
Ice Cream Factories	Photographic Rooms
Dairies	Hospital
Laboratories	Amphitheatres

AIRKORE FIRE DOORS

Hollow Core Steel Doors, Underwriters Labeled	Corridors or Room Partitions
Either Sliding or Hinged	Openings in Fire Walls
Openings in Vertical Shafts	Openings in Exterior Walls

ROLLING STEEL FRONTS

For Protection Against Intrusion

News Stands	Stationary Cabinets
Coat Rooms	Windows for Light-Proof Protection
Ticket Booths	

SECTIONFOLD OVERHEAD DOORS

Wood Doors Standard

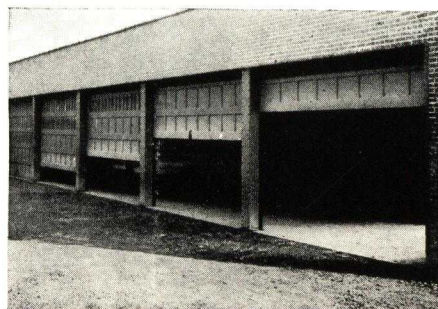
Garages (Private)	Warehouse Doors
Garages (Public)	Shipping Openings

OTHER PRODUCTS

Venetian Awning Blinds	Diffuselite Blinds
Horizontal Rolling Partitions	Sectionfold Partitions
Vertical Rolling Partitions	Disappearing Door Wardrobes
	Rolling Front Wardrobes



ROLLING STEEL FRONTS



SECTIONFOLD OVERHEAD DOORS

Wilson ROLLING STEEL DOORS

For All Types of Services

Wilson offers a complete line of rolling steel doors for all types of service, with a background of over 60 years' experience in the manufacture of rolling doors in steel and wood. The mechanical features of these doors are designed to insure simple and easy operation and long life. Their efficiency has been tested and proved under all types of exposure and use.

Wilson Engineering Service

We are always ready to co-operate in solving any special or unusual problems. This service is rendered without obligation.

The Importance of Proper Installation

No door will be satisfactory unless it is properly installed. Wilson rolling doors are simple in design and not difficult to install. We strongly recommend that all doors be erected by the manufacturer or his representative, who maintains trained crews for this purpose and for servicing doors.

Types of Wilson Rolling Steel Doors

Wilson Rolling Steel Doors are divided into two distinct classifications, Standard Commercial and Underwriter Labelled Automatic Closing Doors.

COMMERCIAL TYPE is applied to rolling steel doors for ordinary services. They are not restricted as to size or area and do not have the automatic closing features.

UNDERWRITER TYPE is used for insurance reduction purposes and where fire hazards exist and fire protection is desired on interior and exterior openings. This type is restricted to a definite size and area, is made for fully labelled requirements, and tested and approved by Underwriters' Laboratories, Inc. Where required, are equipped with automatic device, closing at a temperature of 160 degrees by fusible link.

Doors can be raised without difficulty after closing automatically; the automatic device can be reset and new fusible link inserted without removing the hood or dismantling the door. All automatic mechanism is contained within the hood.

Class "A"—Fire Wall Doors—Area of opening not to exceed 80 sq. ft.; neither width nor height to exceed 12 ft. Two doors are required, and may be hung on face of wall or between jambs, self-coiling or crank operation, and close automatically in case of fire. Wilson Type Nos. 31 to 35, inclusive, interlocking slat No. 2, 20 gauge.

Class "B"—Vertical Shaft Doors—Area of opening not to exceed 80 sq. ft.; neither width nor height to exceed 12 ft. Curtains may be hung on face of wall or between jambs, self-coiling or crank operation, and may be automatic closing in case of fire. Wilson Type Nos. 21 to 26, interlocking slat No. 2, 20 gauge.

Class "C"—Corridor and Room Partition Doors—Same requirements as Class "B."

Class "D"—Exterior Wall Doors—Area of opening not to exceed 100 sq. ft.; neither width nor height to exceed 12 ft. Curtain may be hung on face of wall or between jambs, self-coiling, chain or crank operation, and, where permitted, may be automatic closing in case of fire. Wilson Type Nos. 41 to 51, interlocking slat Little 4, 22 gauge.

Methods of Operation

The means of operating Wilson Standard Commercial Rolling Steel Doors depends generally on the size of the opening enclosed.

There are four general types of operation.

Self-Coiling (S-C) Type—Manually operated, standard for openings to 80 sq. ft.

Chain Geared (C-G) Type—Chain-gear operated, for openings over 80 sq. ft.

Crank Geared (K-G) Type—Crank-gear operated, for openings over 80 sq. ft.

Motor Operated Type—Generally used for large openings or for large doors requiring quick operation by remote control. (See page 6.)

The Wilson Curtain

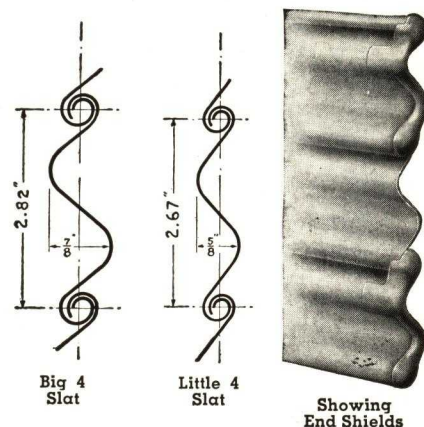
The Wilson curtain is composed of a series of cold rolled interlocking slats, formed from copper-bearing electro-galvanized steel, which metal and protection is conceded to be more effective in retarding corrosion than any other similar product. The electro-galvanized coating does not fracture by bending and will not peel. Absence of all sharp bends further insures maximum galvanic protection. Curtain can also be made of aluminum, bronze or stainless steel.

Proven Strength Against Wind Pressure

An outstanding Wilson feature is the patented safety groove and wind locks which are standard equipment on doors over 14 ft. in width. Doors so equipped cannot possibly be blown from grooves and will withstand any conceivable wind pressure without excessive deflection of the curtain, at the same time minimizing possible damage to curtain from whatever cause.

As an example, a wind velocity of 120 miles exerts a pressure of 43 lbs. per sq. ft. Wilson safety knobs overcome a resistance per sq. ft. of 1000 lbs. for 18-ft. span, 500 lbs. for 24-ft. span, and 300 lbs. for 30-ft. span. Gauge of slats depends entirely on size of opening.

TYPES OF SLATS

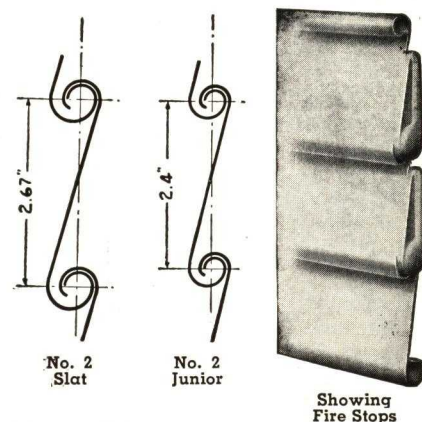


BIG 4 INTER-LOCKING SLAT

For Openings Over 12 Feet Wide—This shape has very deep corrugations, therefore greater strength than the ordinary channel type slat. This protects the interlocking joints from damage when hit by moving vehicles. It has the same appearance on both sides. Rain cannot enter the joints and therefore no water can be held in the joints to rust or freeze. The design permits the use of end-shields which actually do take all wear from that part of the curtain sliding in the grooves, which adds considerable to the life of the door.

LITTLE 4 INTERLOCKING SLAT

For Openings Up to 14 Feet Wide—Also for Underwriters' doors on exterior openings and when coil must be made as small as possible. Similar in design to Big 4 Slat but corrugations are not as deep. Can be fitted with continuous end locks or fire stops.



NO. 2 INTER-LOCKING SLAT

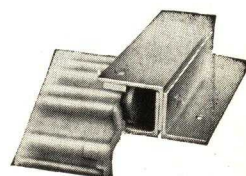
For Underwriters' Labeled Fire Doors—Also for interior doors not subjected to wind pressure or unusually hard service. Equipped with fire stops on ends of slats to prevent smoke and flame from passing through grooves.

NO. 2. JUNIOR SLAT

Similar Use to No. 2 Slat—Use, principally when coil space is limited. Slightly smaller than No. 2 Slat.

At Right:

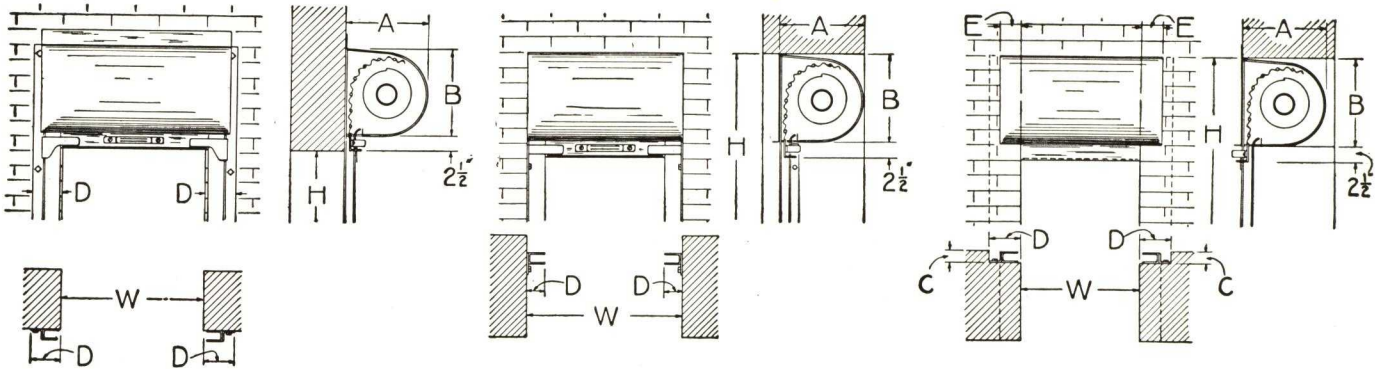
SAFETY GROOVE AND WIND LOCK



WILSON STANDARD DOORS

Types of Operation and Dimensions of Standard Hoods and Grooves

SELF COILING • MANUALLY OPERATED • AREA NOT OVER 80 SQ. FT.



SELF-COILING DOORS—TYPE S. C. 11
Grooves and Coil on Face of Wall

H	W	D	Little No. 4 Slat		No. 2 Jr. Slat	
			A	B	A	B
6' 0"	3' 0"	4 5/8"	14"	14 1/2"	13"	13 1/2"
7' 0"	4' 0"	4 5/8"	14"	14 1/2"	13"	13 1/2"
8' 0"	5' 0"	4 5/8"	15"	15 1/2"	14"	14 1/2"
9' 0"	6' 0"	4 5/8"	15"	15 1/2"	14"	14 1/2"
10' 0"	7' 0"	4 5/8"	15"	15 1/2"	15"	15 1/2"
11' 0"	10' 0"	4 5/8"	16"	16 1/2"	15"	15 1/2"

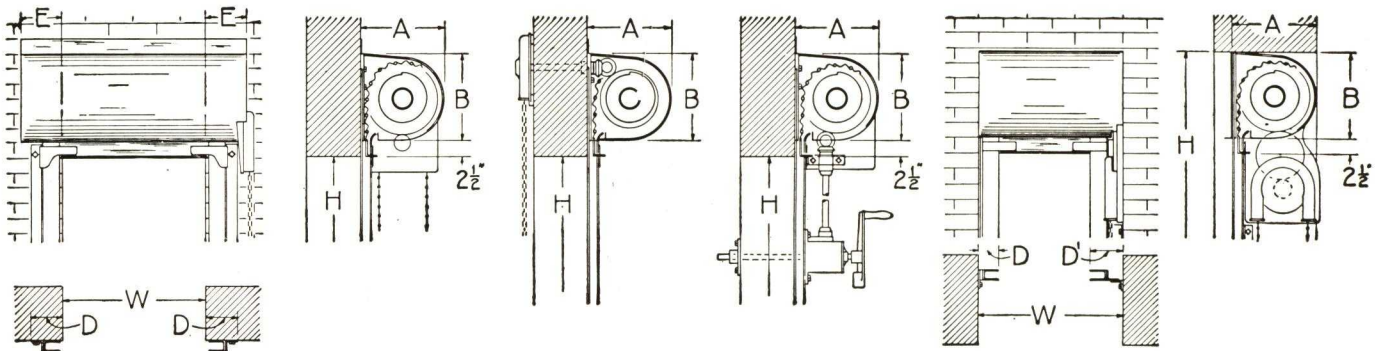
SELF-COILING DOORS—TYPE S. C. 22
Grooves and Coil Within the Opening

H	W	D	Little No. 4 Slat		No. 2 Jr. Slat	
			A	B	A	B
6' 0"	3' 0"	2 3/8"	13"	13 1/2"	12"	12 1/2"
7' 0"	4' 0"	2 3/8"	14"	14 1/2"	13"	13 1/2"
8' 0"	5' 0"	2 3/8"	14"	14 1/2"	13"	13 1/2"
9' 0"	6' 0"	2 3/8"	15"	15 1/2"	13"	13 1/2"
10' 0"	7' 0"	2 3/8"	15"	15 1/2"	14"	14 1/2"
11' 0"	8' 0"	2 3/8"	15"	15 1/2"	15"	15 1/2"
12' 0"	10' 0"	2 3/8"	15"	15 1/2"	15"	15 1/2"

SELF-COILING DOORS—TYPE S. C. 21
Coil Within the Opening—
Grooves Recessed on Face of Wall

H	W	C	D	E	Little No. 4 Slat		No. 2 Jr. Slat	
					A	B	A	B
6' 0"	3' 0"	2"	4 5/8"	5 1/8"	13"	13 1/2"	12"	12 1/2"
7' 0"	4' 0"	2"	4 5/8"	5 1/8"	14"	14 1/2"	13"	13 1/2"
8' 0"	5' 0"	2"	4 5/8"	5 1/8"	14"	14 1/2"	13"	13 1/2"
9' 0"	6' 0"	2"	4 5/8"	5 1/8"	15"	15 1/2"	13"	13 1/2"
10' 0"	7' 0"	2"	4 5/8"	5 1/8"	15"	15 1/2"	14"	14 1/2"
11' 0"	8' 0"	2"	4 5/8"	5 1/8"	15"	15 1/2"	15"	15 1/2"
12' 0"	10' 0"	2"	4 5/8"	5 1/8"	15"	15 1/2"	15"	15 1/2"

CHAIN AND CRANK GEARED DOORS • MANUALLY OPERATED •
AREA OVER 80 SQ FT.



Type C. G. 11

Type C. G. O. 11

Type K. G. 11

Type C. G. 22

TYPE C.G. 11—(Chain Gear Grooves and Coils on Face of Wall)
TYPE C.G.O. 11—(Chain Gear Operation Through Wall)
TYPE K.G. 11—(Crank Geared Doors Through Wall)

TYPE C.G. 22—(Chain Gear Grooves and Coils Within Opening)

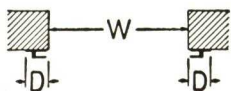
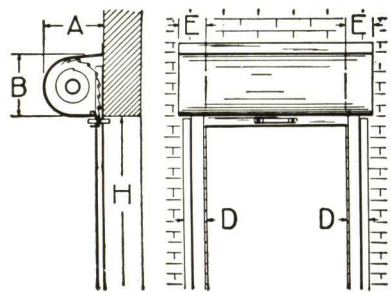
H	W	D	E	Little No. 4 Slat		Big No. 4 Slat		H	W	D	D1	Little No. 4 Slat		Big No. 4 Slat	
				A	B	A	B					A	B	A	B
8' 0"	6' 0"	4 5/8"	5 3/4"	15"	15 1/2"	17"	17 1/2"	8' 0"	6' 0"	2 3/4"	4 7/8"	14"	14 1/2"	16"	16 1/2"
10' 0"	8' 0"	4 5/8"	5 3/4"	15"	15 1/2"	17"	17 1/2"	10' 0"	8' 0"	2 3/4"	4 7/8"	15"	15 1/2"	16"	16 1/2"
12' 0"	10' 0"	4 5/8"	5 3/4"			20"	20 1/2"	12' 0"	10' 0"	2 3/4"	4 7/8"	16"	16 1/2"	17"	17 1/2"
14' 0"	12' 0"	5 1/4"	6 3/8"			20"	20 1/2"	14' 0"	12' 0"	5 1/2"	5 1/2"			20"	20 1/2"
16' 0"	14' 0"	5 1/4"	6 3/8"			22"	22 1/2"	16' 0"	14' 0"	5 1/2"	5 1/2"			20"	20 1/2"
18' 0"	16' 0"	5 1/4"	6 3/8"			23"	23 1/2"	18' 0"	16' 0"	5 1/2"	5 1/2"			22"	22 1/2"
20' 0"	18' 0"	5 1/4"	6 3/8"			23"	23 1/2"	20' 0"	18' 0"	5 1/2"	5 1/2"			23"	23 1/2"
22' 0"	20' 0"	5 1/4"	6 3/8"			24"	24 1/2"	22' 0"	20' 0"	5 1/2"	5 1/2"			23"	23 1/2"
24' 0"	22' 0"	5 1/4"	6 3/8"			28"	28 1/2"	24' 0"	22' 0"	5 1/2"	5 1/2"			24"	24 1/2"
28' 0"	24' 0"	5 1/4"	6 3/8"			28"	28 1/2"								

Note: To provide for Clear Opening Height, add 2 1/2" to Dimension B for Clearance of Bottom Rail.

WILSON UNDERWRITER LABELED DOORS

Types of Operation and Dimensions of Standard Hoods and Grooves

SELF COILING • AREA NOT OVER 80 SQ. FT.



Types 21, 23, 41, 43, 50, Single
Type 31, Double

Table Below, at Left:
TYPES 21, 23, 41, 43 and
50 SINGLE DOORS •

TYPE 31 DOUBLE
DOORS (One on each
side of opening. Grooves
and coil on face of wall.)

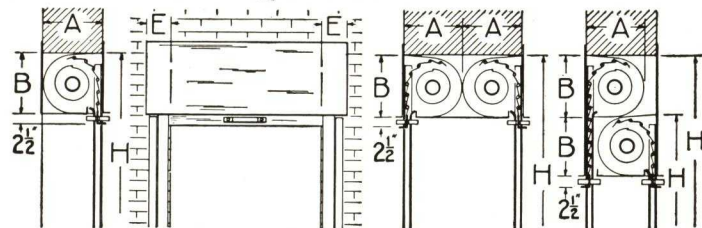
Table Below, at Right:
TYPES 22, 24, 44 and 51
SINGLE DOORS
(Grooves and coil within
the opening) •

TYPE 42 SINGLE
DOOR (Coil within opening,
grooves recessed on
face of wall) •

TYPE 32 DOUBLE
DOORS (Coils superimposed;
grooves within opening or recessed.) •

TYPE 33 DOUBLE
DOORS (Coils within opening;
grooves within opening or recessed.)

For classes under each
type, see page 3.



(Upper Plan)

Types 22, 24,
44, 51

(Coil and grooves
within
openings.)

(Lower Plan)

Type 42

(Coil within opening;
grooves recessed.)

(Upper Plan)

Types 33 and 32 (Coils Within
Opening.)

(Lower Plan)

Grooves within opening.

Grooves recessed.

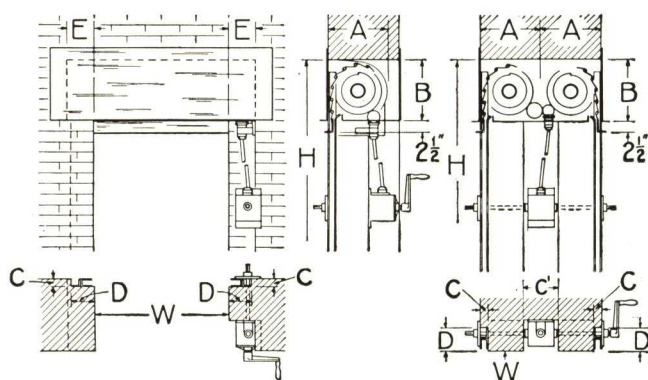
TYPES 21, 23, 41, 43 and 50, SINGLE
TYPE 31, DOUBLE

H	W	D	E	No. 2 slat for interior openings		Little No. 4 slat for exterior openings only	
				A	B	A	B
7' 0"	6' 0"	5 1/4"	6"	16"	16 1/2"	16"	16 1/2"
8' 0"	7' 0"	5 1/4"	6"	16"	16 1/2"	16"	16 1/2"
9' 0"	8' 0"	5 1/4"	6"	18"	18 1/2"	18"	18 1/2"
10' 0"	9' 0"	6 1/4"	7"	19"	19 1/2"	19"	19 1/2"
11' 0"	10' 0"	6 1/4"	7"	19"	19 1/2"	19"	19 1/2"
12' 0"	11' 0"	6 1/4"	7"	20"	20 1/2"	20"	20 1/2"
13' 0"	12' 0"	6 1/4"	7"	20"	20 1/2"	20"	20 1/2"
14' 0"	14' 0"	6 1/4"	7"	20"	20 1/2"	20"	20 1/2"

TYPES 22, 24, 44, 51—(Coil and Grooves Within Openings), SINGLE
TYPE 42—(Coils Within Opening; Grooves Recessed), SINGLE
TYPES 33 and 32—(Coils Within Opening), DOUBLE

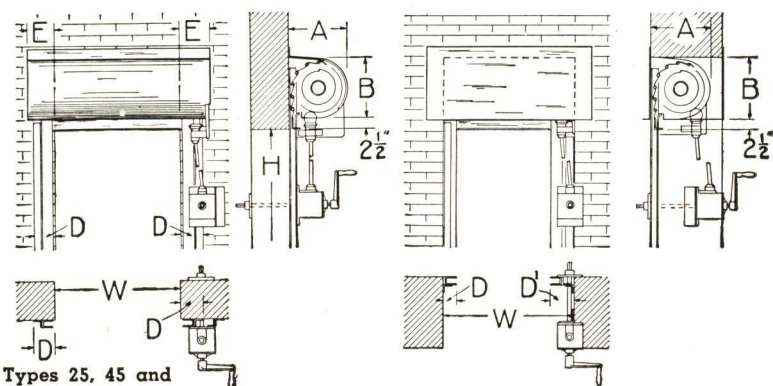
H	W	C	D	E	No. 2 Slat for interior openings		Little No. 4 slat for exterior openings only	
					A	B	A	B
7' 0"	6' 0"	2"	6"	6"	16"	16 1/2"	16"	16 1/2"
8' 0"	7' 0"	2"	6"	6"	16"	16 1/2"	16"	16 1/2"
9' 0"	8' 0"	2"	6"	6"	18"	18 1/2"	18"	18 1/2"
10' 0"	9' 0"	2"	6" & 7"	6" & 7"	19"	19 1/2"	19"	19 1/2"
11' 0"	10' 0"	2"	6" & 7"	6" & 7"	19"	19 1/2"	19"	19 1/2"
12' 0"	11' 0"	2"	7"	7"	20"	20 1/2"	20"	20 1/2"
13' 0"	12' 0"	2"	7"	7"	20"	20 1/2"	20"	20 1/2"
14' 0"	13' 0"	2"	7"	7"	20"	20 1/2"	20"	20 1/2"

CRANK GEARED DOORS



Types 26, 46 and 48 Single Doors
(Coil and grooves recessed in wall.)

Type 35 Double Doors
One on each side of opening;
coils and grooves
recessed in wall.



Types 25, 45 and
47 Single Doors
Type 34 Double Doors
(One on each side of opening; coil and
grooves on face of wall.)

Type 26
(Coil and grooves within
opening.)

TYPES 46 AND 48 SINGLE DOORS

TYPE 35 DOUBLE DOORS

(One on each side of opening; coils and grooves recessed in wall.)

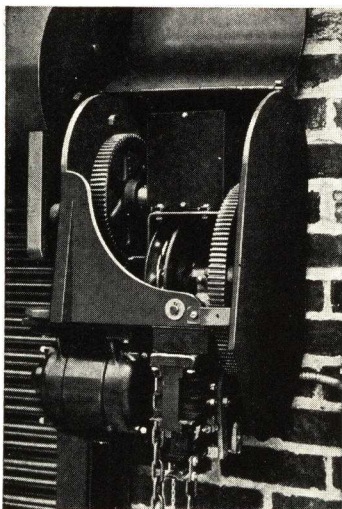
H	W	C	Cl	D	E	No. 2 Slat for interior openings		Little No. 4 Slat for exterior openings only	
						A	B	A	B
7' 0"	6' 0"	2"	11"	6"	6"	16"	16 1/2"	16"	16 1/2"
8' 0"	7' 0"	2"	11"	6"	6"	16"	16 1/2"	16"	16 1/2"
9' 0"	8' 0"	2"	11"	6"	6"	18"	18 1/2"	18"	18 1/2"
10' 0"	9' 0"	2"	11"	7"	6"	19"	19 1/2"	19"	19 1/2"
11' 0"	10' 0"	2"	11"	7"	6"	19"	19 1/2"	19"	19 1/2"
12' 0"	11' 0"	2"	11"	7"	7"	20"	20 1/2"	20"	20 1/2"
13' 0"	12' 0"	2"	11"	7"	7"	20"	20 1/2"	20"	20 1/2"
14' 0"	14' 0"	2"	11"	7"	7"	20"	20 1/2"	20"	20 1/2"

H	W	D	E	No. 2 Slat for interior openings		Little No. 4 Slat for exterior openings only	
				A	B	A	B
7' 0"	6' 0"	5 1/4"	6"	16"	16 1/2"	16"	16 1/2"
8' 0"	7' 0"	5 1/4"	6"	16"	16 1/2"	16"	16 1/2"
9' 0"	8' 0"	5 1/4"	6"	18"	18 1/2"	18"	18 1/2"
10' 0"	9' 0"	6 1/4"	7"	19"	19 1/2"	19"	19 1/2"
11' 0"	10' 0"	6 1/4"	7"	19"	19 1/2"	19"	19 1/2"
12' 0"	11' 0"	6 1/4"	7"	20"	20 1/2"	20"	20 1/2"
13' 0"	12' 0"	6 1/4"	7"	20"	20 1/2"	20"	20 1/2"
14' 0"	14' 0"	6 1/4"	7"	20"	20 1/2"	20"	20 1/2"

Type 26 (Coil and grooves within opening). (Also for Type 26 Recessed)

H	W	D	E	No. 2 Slat for interior openings		Little No. 4 Slat for exterior openings only	
				A	B	A	B
7' 0"	6' 0"	5 1/2"	5 1/2"	15"	15 1/2"	15"	15 1/2"
8' 0"	7' 0"	5 1/2"	5 1/2"	15"	15 1/2"	15"	15 1/2"
9' 0"	8' 0"	5 1/2"	5 1/2"	16"	16 1/2"	16"	16 1/2"
10' 0"	9' 0"	6 1/2"	6 1/2"	17"	17 1/2"	17"	17 1/2"
11' 0"	10' 0"	6 1/2"	6 1/2"	19"	19 1/2"	19"	19 1/2"
12' 0"	11' 0"	6 1/2"	6 1/2"	19"	19 1/2"	19"	19 1/2"
13' 0"	12' 0"	6 1/2"	6 1/2"	19"	19 1/2"	19"	19 1/2"
14' 0"	14' 0"	6 1/2"	6 1/2"	21"	21 1/2"	21"	21 1/2"

TYPES OF WILSON MOTOR UNITS



At Left:

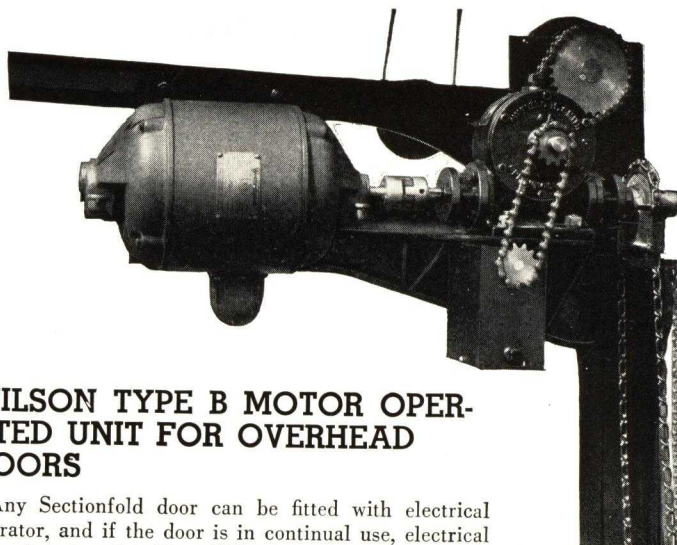
WILSON MOTOR UNIT

For Large or Small
Rolling Doors

At Right:

WILSON TYPE B MOTOR UNIT

For Overhead Doors



WILSON TYPE B MOTOR OPER- ATED UNIT FOR OVERHEAD DOORS

Any Sectionfold door can be fitted with electrical operator, and if the door is in continual use, electrical operation is advisable. Wilson motor units are extremely simple and compact. They are composed of substantial switch, motor, reduction gears, magnetic reversing panel, solenoid brake, and control station as made by the foremost electrical manufacturers. There are three types: Type B with momentary control station; Type C De Luxe with momentary control station; and Type C standard, with constant control station. The B unit is also equipped with emergency hand chain operation in case of current failure. Current characteristics often complicate electrical installations and we would recommend consultation with our nearest representatives regarding motor installations.

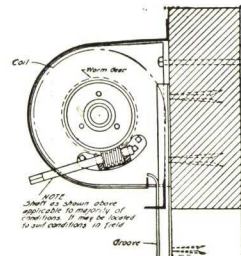
WILSON MOTOR UNIT FOR LARGE OR SMALL ROLLING DOORS

A compact, dependable electric power unit for operating either new or old doors. Motor is controlled by push button located at any point desired. Equipped with limit switch, Thermo Overload Relay and solenoid brake. Also has manually operated emergency hand chain provided for use during interruption of power service. The reduction gears are entirely enclosed in a metal hood.

WILSON WORM GEAR SPRING ADJUSTING DEVICE

The adjustment of the spring tension in Wilson Rolling Doors is readily accomplished by a worm gear spring adjusting device located at one end of the hood. It can be operated with a crank without removing or interfering with the door mechanism. This device not only assures easy and accurate adjust-

ment in counterbalancing the curtain but holds it in positive adjustment at the tension desired without the use of pins or locks. (The illustration at right shows how it is easily accessible and self-sustaining.)



Wilson ROLLING STEEL FRONTS

For Locations Where Protection
Is Desired, But Not Air or Light

NEWS STANDS STATIONARY CABINETS
COAT ROOMS TICKET BOOTHS
FOR LIGHTPROOF PROTECTION

For the above uses we offer our Midget Slat Rolling Steel Curtain as illustrated at the right.

The surface of one side is flat, which makes them suitable for decorative purposes where required. Slats may be made of steel, aluminum, bronze or stainless steel, if desired.

Manual operation is most always satisfactory for small openings, but crank operation can be had when curtain is over a wide counter or otherwise inaccessible.

Send for drawing A-1025 showing details of construction, coil diameters, etc.



Above:

A PARCEL ROOM
AND NEWS STAND
DURING THE DAY.

At Right:

SAME OPENINGS AT
NIGHT.



THE J. G. WILSON CORPORATION

Wilson AIRKORE SLIDING OR SWINGING FIRE DOORS

Details of Construction

STEEL FIREPROOF AIR CHAMBER DOORS — UNDERWRITERS' LABELED

The most effective retardant. This door has been tested by the Underwriters' Laboratories, Inc. in Chicago. It was subjected to heat which was gradually raised to 1750°. After undergoing this terrific heat test for one hour, the door was immediately subjected to a cold water hose stream test. After these tests, far more severe than would have been occasioned by an actual fire, the door showed little deterioration, and to all appearances was "as good as new."

In addition, the Wilson "Airkore" Fireproof Air Chamber Door is practical and durable, rugged in construction and capable of withstanding hard usage. Covered with galvanized sheet steel, it is not affected by corrosion. It is simple and easy to operate, and, with its plain, not corrugated, cover sheets, presents a very pleasing appearance.

All hardware used on Airkore doors is of special design and of very durable construction made by Wilson for exclusive use on Airkore doors.

Its use is recommended to all who are more interested in preventing the spread of fire and maximum protection against such possibilities rather than lowest first cost just to get by requirements.

Airkore Doors are made in the following types, all fully approved and labeled:

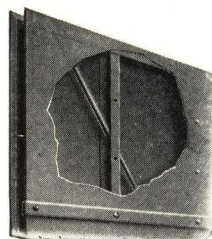
- Single Swing
- Double Swing
- Single Slide—level track
- Double Slide—level track—*Exclusive Wilson feature*
- Single Slide—inclined track
- Double Slide—inclined track—*Exclusive Wilson feature.*

UNDERWRITERS' LIMITATIONS

Single swinging type for interior openings not to exceed 6 ft. in width and 12 ft. in height; for exterior openings, 4 ft. in width and 12 ft. in height.

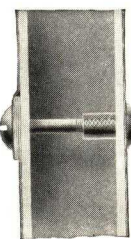
Double swinging type for interior openings not to exceed 10 ft. in width and 12 ft. in height; for exterior openings, 6 ft. in width and 12 ft. in height.

Sliding type not to exceed 120 sq. ft. in area, neither width nor height over 12 ft.

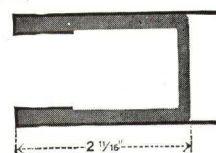


The main frame of the Wilson Airkore Fireproof Door is composed of $2\frac{1}{16}$ " x $1\frac{3}{8}$ " channel, $\frac{1}{8}$ " thick, and is acetylene welded at the corners, forming a continuous channel frame. This frame is covered both sides with 24 gauge, galvanized sheet steel, electro spot-welded to the channel frame every six inches. Web of door is reinforced by vertical channels spaced 12" apart. Swinging doors are provided with diagonal braces to prevent sagging.

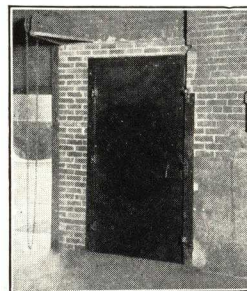
The top and bottom members of the channel frame are ventilated by means of $\frac{3}{8}$ " holes through the web of the channel. This provides for a circulation of air through the chambers formed in the door.



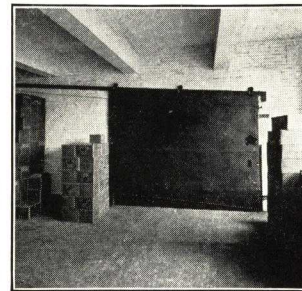
SECTION THROUGH CENTER OF DOOR
Showing lap joint, reinforcing channel and bolt.



SECTION THROUGH OUTER FRAME OF DOOR
Showing cover sheets, spot-welded to channel, inside and outside.



SWINGING TYPE



SLIDING TYPE INCLINED TRACK



ROLLING WOOD DOORS Not Affected by Corrosive Fumes

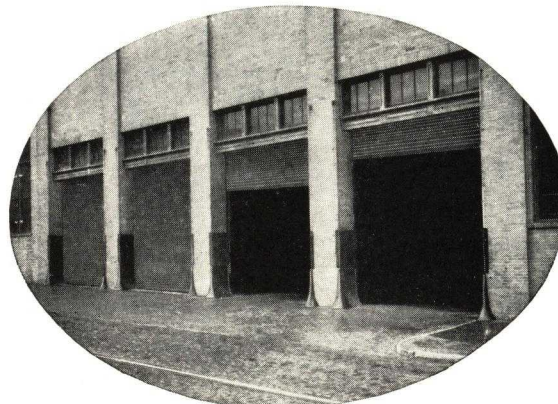
Especially made to withstand corrosive acid or oxidizing fumes, so destructive to iron and steel. Recommended for roundhouses, powerhouses, chemical plants, refrigerating plants, ice cream plants, dry kilns, etc.

Heavy Slat Doors—Made of wood slats 2 in. wide and $1\frac{1}{16}$ " thick, threaded on steel bands running from top to bottom about 18 in. apart. Each band is riveted to top slat and attached at bottom to a strong steel spiral spring anchor. This construction allows for shrinking and swelling of door due to atmospheric changes. It requires less than one minute to raise or lower the door.

The doors are treated with carbolineum, reducing to a minimum any expansion or contraction, and acting as a preservative. Doors may be obtained up to 15'8" wide and 22'0" high.

For unusually severe conditions phosphor bronze bands and anchor springs are recommended. Bronze gearing can also be furnished if desired for chain or crank operation.

Light Slat Doors—Similar to heavy slat type except slats are $\frac{13}{16}$ in. thick. Limited to use on openings not exceeding 14'0" in width and 18'0" in height.



WILSON ROLLING WOOD DOORS ON
AN ICE CREAM PLANT

1841 BROADWAY, NEW YORK CITY



ROLLING STEEL GRILLES

Allow Passage of Light and Air —

Yet Protect Against Intrusion

WIDE APPLICATION OF USES FOR:

Concessions
Gateways
Transformer Rooms
Store Entrances
Display Windows

Corridor Openings
Vaults
Storage Rooms of Various
Kinds
Produce Markets

Elevator Shafts
School Building Corridor Segregation.
Nurseries

Industrial Buildings
Commercial Buildings
Monumental Buildings
Residential Buildings

The Wilson Rolling Steel Grille affords real protection for openings where it is desirable to admit light and air yet have the protection necessary against petty theft or intrusion. It offers not only protection but a decorative screen and a practical solution of the problem.

It is made to roll overhead into a hood and is completely out of the way when rolled up.

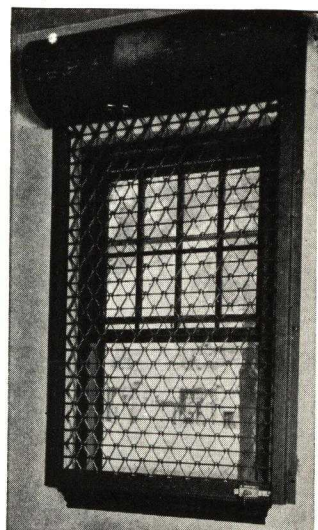
Construction and Installation

The grille embodies the same principles of construction used in Wilson Rolling Steel and Wood doors for over 60 years. It is constructed of $\frac{3}{8}$ in. round rods, separated by $\frac{1}{8}$ in. x $\frac{3}{4}$ in. steel triangular shaped links in such a way as to form a rugged, substantial curtain, yet light in appearance and operation (see details below). The grille openings are too small for the ordinary hand to pass through.

It coils on a pipe shaft enclosing a helical counterbalancing spring and travels in steel guide channels in which ends of curtain are secured to prevent the curtain's being dislodged therefrom. Coil is surrounded by a suitable sheet metal hood.

May be operated by hand, chain, crank or motor. It may be placed on the face of the wall to coil above the lintel, or between jambs and below the lintel, or on the outside face of wall, with operation from either side.

Our Engineering Department is at your service for the solution of unusual problems of installation or the preparation of architectural or engineering details.

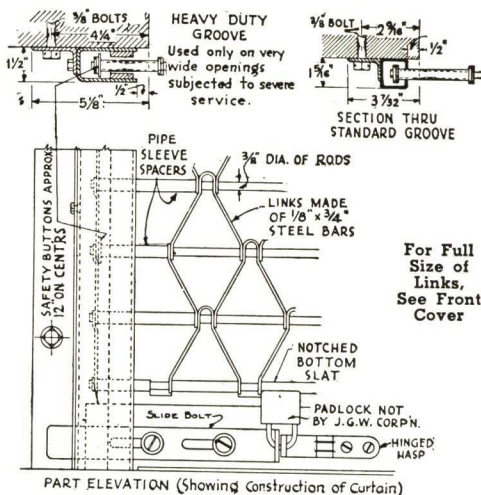


WILSON ROLLING GRILLE ON INSIDE OF WINDOW IN A WAR MEMORIAL

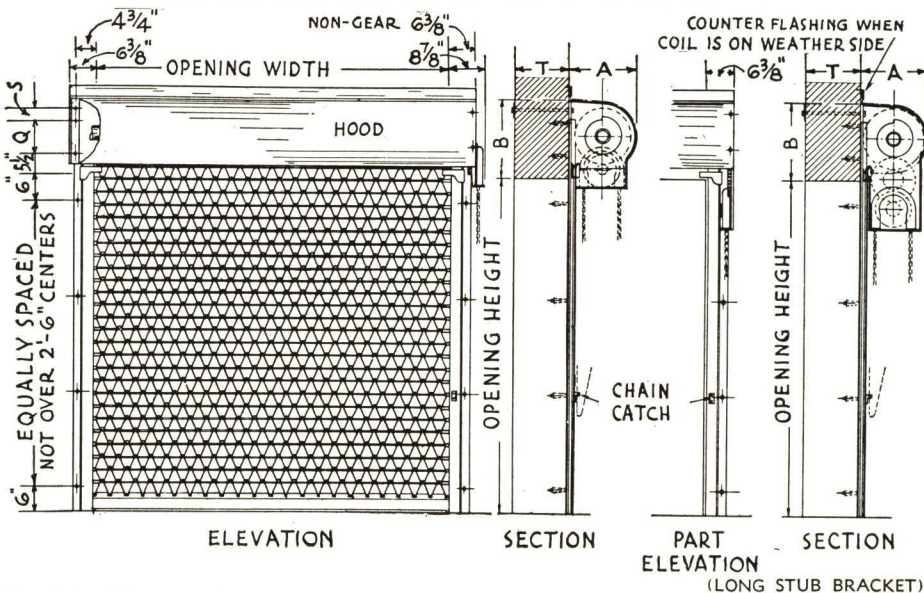
Provides adequate protection for valuable trophies.



Rolling Steel Grille, Sears, Roebuck and Co., Houston, Tex.



For Full Size of Links, See Front Cover



Schedule of Coil Sizes

Maximum Opn. Ht.	A	B	Q	S
6' 0"	14"	17"	6"	3"
7' 8"	15"	18"	7"	3"
9' 3"	16"	19"	8"	3"
11' 4"	17"	20"	8"	4"
12' 1"	18"	21"	9"	4"
14' 2"	19"	22"	10"	4"

NOTE—

Grilles for openings up to and including 8'x8' are made non-gear to be operated manually by handles on bottom bar.

LONG STUB BRACKET—

Used for openings of more than 100 sq. ft., or where sideroom is limited to 6'x8'.

SIZE OF BRACKET BOLTS—

$\frac{1}{2}$ " dia. when dimension "A" is 19" or less.
 $\frac{3}{8}$ " dia. when dimension "A" is 20" or more.

Wilson

SECTIONFOLD OVERHEAD DOORS

SECTIONFOLD
DOORS ARE EASY
TO OPERATE

For Public or Private Garages
Service Stations • Factories • Warehouses
Other Commercial Buildings

MADE IN STOCK OR
SPECIAL SIZES

MANUAL, CHAIN OR
POWER OPERATED

SUPERIOR FEATURES OF CONSTRUCTION

Simplicity of Operation—The doors can be so perfectly counterbalanced, whether chain or hand operated that a child can operate them with ease. It is the best counterbalanced door because of the means employed—the torsional spring.

Springs Built Especially for Each Door—Each helical oil tempered steel spring is made in our own factory and is designed for a specific door after its weight is known. This assures perfect balance and any adjustment is readily made through a single adjusting wheel. The counterbalancing spring is totally enclosed in a steel shaft and all bearings are ball bearings.

Continuous Vertical Track Members—Used instead of angle clips, insuring greater strength and rigidity—a feature pioneered by Wilson.

Tracks—Of hot rolled 13 gauge steel, vertical tracks attached to continuous back angles. Complete track assembly painted one shop coat of good quality aluminum primer.

Hardware—Of pressed steel, galvanized to prevent rusting. All rollers ball bearing.

Weather Seal—Rolled steel angles mounted on bucks converging toward bottom of opening. Door edges rabbetted to receive the angle in a wedging action, insuring tight closure when door is down. No binding or sticking.

Door Sections—Stiles and rails made of B & Better vertical grain spruce kiln dried, usually $1\frac{3}{4}$ " thick, through-tenoned and steel doweled to prevent water pockets, increase strength and thus add greater life to door by arresting decay.

Panels—Three-ply $\frac{3}{8}$ " thick Douglas fir, built-up with waterproof glue, all edges thoroughly sealed with white lead and oil.

Reinforcing Strips—Of 16 gauge galvanized steel on all doors over 12 ft. in width, so fastened to each section as to give maximum protection against pressure equally from both sides and to prevent abnormal sagging of the sections when raised.

Wicket Doors—These are not recommended in doors exceeding 14 ft. in width. Although we can furnish them, there is always the possibility of abnormal sagging in such installations in spite of the use of reinforcing strips. If it is possible to leave the building by other openings, it is suggested that this be used rather than a wicket door in the overhead door.

Hinged and Sliding Pilasters—For openings made up of two or more doors we can furnish hinged or sliding pilasters so as to give use of a clear opening when the doors are raised. The hinged type pilasters are raised to the ceiling by lifting cables, the sliding type moved to the side of the opening on an overhead track.

Vertical Lift Type Doors—For conditions where doors are to clear high objects, such as cars on jacks within the building, we can furnish special type track to accomplish this.

Center Tracks—For doors 21 ft. wide and up, we furnish center tracks or supports on which the doors rest when raised in the horizontal position. This eliminates any danger of sagging.

TYPES OF OPERATION

Manual

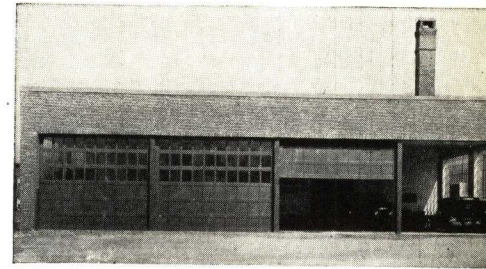
Lifted by Tru-Lay Cables—Recommended on all doors up to 12 ft. in height where the area is not over 144 sq. ft. and the thickness of the door not over $1\frac{3}{4}$ ".

Chain Hoist—Recommended on all doors over 144 sq. ft. in area or when heavy glass is used and thickness is in excess of $1\frac{3}{4}$ "; lifted by electric welded steel chain, all gears made of gray cast iron from cut steel patterns, the gearing mounted on the door brackets.

Motor Operation

Generally used for large openings or for large doors requiring quick operation by remote control. (See page 6.)

Note: Where motor operation is required, the head room needed is 19".



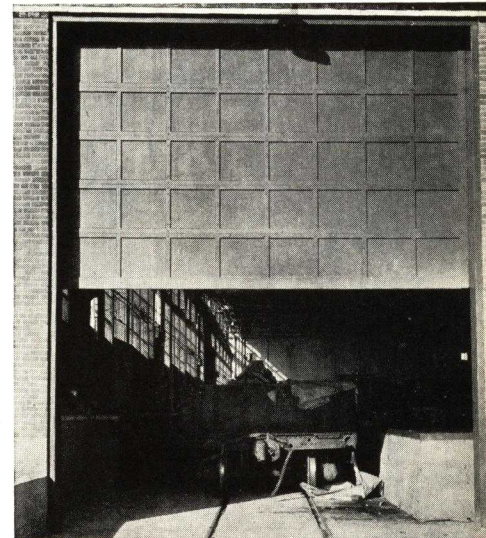
WILSON SECTIONFOLD DOORS
ON FACTORY GARAGE



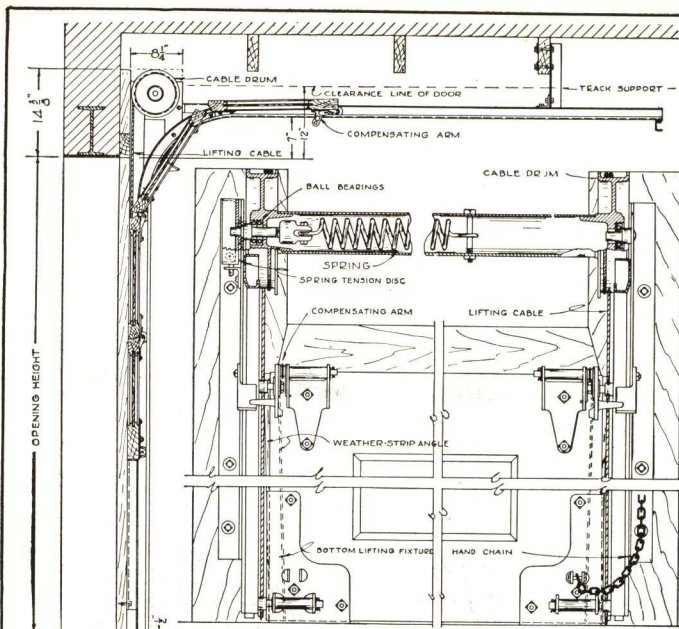
WILSON SECTIONFOLD DOORS
ON RESIDENTIAL GARAGE



WILSON BATTEN TYPE SECTION
FOLD DOORS . . .
Can be made to blend with Special
Architectural Motifs.



WILSON SECTIONFOLD DOOR
ON STEEL WAREHOUSE
Shown in half-open position.



VERTICAL SECTION

3/4 DETAIL ELEVATION OF DOOR

SCHEDULE OF DOOR PANELING

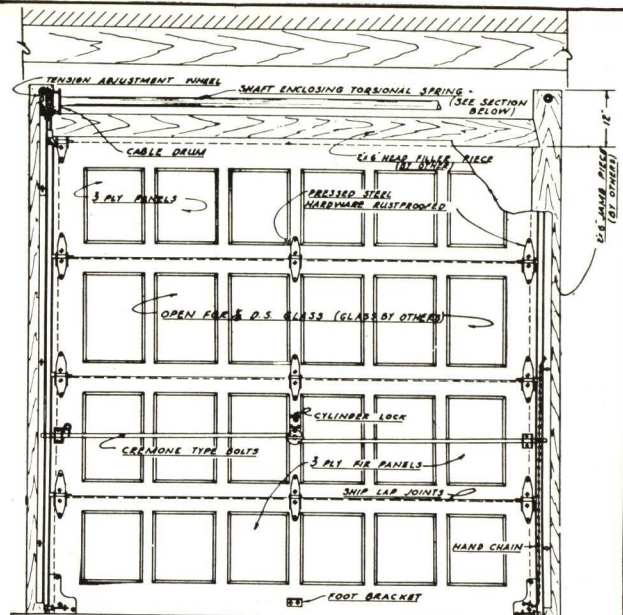
DOORS FOR OPENINGS UP TO 9'-11" WIDE TO BE MADE 4 PANELS WIDE.

10'-0" TO 11'-1"	5
12'-0" TO 13'-1"	6
14'-0" TO 15'-1"	7
16'-0" TO 17'-1"	8

DOORS FOR OPENINGS UP TO 9'-11" HIGH TO BE MADE 4 SECTIONS HIGH.

10'-0" TO 11'-1"	5
12'-0" TO 13'-1"	6
14'-0" TO 15'-1"	7
16'-0" TO 17'-1"	8

* INSIDE ELEVATION OF OPENING SHOWING WOOD BUCKS FOR DOOR OF SIZES NOTED



3/8" SCALE TYPICAL ELEVATION SHOWING HINGES AND 6 PANEL DIVISIONS FOR STANDARD STOCK MODEL
8'-0" x 8'-0" - 8'-0" x 7'-6" - 8'-0" x 7'-0"

DETAILS OF NON-GEARED SECTIONFOLD DOORS Built to Order

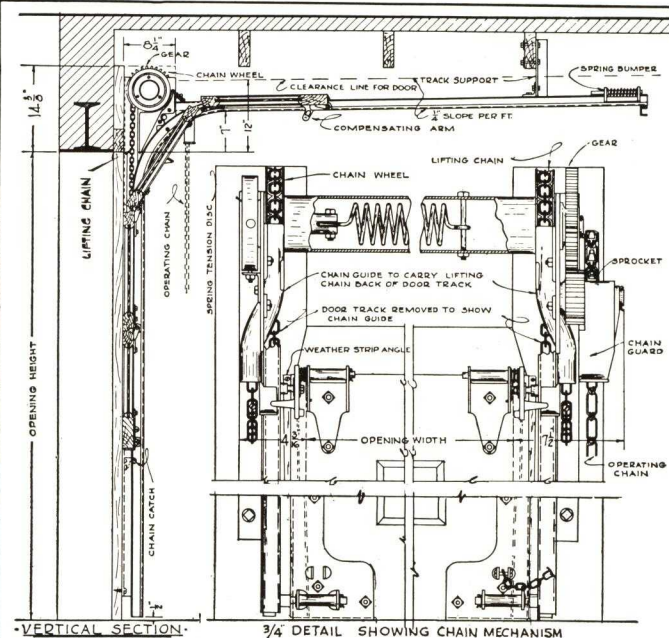


DOUBLE

ATTACHMENT OF RUBBER WEATHER STRIP TO BOTTOM OF DOOR. THIS IS NOT STANDARD - ONLY FURNISHED AT ADDITIONAL CHARGE WHEN DEFINITELY SPECIFIED.

FOR DETAILS OF HARDWARE SEE FOLLOWING PAGE

SINGLE REINFORCING STRIPS FOR BOTTOM RAIL OF EACH SECTION OF DOOR OVER 16'-0" WIDE

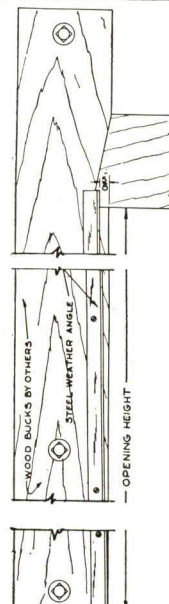


VERTICAL SECTION

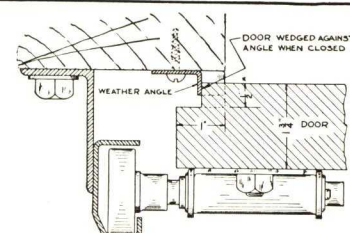
3/4 DETAIL SHOWING CHAIN MECHANISM

DETAILS OF CHAIN LIFT SECTIONFOLD DOORS

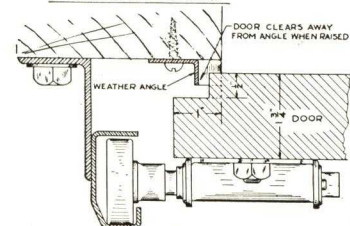
Built to Order



INTERIOR ELEVATION OF L.H. JAMB SHOWING LOCATION OF WEATHER ANGLE



SECTION THRU JAMB SHOWING DOOR COMPLETELY CLOSED



SECTION THRU JAMB SHOWING DOOR PARTIALLY OPEN

DESCRIPTION
THE PRINCIPAL OF THIS DEVICE IS THE CONTACT BETWEEN SLOPING ROUT AT SIDES OF DOOR AND STEEL ANGLES MOUNTED ON JAMBS WITH CORRESPONDING SLOPE.

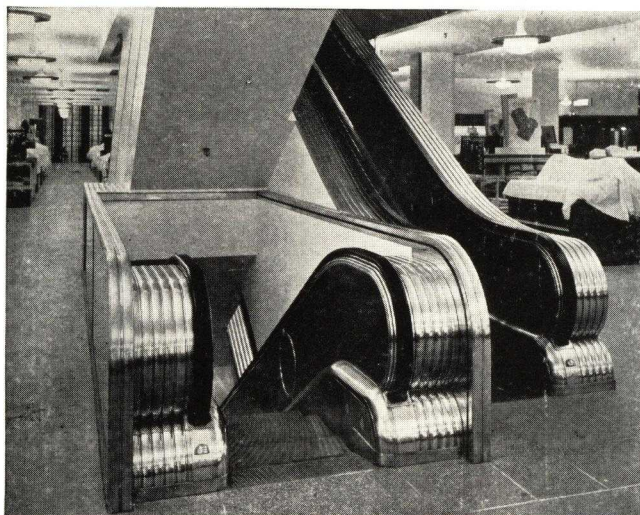
WHEN DOOR IS COMPLETELY CLOSED IT IS MADE WEATHER-PROOF BY THE TIGHT CONTACT BETWEEN DOOR & ANGLE.

WHEN DOOR IS RAISED THE ROUTING AT SIDE IMMEDIATELY CLEARS AWAY FROM ANGLE THUS MAKING DOOR ENTIRELY FREE IN ITS UPWARD TRAVEL.

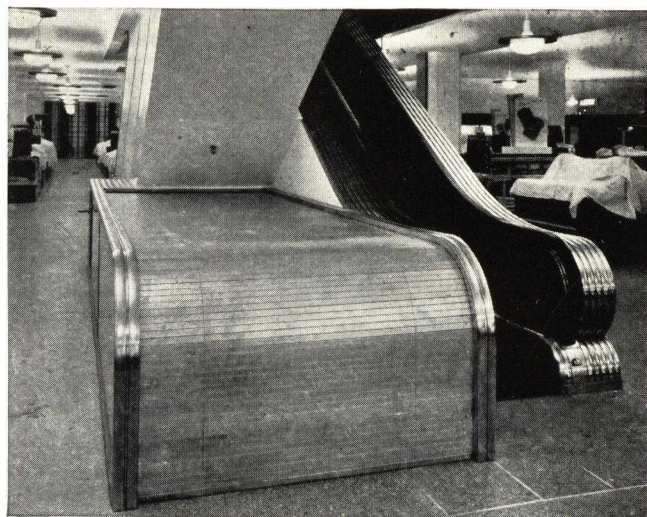
DETAILS OF WEATHER SEAL. ANGLES ON BUCKS CONVERGING TOWARD BOTTOM OF OPENING. DOOR EDGES RABBETED TO RECEIVE ANGLE IN WEDGING ACTION.

Wilson

ESCALATOR WELL ENCLOSURES



ESCALATOR WELL ENCLOSURE CONCEALED



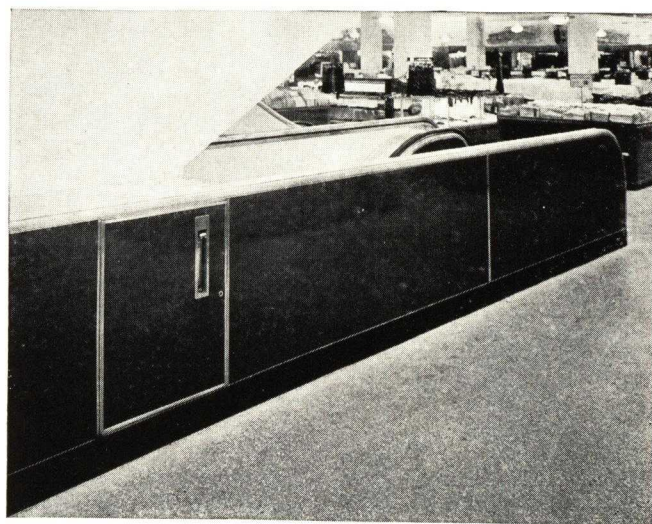
ESCALATOR WELL ENCLOSURE DRAWN OUT, CLOSING ESCALATOR WELL

Modern Escalator design and construction dictate the need of an effective cut-off to prevent the spread of fire between floors.

It is only logical that the rolling type fire shutter be adapted to this purpose. Just as the Wilson commercial and labelled fire Shutters coil in a confined space overhead without encroaching in any way on valuable floor or wall space, are easy to open and close and require a minimum of upkeep and maintenance, so do Wilson Escalator Well Enclosures commend themselves.

Simplicity in design, construction and operation is a prerequisite for any device required to be operated in an emergency. In the design of the Wilson Escalator Well Enclosure, cables, chains and springs have all been eliminated. Opening and closing are both effected thru a single fixed crank. Revolving the crank clockwise closes the opening and revolving it counter-clockwise opens it, without shifting gears, pressing buttons, relocating crank or making any other preliminary maneuvers whatever. Crank folds into recess and does not project beyond well wall. It is always in place and ready for immediate use.

Simplicity is carried a step further. The entire Wilson unit with the exception of the guides which are built into the well wall, can be removed and replaced at will through the access door provided. The entire unit is self-contained and self-supporting.



OPERATING CRANK RECESSED ON SIDE OF ESCALATOR WELL
Photo Also Shows Access Door of Wilson Unit

All shaft bearings are ball bearings and the entire movement of the curtain is carried on hard bronze rollers revolving on machined steel pins.

Wilson Escalator Well Enclosures can be had with electrical operation and with self-closing device when desired.

The Wilson Escalator Well Enclosures have been installed in the new Sears-Roebuck Building at Baltimore, Md., and in the B. Altman store in New York City.

Our Engineering Dept. is placed at your disposal to assist in its application in connection with old and new work and in collaboration with the escalator manufacturers.

THE J. G. WILSON CORPORATION

Wilson PARTITIONS

For those who are interested in modernizing their present buildings and those planning new buildings with limited funds available, Wilson Partitions are a real economy. They are actually "movable walls" as they provide larger or smaller rooms as occasion demands, and eliminate the necessity of additions or alterations to present buildings. They may be designed to harmonize with any interior, old or new.



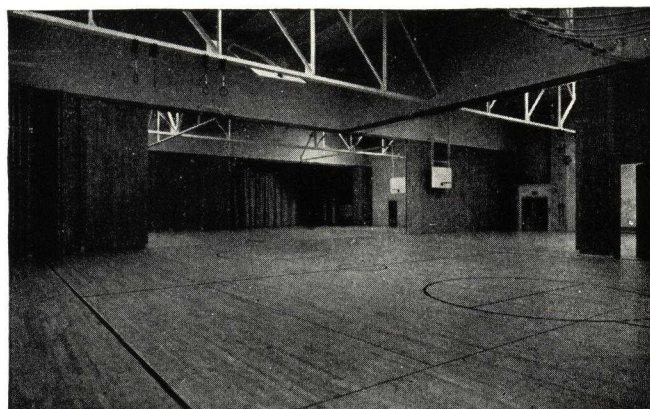
Our Engineering and Erecting Departments are at the disposal of architects, contractors or owners for the solution of any complicated installations.

Wilson Partitions are manufactured in their entirety within the confines of one plant. Wilson, and Wilson alone, is responsible for the quality of every part entering into the making of Wilson Partitions, be that part but a door handle or a guide track.

SECTIONFOLD — Floor Supported

Sectionfold Partitions should not be confused with so-called "accordion" or "assembled" partitions. The doors are operated in pairs and not in large unwieldy units. The entire weight of the partition rests on the floor track and Sectionfolds do not require special overhead trusses for supporting members. The head guide, or track, is employed only to keep the partition in alignment and to provide a means of securing the unique locking features characteristic of Wilson Sectionfold.

Because of these features we feel justified in our claim that there is no comparison between our product and doors hung on ordinary hardware made to imitate the Wilson.



"Sectionfold" Partitions Dividing Large Gymnasium Into Three Units and Shutting Off Stage

MULTIFOLD — Overhead Hung

This partition has been developed to meet the needs of churches and small auditoriums where an inexpensive, sound-retarding partition of canvas-covered doors will suffice. The Multifold Partition is a relatively inexpensive partition of light construction—the entire weight of the doors being carried overhead on a roller-bearing, four-

wheel trolley. It may be hand, crank, or electrically operated.

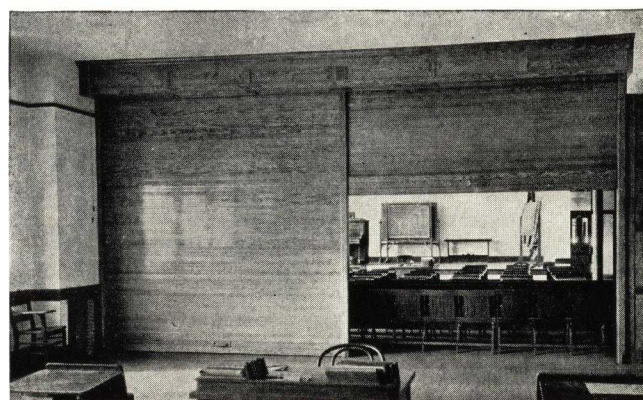
This partition can be furnished with a small, inconspicuous floor track—used only as a guide to keep the doors in alignment when traveling across the opening, or with floor bolts in alternate doors.

ROLLING PARTITIONS — Horizontal and Vertical

Where subdivision of rooms must be most economically accomplished, Wilson Rolling Partitions will be found superior to every other means. Simplicity of construction and lack of mechanical contrivances assure ease of operation for many years, with no maintenance cost. Little or no provision need be made for their installation. They may be made to roll up or sideways.

One side of horizontal type may be finished a flat, smooth surface and coated with black silicate, providing additional blackboard space. This is applied to the side opposite the coil only.

Openings of any width may be closed by use of movable posts. Made in all woods and finishes.



Horizontal Rolling Partitions Used in a Grade School


Catalogue, Giving Further Information, Details and Specifications, Furnished on Request

1841 BROADWAY, NEW YORK CITY



Wilson

SECTIONFOLD OVERHEAD DOORS



Above — Wilson Sectionfold Overhead door in warehouse, raised. Note reinforcing truss and stiffening members between sections to prevent sagging.

At right — Same door closed. Weather tight angles give snug fit, keeping out the elements, saving fuel.

All panels made with waterproof glue.

THE J. G. WILSON CORPORATION

General Offices

1841 BROADWAY, NEW YORK CITY

FACTORY—NORFOLK, VA.

Sales representatives in all principal cities

BETTER BILT DOOR CO.

Manufacturers of Overhead Type Doors

GENERAL OFFICES

119 West Avenue
JENKINTOWN, PA.

NEW YORK CITY OFFICE: 103 Park Avenue

DISTRIBUTORS IN PRINCIPAL CITIES

Better Bilt Specifications

Clearances Required—Headroom—Doors up to 175 sq. ft. in area, 10½ and 12½ in. Doors over this area and mechanically operated, 22 in. Doors up to 100 sq. ft. can be equipped at extra cost with low headroom tracks—minimum 7½ in.

Sideroom—Hand operated doors 3½-in. stretch springs. Hand operated doors 8-in. torsion springs. Chain operated doors 6½ in. chain hoist side only.

Motor operated doors Models BC and BCML 15 in.

Stiles and Rails—Douglas Fir standard 1¾ or 1⅝ in. thick. Other woods at slight extra cost.

Panels—Three-ply ⅜-in. Fir.

Track—Vertical—Clip angle mounted up to 120 sq. ft., over 120 sq. ft. continuous angle mounted.

Horizontal — Over 100 sq. ft. angle mounted.

Joints — Mortise and tenon waterproof glued, steel doweled. Shiplap between sections.

Hardware — Extra heavy — guaranteed. Full 8-in. hinges, rigid track, steel ball bearing rollers. Chain used for lifting, cylinder type lock operating lock bars across the entire width of door. Doors over 12 ft. wide reinforced with steel struts.

Guarantee — Doors and hardware for one year. Counterbalancing springs five years. Electric equipment ninety days.

Engineering Department—At your disposal to solve your door problems.

Accessories

In connection with BETTER BILT DOORS the following accessories can be furnished:

Wicket Doors

Swinging or Sliding Posts (require 22½-in. headroom).

Chain Hoist Operators (require 21½-in. headroom and 6½ in. sideroom on chain operator side of door only).

Electric Operators with any desired type of control (write for headroom in addition to that required by door and accessories).

High Lift to clear hydraulic greasing lifts.

Sections for Door Height

Doors up to 8-ft. 6-in. Four sections

Doors over 8-ft. 6-in. to 10-ft. 6-in. Five sections

Doors over 10-ft. 6-in. to 12-ft. 6-in. Six sections

Doors over 12-ft. 6-in. to 14-ft. 6-in. Seven sections

Note: All doors of special "built-to-order" type are built up in unit sections of approximately 2 ft. in height.

Metal Covered Kalamein or Tubular Steel Doors

BETTER BILT DOORS can also be furnished in metal covered kalamein or tubular steel. Further information on request.

Stock Door Sizes

Stock sizes are as follows: 8-ft. x 7-ft.; 8-ft. x 7-ft. 6-in.; 8-ft. x 8-ft., doors 1¾ or 1⅝-in. thickness.

We also manufacture any size or style of door to your details and specifications.

Note: Doors of special detail can be manufactured meeting the various architectural design requirements. In this, and matters of special track layouts, our *Engineering Department* is completely at your service, furnishing proposed designs and possible arrangements of accessories to answer your problem. BETTER BILT Door offers a complete line of accessories, wicket doors, low headroom,



Industrial Doors

Better Bilt Door facilities enable us to build doors up to 35 ft. wide and almost any height, manually or electrically operated.

posts, etc., as already listed.

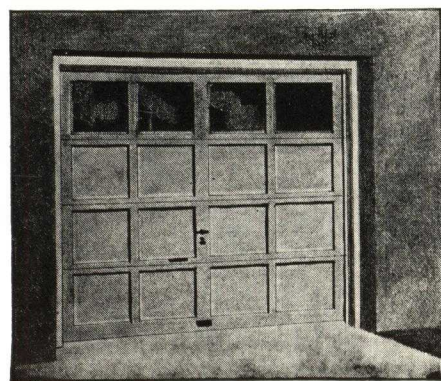
Shipping Facilities

Shipment of above stock sizes can be made within 48 hours. Other sizes made to order and shipped within 10 days. Shipments made from our plant via water, rail or motor truck.

Installation

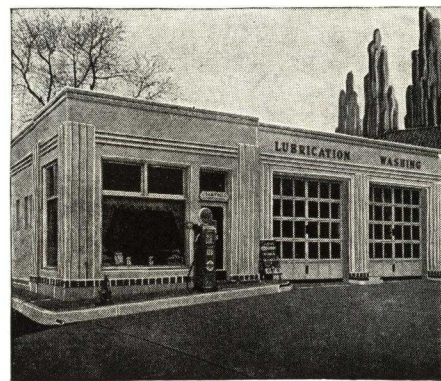
Erection instructions will be furnished with each door, or our local distributor will supply erectors, if desired.

In the past, the idea has been sold that overhead type doors could only be installed by experienced mechanics employed by the agents of the door company. There is no more skill or experience required to erect the Better-Bilt Door than a swinging or sliding door. In fact, it is easier and faster to erect.



Residential Doors

A separate catalogue with full details on INDUSTRIAL DOORS, RESIDENTIAL DOORS and SERVICE STATION DOORS has been compiled and will be sent on request.



Service Station Doors

Better Bilt Doors Are Easy to Install

BARBER-COLMAN COMPANY

Barcol OVERdoors and Door and Gate Operating Equipment ROCKFORD, ILL.

For our pages on Temperature and Humidity Control Equipment and Uni-Flo Grilles and Registers, see File Index

Barber-Colman Doors and Operators

Barcol OVERdoors—An improved type of overhead or upward-acting door suitable for residence and commercial garages, automobile service stations, factories, fire stations, terminals, etc. Three models.

Door Operators—Motor-driven equipment for opening and closing all types and sizes of doors. All conventional controls.

Gate Operators—Motor-driven equipment for opening and closing swinging and sliding gates. All conventional controls.

Radio Control—A special control for door (or gate) operators. Garage doors can be opened and closed from moving automobile.

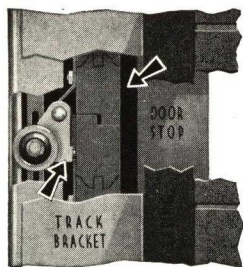
Information, installation and service on all these items are provided by branch offices and representatives in principal cities.

In Canada the Barcol OVERdoor is manufactured by the A. B. Ormsby Co., Ltd., Toronto, Ontario, under the name Ormsby-Barcol OVERdoor.

Barcol OVERdoors

The Barcol OVERdoor is an *improved* overhead door which is *weather-tight but easy working*.

Closing Action—A special closing action provides a positive, weather-tight, rattleproof fit, and at the same time prevents sticking and dragging between door and jamb. (Detail at hinge shown below.) The top illustration shows how the door is always carried by the rollers well away ($\frac{1}{2}$ in.) from the stop strips, except when fully closed. As the door closes, a stop on the track engages a lever, which, by links, draws up all the hinge roller cranks, as shown in the lower illustration, and pushes the door uniformly and firmly against the stop strips on sides and top. Because of this, the door runs freely even in wet weather when the wood parts swell, but closes with a weather-tight fit.



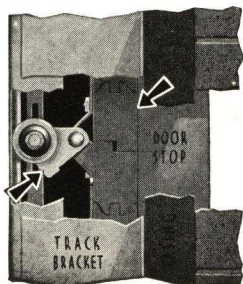
Counterbalancing

—Accurate counterbalancing is provided by two six-inch diameter tailored "twin torsion" springs, one above each side of the door, connected to the lower corners by flexible steel airplane cables. The arrangement is neat, *safe*, strong, quiet, and easily adjusted.

Rollers—Rollers are equipped with one piece steel tires and ball bearings with large diameter race. They are designed to run easily and stand hard use.

Vertical Track Brackets

—Vertical track brackets are continuous, forming a rigid support for vertical track and counterbalancing spring assembly. The continuous



For Better Homes
Specify the
Radio Control
See Page 4

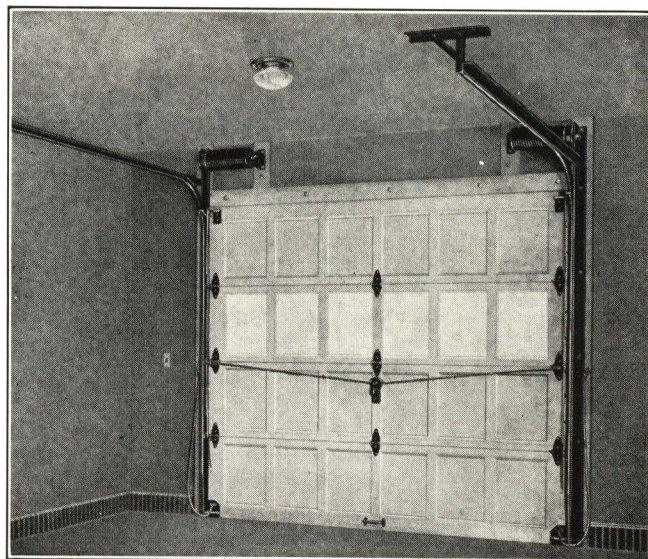


bracket also shields the roller and cable mechanism from damage and from possible contact with anyone standing near the door.

Hinges—An ample number of tubular pin hinges are provided to insure proper operation and endurance.

Door Sections—Standard wood sections are made of full $1\frac{3}{4}$ in. Sitka Spruce or Western Pine stiles and rails and three-ply fir panels. Joints are mortised, glued with waterproof glue, and steel pinned through the tenons.

Latch and Lock—The door latches and locks the same as a house entrance door. Spring-operated bolts engage adjustable bolt strikes when door is closed. One central handle withdraws both bolts simultaneously. Handle locked by *full size* standard cylinder lock with night latch.



Standard Model 50 Barcol OVERdoor

Showing Position of Tailored "Twin Torsion" Counterbalancing Coil Springs

Models—Three models are available. Model 75 is the best door, with refinements such as zinc-cadmium plated hardware, rubber astragal, and primed wood sections. Model 50, which is considered the "standard" door is the same as Model 75 without the refinements. Model 40, the lowest priced OVERdoor, is the same as Model 50 except that it does not have the special closing action, and is equipped with a cremone bolt lock. Its points of superiority to competitive doors are its "twin torsion" springs

and its continuous track brackets.

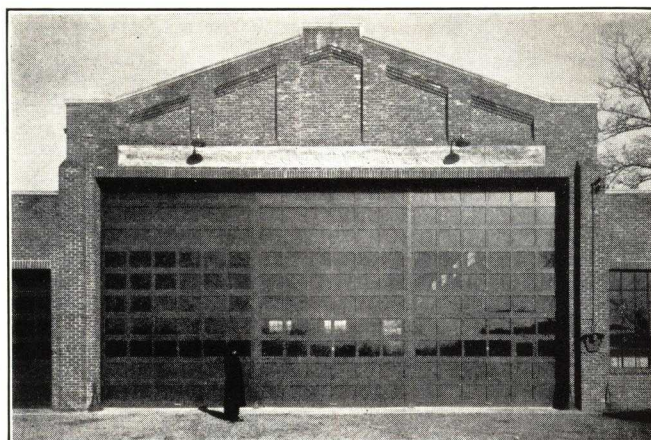
Stock Sizes—All models are available in five stock sizes: 8 x 6 ft. 8 in., 8 x 7 ft., 8 x 7 ft. 6 in., 8 x 8 ft., and 15 x 7 ft. Special sizes up to 20 ft. wide and 16 ft. high can be provided.

Special Designs—Special design doors to match architectural style of building can be made to order. Metal or metal-covered door sections are available in several types.

Special Devices—Many special devices are available, including provision for low headroom, a wicket door, reinforcement for wide doors, removable mullions, chain hoist, vertical doors, extra vertical clearance, etc.



OVERdoors on Service Station



Large Institution Garage

Sample Specifications

Model 50—Doors shall be Barcol OVERdoors, Model 50, as manufactured by Barber-Colman Company, Rockford, Ill. They shall be of a size as shown on the plans, and shall be accurately counterbalanced by means of tailored "twin torsion" springs connected to the lower corners by flexible steel airplane cable of ample strength, running inside the vertical track brackets.

Doors shall be equipped with a closing action which shall provide not less than $\frac{1}{4}$ -in. clearance between door and door stops when the door is 3 in. and more open, but which shall bring it snugly against the stops at top and sides when closed.

Vertical tracks shall be furnished with continuous track brackets.

Doors shall latch automatically when closed. Locking shall be by means of standard size lock cylinder and night latch.

Doors shall be installed by the local distributor of the manufacturer.

Model 75—(The following three items convert Model 50 to Model 75. Any of them can be furnished on Model 50 as an extra.)

Hardware shall be zinc-cadmium plated.

Sections shall be primed before delivery.

A rubber astragal in the form of an upright "U" shall be fastened to the bottom of the door for its full width.

Model 40—Doors shall be Barcol OVERdoors, Model 40, as manufactured by Barber-Colman Company, Rockford, Ill. They shall be of a size as shown on the plans, and shall be accurately counterbalanced by means of tailored "twin torsion" springs connected to the lower corners by flexible steel airplane cable of ample strength.

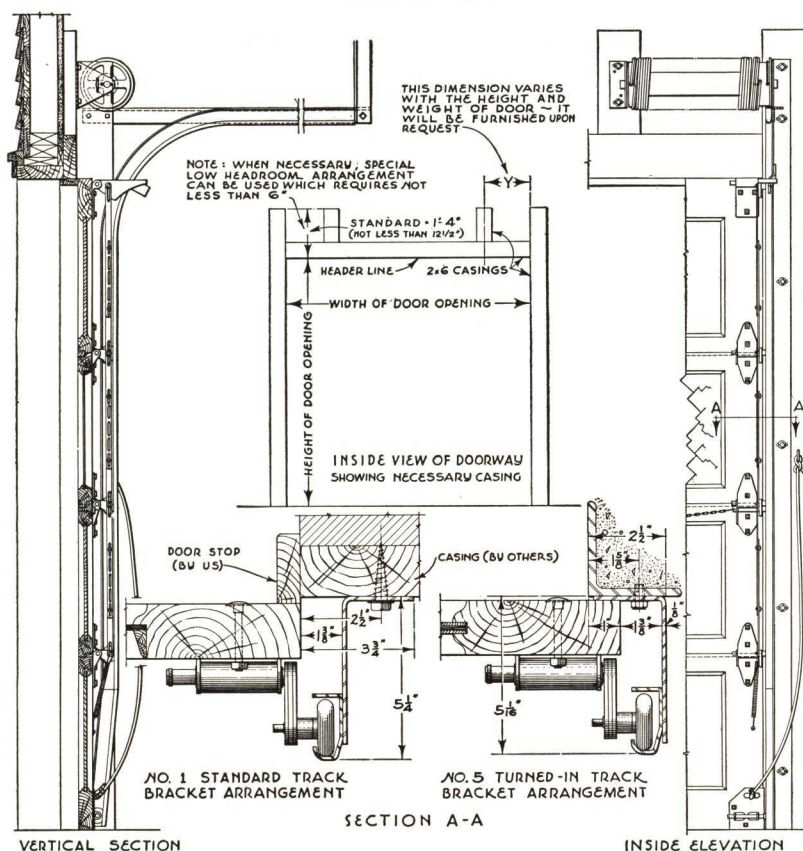
Vertical tracks shall be furnished with continuous track brackets.

Doors shall be installed by the local distributor of the manufacturer.

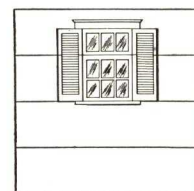
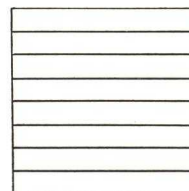
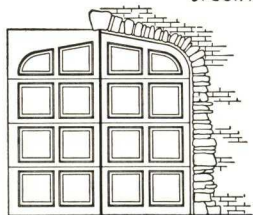
Casing Specifications—(To be included in the carpenter's specifications).

Door opening shall be cased with standard 2x6 lumber as shown on the detail to be furnished by the local distributor of Barcol OVERdoors.

BARCOL OVERDOOR MECHANISM AND CASING SHOWING DETAILS OF CONSTRUCTION MODEL 50



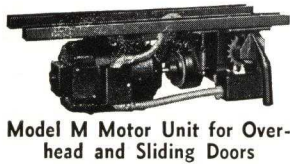
EXAMPLES OF
SPECIAL DESIGNS OF BARCOL OVERDOORS



For Barber-Colman Door and Gate Operating Equipment See Next Two Pages

OPERATING EQUIPMENT

Electric Door Operators



Model M Motor Unit for Overhead and Sliding Doors

Motor-driven Door Operators provide a means for opening and closing doors by power, and find their principal applications in residence and commercial garages, and some industrial buildings.

Barber-Colman Door Operators are simple and rugged in construction, and provide proper operation of the door at lowest maintenance cost.

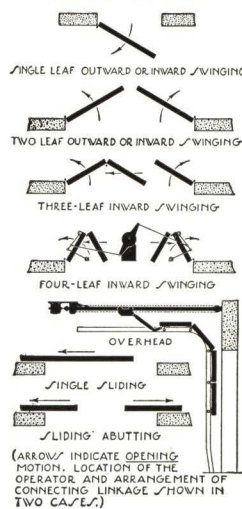
An electric motor, through a clutch, drives a speed reduction mechanism which is linked to the door. Limit switches are provided which automatically stop the door accurately when fully opened or closed.

The various types of doors which can be handled by these operators are diagrammed above. Two principal types of operators are provided: the



Model V Motor Unit for Swinging Doors

DOOR TYPES



Model M for overhead and sliding doors, and the Model V for swinging doors. The Model S is a special form of the Model M, for residential overhead garage doors.

Control for these operators is obtained from any of the conventional types of switches, or from the "electric eye," or from the Radio Control. Switch controls include: the regular wall switch, the driveway post, the driveway plate, and wall switches suitable for exterior mounting. Special delayed-operation controls can also be provided.

Electric Gate Operators

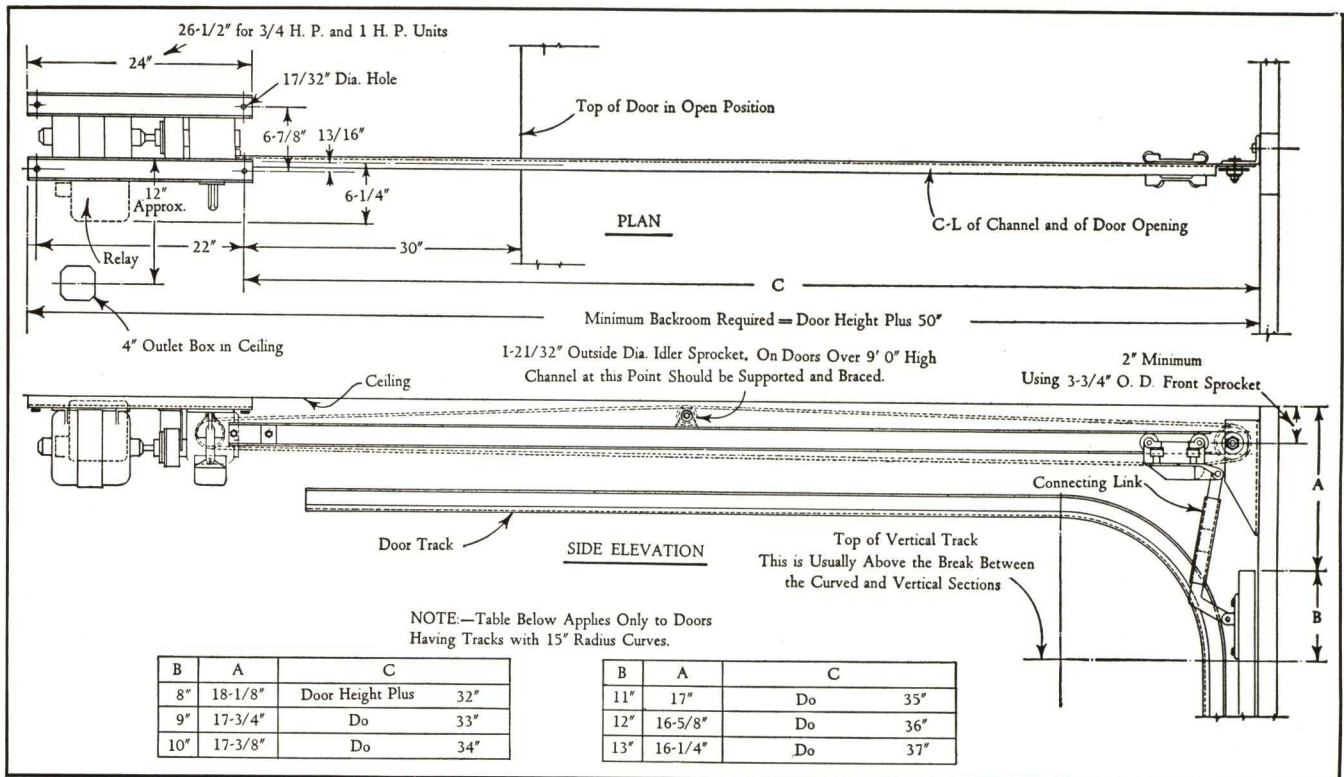
Motor-driven Gate Operators can be provided for most types of swinging and sliding gates, such as are found at entrances to estates, clubs, some residences, public buildings, factories, stadiums, etc.

The motor drives a speed reduction mechanism which is linked to the gate in the proper manner to operate it as required.

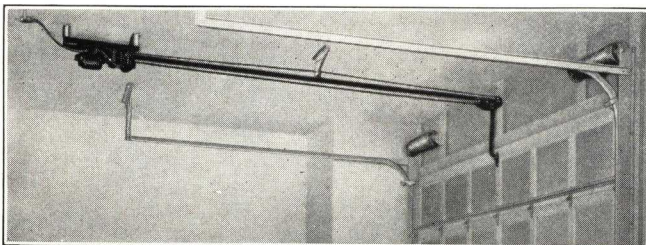
All parts are carefully protected from the weather and are ruggedly made to insure lasting service.

The same types of controls used on Door Operators can be applied to the Gate Operators, including the Radio Control.

Standard Installation Layout of Models M and MR Operators for Overhead Type Door



Sample Specifications for Operator for Overhead Type Door



Door Operator shall be Model — as manufactured by BARBER-COLMAN COMPANY, shall require but momentary (or con-

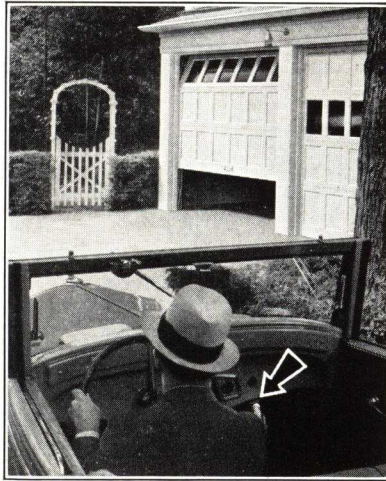
stant) contact of the control switch, and shall include the following: Westinghouse, General Electric, or Leland motor of ample power and adapted to the type of electric power available; speed reduction by worm and worm gear running in oil; limit switch to shut off motor when door is fully open or closed; slip clutch for safety; *release device so door can be operated manually, if power is off, without removing bolts or pins or disturbing adjustment. *(Omit on residential jobs.)

Control shall be by wall switches located as shown on plans.

RADIO CONTROL

A Proven Convenience Backed by the Standard Barber-Colman Guarantee

The Radio Control is a Barber-Colman development which provides a means for opening and closing garage doors from a moving car. The driver pulls a knob or pushes a button on the instrument board and this sends a signal from the car as it approaches the garage. This signal actuates the standard operator, which opens the doors in the usual manner. Another signal from the car causes the doors to be closed. It is not necessary to stop the car, or get out of it, or reach out in any way.



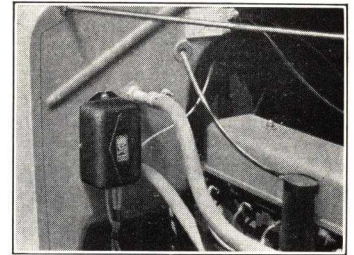
Opening the Doors with the Radio Control

As an additional feature, at night the lights in the garage and along the driveway are turned on when the doors are opened.

Special coding or frequency of the automatic transmitter of the Radio Control provides privacy and prevents operation due

to other electric impulses such as lightning.

The Radio Control includes the automatic transmitter installed in the car and an automatic analyzing receiver located in the garage. The signal from the car is picked up by a receiving antenna in the driveway.

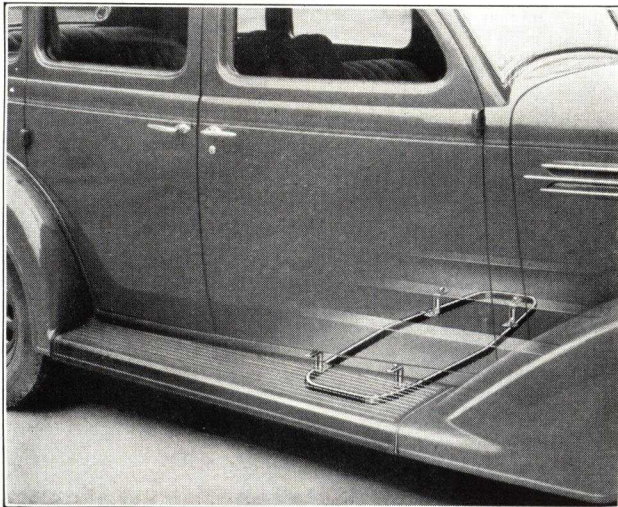


Model C Transmitter on Dash Board

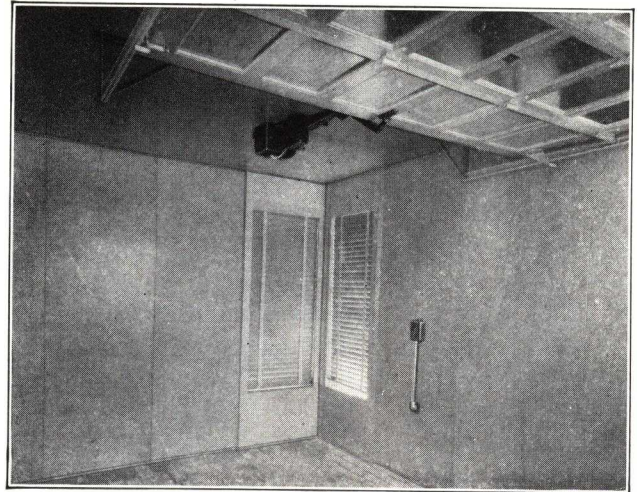
This device is entirely reliable, as shown by numerous fine residence garage installations which have been operating continuously for the past seven or eight years.

The Radio Control can also be used in connection with Barber-Colman Gate Operators, affording an unusual convenience at entrances where there is no gatekeeper.

Transmitting equipment can be readily removed from one car and installed in another.



Model C Transmitting Coil Under Car

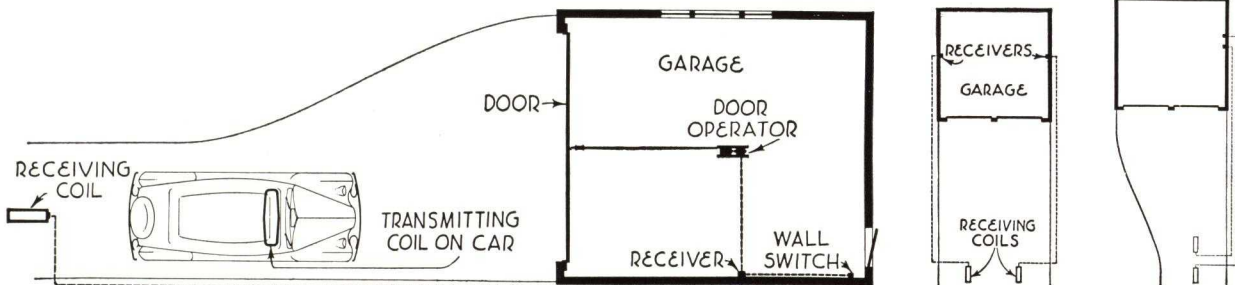


Model C Receiver on Wall in Garage

Sample Specifications

Control of garage doors and lights shall be by wall switches located as shown on plans and from the car by Barber-Colman Radio Control—the latter to be selective between installations by difference in coding or frequency, and not permit operation of the doors by other electrical impulses such as lightning.

Typical Layouts — Model C Radio Control



Radio Control is now available in simplified form at lower cost.

McKEE DOOR COMPANY

MAIN OFFICE AND FACTORY

AURORA, ILLINOIS

BRANCH OFFICES OR REPRESENTATIVES IN PRINCIPAL CITIES

ST. LOUIS, MO., McKee Door Co. of Missouri, 1322 Delmar Blvd.

PITTSBURGH, PA., McKee Door Co. of Penna., 261 Broadmore Ave.

METROPOLITAN NEW YORK AREA, McKee Door Sales Co., 168-45 88th Ave., Jamaica, L. I., N. Y.—Telephone, Republic 9-7016

CHICAGO, ILL., McKee Door Co. of Chicago, 2235 W. Grand Ave.—Telephone, Monroe 3000

Products

Manufacturers of "McKee Doors," "McKee Steel-Door" of sectional overhead type, hand or electrically operated, for residential garages, service stations, factories, warehouses, loading platforms, commercial garages, and many other uses; "VERTICAL LIFT" weight counterbalanced doors where adaptable.

Description

Doors are scientifically engineered, made for any opening, manually or electrically operated, furnished with variations in construction adapting them to the conditions. The doors save space opening up out of the way, are quickly opened or closed saving time and heat loss. Operation is not affected by snow or weather.

Standard doors are panel design with any openings desired prepared for glass. Special door designs as Batten Type, Raised or Special Panels, Raised Moulding, Segment Head, Special paneling arrangements, Flush Doors, Shutters, Louvres, and of Special Lumbars available.

Sizes of sections, hardware and counterbalance are designed for each particular size door of proper strength and rigidity for operation and service.

An Architects Catalogue showing many suggested special designs and hardware details may be obtained on request.

Specifications

"McKee Doors" are furnished complete, including door sections, all hardware, locking device, counterbalancing means, tracks, stop moulding, hangers. Installation is made by factory or their representatives with trained skilled mechanics, insuring proper door operation.

Opening preparation and jambs by others.

No painting or glass furnished unless specified.

Doors give full clear opening when open.

Wedge closing action as doors are moved to full closed position gives weather-tight fit all around, yet freeing itself from jamb stop when opening, allowing free operation.

Doors may be locked or unlocked from either side. Locking device is Sargent Cylinder Lock, key operated outside, engaging with heavy steel bars positively bolting through tracks on both sides of opening. Cylinders keyed alike or master-keyed if desired. Adaptable also "Inside Lock Only" when specified.

All moving parts are roller or ball-bearing design with floating roller shafts. Heavy sash cord pull down ropes furnished and suitable lift pulls each door. All hardware applied with step or carriage bolts.

Twin spring counterbalance with direct pull to door, enabling perfect balance in all positions, each spring operating individually to respective side of door, exert full proper tension, eliminating binds.

Doors give easy, quiet, smooth operation.

Standard doors are paneled design, stiles and rails of Sitka Spruce, 1 3/4 in. thick, 3/8 in. 3-ply Fir panels, mortised and tenoned construction, 3/8 in. rabbeted section joints. All sections furnished paneled or any open for glass in positions specified.

SPECIAL FEATURES

Used where specified only
RUBBER ASTRAGAL on bottom rail.

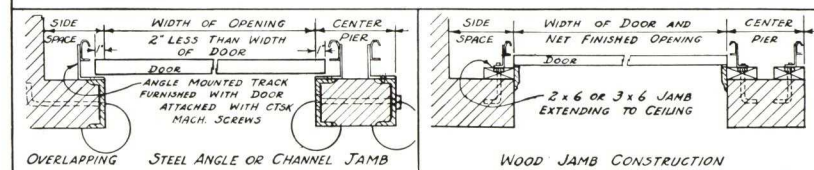
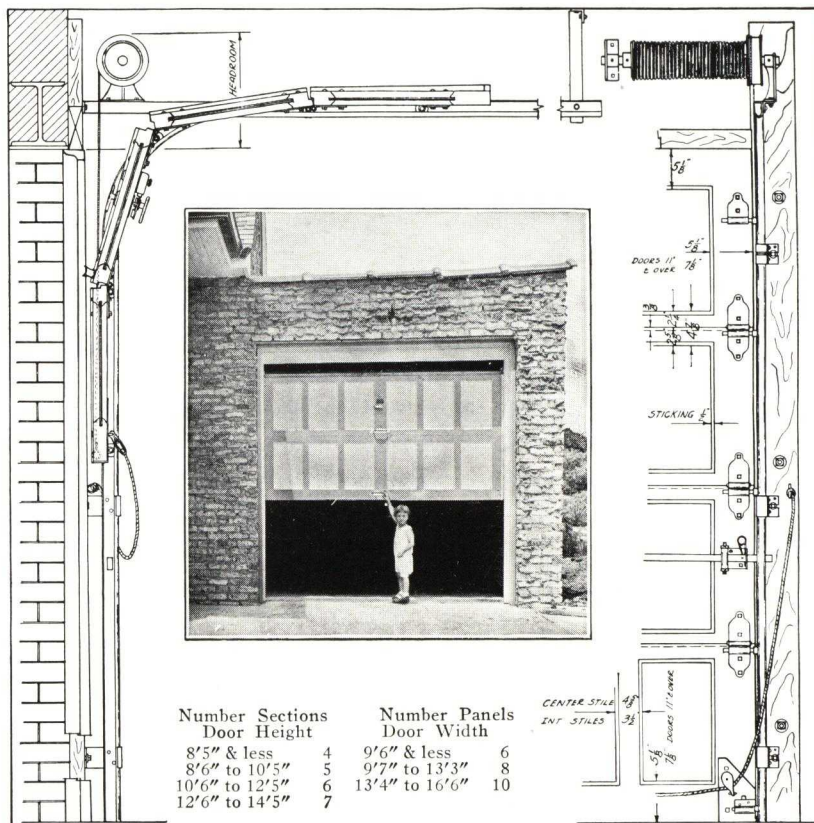
Udylite Hardware Finish, "CADMIUM PLATING" or other rust proofing process.

TOXIC PRESERVATIVE and WATERPROOF Treatment for the wood doors.

EXTRA CLEARANCE construction for more space above opening under door when open. Tracks extend vertically to a maximum of 6'0" above opening before turning horizontally, or to within 10" of ceiling as standard, minimum 6". Effective counterbalance is maintained in the vertical travel of the door by winding cable on cone drums to change radius arm.

SERVICE DOOR approximately 2' x 5' 6", built up in lower three sections on side of door specified. Furnished to open outwardly, kept constantly closed by spring closer, with cylinder lock for same. Not recommended for doors over 12' wide.

For lesser space requirements, Special Constructions available to fit in particular conditions, consult us for details.



HARDWARE DETAILS

RESIDENTIAL MODEL

Stock Sizes—8' 0"x 8' 0", 8' 0"x 7' 0", 8' 0"x 7' 0", both 1 3/4" and 1 3/4" thick.

Tracks—2"—13 gauge, 15" radius, special steel formed section so rollers can not pull out, bracket mounted.

Rollers—Ball-bearing, pressed steel, hardened raceways.

Hardware and Hinges—12 gauge, all hardware, tracks, and springs black japan finish.

Counterbalance—Twin Torsional roller-bearing spring assemblies, adjustable to exact tension. (Optional encased ball-bearing motor spring assemblies.)

Lifting Means—3/8" 7x19 tinned steel cable, 2400 lb. tensile.

Space Requirements—Headroom 16", Side Space 4", Center Pier 8".

Low Headroom Construction

13" Headroom—Springs mounted rearwardly, cable operates over idlers.

6" Headroom—Quick turning special top roller and track assembly, springs mounted rearwardly. Side space 6", Center Pier 12".

LARGER SIZES

Tracks—2"—13 gauge 15" or 20" radius, both vertical and horizontal tracks mounted with continuous angles.

Rollers—Ball-bearing fully machined raceways, case hardened. Roller shaft engages two end hinges on wider doors.

Hardware and Hinges—12 gauge and heavier, all hardware, tracks, and springs black japan finish.

Trusses—All doors 12' and wider have sections reinforced with steel truss members. Deeper trusses used for wider width doors.

Counterbalance—Twin Torsional roller-bearing spring assemblies, direct pull, oil tempered spring steel, adjustable for exact tension.

Lifting Means—3/8" 7x19 airplane cable 2400 lb. or 4200 lb. tensile.

Space Requirements—Headroom for 15" radius tracks 18"; Headroom for 20" radius tracks 22". Side Space 4". Center Pier 8".

Special Construction made for 2" less headroom than shown, or 13" headroom construction available.

HEAVY LARGE DOORS

Recommended over 180 sq. ft. and over 16' 6" wide.

Tracks—3"—11 gauge 20" radius, mounted with continuous angles, with 3" rollers.

Space Requirements—Headroom 22", Side Space 5 1/2", Center Pier 11".

AUXILIARY EQUIPMENT

Electric Operators—Model FM

Construction—Heavy unit particularly adaptable for commercial uses to withstand constant and continuous operation. Momentary contact unit, Built-in Gear Reduction in motor, Magnetic Brake, Limit Switch veneer adjustment, Reversing Relay, Three Button Control, "Up," "Down," "Stop."

One Control Station furnished. Extra and Special Type Controls when specified. Wiring to circuit by others.

Residential—Model C

Adaptable for residential use only with all features, including control from automobile by induction coil.

Space Requirements—Headroom additional 4" over standard, or 7" over minimum.

Chain Hoist

Recommended over 190 sq. ft., over 18' wide, over 13' high. Not required if electric operated.

Construction—Carriage in track centered over door with arm pushing or pulling door, connected to hand wheel and chain on side of door specified.

Space Requirements—Headroom as electric operators. Side space for hand wheel 14".

Movable Post

For wide openings to give full unobstructed width.

Space Requirements—Headroom 21", Side Space to which post rolls 16".

Note: Steel Jambs, track continuous angle mounted, requires 1" additional side space; 2" additional center pier width.

OVERHEAD DOOR CORPORATION

MAIN OFFICE AND FACTORY
HARTFORD CITY, IND., U. S. A.

THE



THE DOOR WITH THE MIRACLE WEDGE

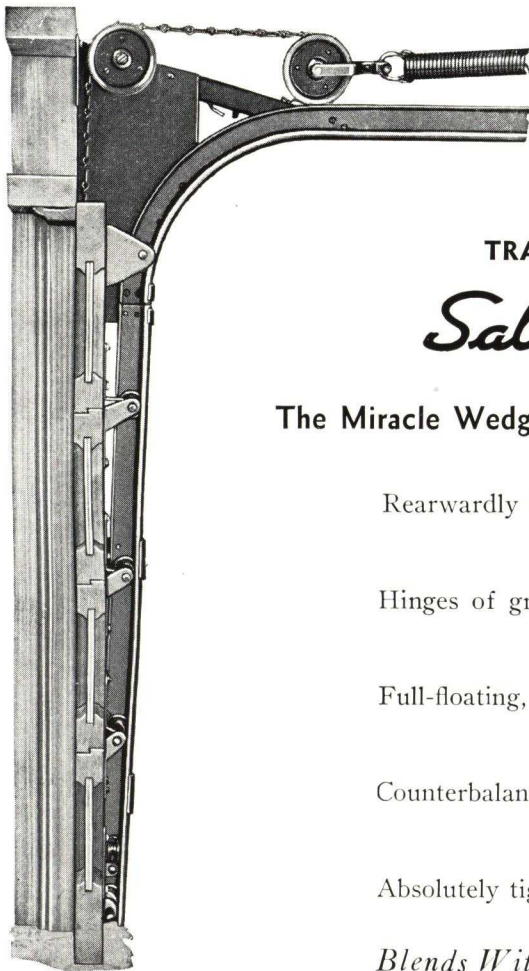
Adaptable to

*Home Garages
Public Garages*

*Factories
Fire Stations*

*Boat Wells
Warehouses*

*Greasing Stations
Similar Buildings*



TRACKS AND HARDWARE

Salt Spray Steel

The Miracle Wedge Is a Result of Five Exclusive Features

First

Rearwardly inclined vertical tracks aligned with,

Second

Hinges of graduated heights.

Third

Full-floating, ball bearing rollers.

Fourth

Counterbalance assuring free and easy action.

Fifth

Absolutely tight when closed—yet easy to open.

Blends With Every Type of Construction

"Overhead Door" Service

Our representative will call upon you personally and stamp his address in this space, so that you will know where to get the information or service you may need.

*We Manufacture the Door and Hardware Complete and
Install Anywhere in U. S. A.*



Stock Door—Closed

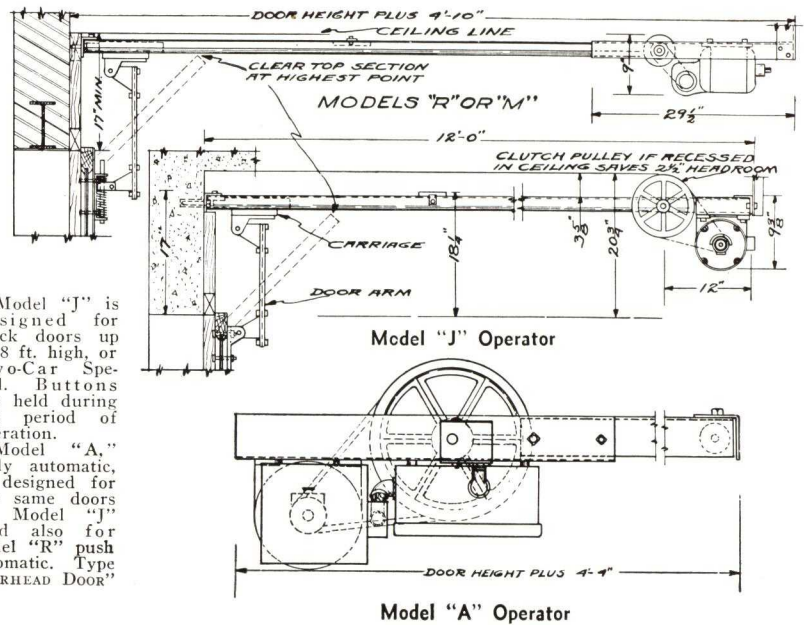


Stock Door—Partly Open

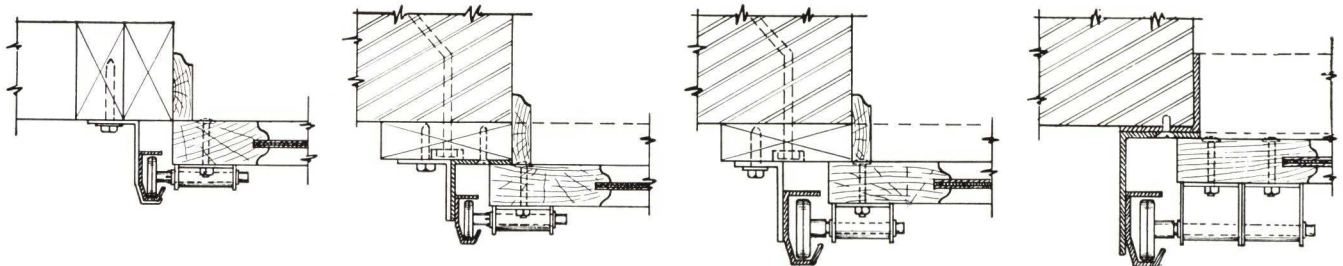
THE UNDERWRITER APPROVED "OVERHEAD DOOR" ELECTRIC OPERATORS



commercial doors up to 10 ft. wide by 10 ft. high. Model "M" is fully automatic. Model "R" push buttons are held during operation. Model "C" and "D" (not illustrated) for large doors. Any "OVERHEAD DOOR" can be arranged for electric operation.



CLASSIFICATION OF TRACK



Track One

Bracket mounted 2-in. track

Track Two

Angle mounted 2-in. track

Track Three

Bracket mounted 3-in. track

Track Four

Angle mounted 3-in. track

Track One—"A"

2 1/2-in. angle reinforced horizontals in place of 1 1/4-in. angle

Track One—"B"

2 1/2-in. angle reinforced verticals for drill and tap job

GENERAL SPECIFICATIONS

Doors indicated, as hinged horizontal sectional type, guided from a vertical to a horizontal position above the doorway, shall be The "Overhead Door," The Door with the *Miracle Wedge*, and equipped with tracks and hardware of Salt Spray Steel; as manufactured by OVERHEAD DOOR CORPORATION or equal.

Stock Doors

Stock size doors are 8 ft. wide by 8 ft. high; 8 ft. wide by 7 ft. 6 in. high; 8 ft. wide by 7 ft. high, either 1 1/4 in. or 1 1/2 in. thick.

Stock door 1 1/4 in. thick are made with 3 1/4-in. wide center stiles, 5 1/4 in. end stiles, 2 1/8-in. center rails, 4-in. top rails, 5-in. bottom rails. Stock doors 1 1/2 in. thick, 3 1/4-in. center, 5 1/4-in. end stiles; 2 1/8-in. center, 5-in. bottom and 4-in. top rails. Each section is made with 5 center stiles and 6 three-ply fir panels 3/8 in. thick, any or all may be left open for glass.

Two-Car-Special

Single door, 12 to 16 ft. wide, up to 8 ft. high, 1 1/2 in. thick, made in 4 sections. Sections are properly strutted to give absolute rigidity. This light door of great strength is easily operated by hand. The Model "M" or "A" operator is well adapted to this Two-Car-Special door.

Doors Made to Size

Doors other than stock, 1 1/4 in. thick, in general, are constructed as follows: Doors up to 10 ft. 2 in. wide are made with 3 1/4-in. center stiles, 2 1/8-in. center rails, 5 1/4-in. end stiles, 5-in. top rails and 6-in. bottom rails. The bottom rails can be furnished extra wide if desired.

Doors from 10 ft. 3 in. to 16 ft. wide are made with 3 1/4-in. wide center stiles, 2 1/8-in. center rails, 5 1/4-in. end stiles, 6-in. top rails, 7-in. bottom.

Stock Materials

Stiles and rails mortised and tenoned, casein glued, steel doweled, are milled of straight grained Sitka Spruce, free from knots. Panels are three-ply fir, 3/8 in. thick, manufactured with waterproof and termite-proof glue. Sections are sanded, ready for paint or varnish.

Tracks and Hardware of Salt Spray Steel

Number of Sections Required

1 1/4 in. or 1 1/2 in. is standard thickness. 1/8-in. rebated weather-joint used throughout. Special material includes clear cypress, white pine (2 1/4 in. thick available) chestnut, or red oak. Panels may be solid, decorative or raised. Hardware specifications, see Track 1, 2, 3, 4, 1 "A" and 1 "B" above.

All the tracks and hardware for The "OVERHEAD DOOR" are made of Salt Spray Steel, a metal that is made by fusing hot zinc into hot steel. All metal parts are stamped and formed from this metal ready to fabricate, without any further rust-resisting methods to be applied. By this process, the user is assured of maximum protection against atmospheric corrosion.

Glass Arrangement

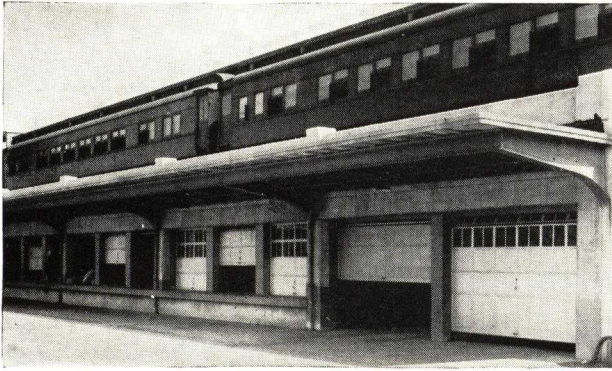
Glass may be substituted for one or all panels in any section. Glass not furnished unless specified.

Doors of Stock Design

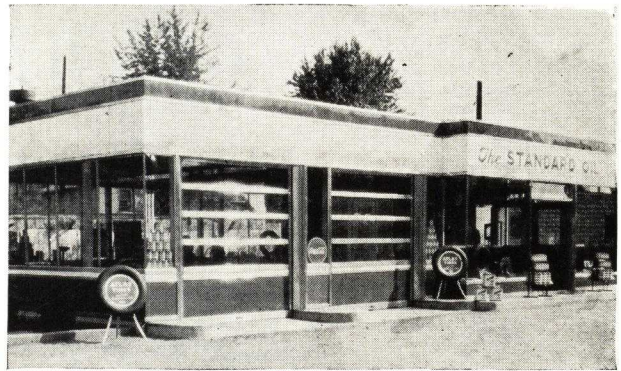
From the beginning The "OVERHEAD DOOR" was planned to meet the architectural trends. The stock stiles and rails may be arranged to meet with any glass and panel design, if necessary.

Doors Furnished Complete

Every "OVERHEAD DOOR" is a complete unit. The sections are designed for "OVERHEAD DOOR" operation. The hardware is designed to properly support and guide the sections. Every door includes all necessary hardware for installation.

"OVERHEAD DOORS," TUBULAR STEEL CONSTRUCTION

Union Station, Dayton, Ohio



Standard Oil, Zanesville, Ohio

TUBULAR STEEL CONSTRUCTION

Tubular steel "OVERHEAD DOORS" are constructed of specially rolled sections forming the rails and stiles. All joints are electric welded and ground smooth. Any or all sections may be arranged for glass. Metal panels and glass are set in rubber channel, insuring watertight construction. Bronze weatherstrips are used at the sides and top. A rubber weatherstrip is used at the bottom. Metal doors cannot be scribed to "fit the floor." Care must be taken to make the floor level.

Tubular steel doors have the same general appearance of wood doors. All steel doors are finished with a blue gray synthetic lacquer.

Chain hoist will be found of great advantage in operating heavy steel doors. Electric controls are available on all steel doors. Consult our Certified Representative or write OVERHEAD DOOR CORPORATION, Hartford City, Ind. for complete information.

A NATION WIDE SALES AND INSTALLATION SERVICE

Afforded by the following "OVERHEAD DOOR" COMPANIES and their Representatives, in every community. This great network of Sales and Installation Service is ready to assist in

selecting the proper door and equipment. We take full responsibility in the matter of installation and render future service that assures lasting satisfaction.

"OVERHEAD DOOR" DISTRIBUTORS

OVERHEAD DOOR CO. OF NORTHERN ALABAMA
Moore-Handley Hardware Co., Birmingham, Ala.

OVERHEAD DOOR CO. OF SOUTHERN ALABAMA
P. O. Box 441, Montgomery, Ala.

OVERHEAD DOOR CO. OF OKLAHOMA AND ARKANSAS
308 W. 7th St., Little Rock, Ark.
1830 N. W. 5th St., Oklahoma City, Okla.

OVERHEAD DOOR CO. OF NORTHERN CALIFORNIA
608 16th Street, Oakland, Calif.

OVERHEAD DOOR CO. OF SOUTHERN CALIFORNIA, INC.
216-222 No. Howard St., Glendale, Calif.

OVERHEAD DOOR CO., COLORADO, INC.
129 W. Third Ave., Denver, Colo.

OVERHEAD DOOR CO., INC.
885 Congress Ave., New Haven, Conn.

OVERHEAD DOOR CO. OF DELAWARE
3212 Lancaster Ave., Philadelphia, Pa.

OVERHEAD DOOR SALES CO., INC.
727 First St., N. W., Washington, D. C.

OVERHEAD DOOR CO. OF FLORIDA & GEORGIA, INC.
135 Luckie St., N. W., Atlanta, Ga.
202 E. Emma St., Tampa, Fla.

OVERHEAD DOOR CO. OF IDAHO
910 Jefferson St., Boise, Ida.

OVERHEAD DOOR CO. OF ILLINOIS
2820 So. Parkway, Chicago, Ill.

OVERHEAD DOOR CORPORATION
Hartford City, Ind.

OVERHEAD DOOR SALES OF INDIANAPOLIS
17 East 16th St., Indianapolis, Ind.

OVERHEAD DOOR CO. OF IOWA, INC.
63rd and Ingersoll Sts., Des Moines, Iowa

OVERHEAD DOOR SALES OF KANSAS
424 No. Rock Island, Wichita, Kan.

OVERHEAD DOOR CO. OF KENTUCKY, INC.
930 Baxter Ave., Louisville, Ky.

OVERHEAD DOOR CO. OF LOUISIANA
4200 Tulane Ave., New Orleans, La.

OVERHEAD DOOR CO. OF MAINE
53 Pennsylvania Ave., So. Portland, Me.

OVERHEAD DOOR SALES CO.
6523 Maplewood Rd., Govans, Baltimore, Md.

OVERHEAD DOOR SALES COMPANY
70 Needham St., Newton Highlands, Mass.

OVERHEAD DOOR SALES OF MICHIGAN
108 Howard Ave., Lansing, Mich.

OVERHEAD DOOR COMPANY
6511 Strong Ave., Detroit, Mich.

OVERHEAD DOOR CO. OF MINNESOTA, INC.
1934 Riverside Ave., Minneapolis, Minn.

OVERHEAD DOOR CO. OF MISSISSIPPI
2000 No. Mill St., Jackson, Miss.

OVERHEAD DOOR CO. OF KANSAS CITY
2051 Main St., Kansas City, Mo.

OVERHEAD DOOR CO. OF MISSOURI, INC.
1039 So. Big Bend Blvd., St. Louis, Mo.

OVERHEAD DOOR SALES
634 Mound St., Helena, Mont.

OVERHEAD DOOR CO. OF NEBRASKA, INC.
12th & Nicholas Sts., Omaha, Neb.

OVERHEAD DOOR COMPANY OF NEVADA
Box 220, Reno, Nev.

OVERHEAD DOOR COMPANY OF NEW HAMPSHIRE
310 Second St., Manchester, N. H.

OVERHEAD DOOR COMPANY, INC.
630 Ramsey Ave., Hillside, N. J.

METROPOLITAN OVERHEAD DOOR CO.
424 Madison Ave., New York, N. Y.

OVERHEAD DOOR CO. OF ARIZONA & NEW MEXICO
J. C. Baldridge Lumber Co., Albuquerque N. M.
1745 E. Lester St., Tucson, Ariz.

OVERHEAD DOOR CO. OF NEW YORK, INC.
Cortland, New York

OVERHEAD DOOR CO. OF THE CAROLINAS
115 Latta Arcade, Charlotte, N. C.

OVERHEAD DOOR CO. OF NORTH DAKOTA
519 Second Ave., No., Fargo, N. D.

THE OVERHEAD DOOR COMPANY
2028 E. 71st St., Cleveland, Ohio

OVERHEAD DOOR CO. OF CINCINNATI
2259 Gilbert Ave., Cincinnati, Ohio

OVERHEAD DOOR COMPANY, INC.
2515 S. E. 25th Ave., Portland, Ore.

OVERHEAD DOOR CO. OF PENNA., INC.
Lewistown, Pa.

OVERHEAD DOOR SALES CO.
119 Dyer St., Providence, R. I.

OVERHEAD DOOR CO. OF SOUTHERN CAROLINA
Box 413, Columbia, S. C.

OVERHEAD DOOR SALES OF SOUTH DAKOTA
211 E. 13th St., Sioux Falls, S. D.

OVERHEAD DOOR CO. OF MEMPHIS
677 No. Main St., Memphis, Tenn.

OVERHEAD DOOR CO. OF CENTRAL TENNESSEE
149 Fourth Ave., No., Nashville, Tenn.

OVERHEAD DOOR CO. OF CHATTANOOGA
1300 Carter St., Chattanooga, Tenn.

OVERHEAD DOOR CO. OF KNOXVILLE
510 No. Broadway, Knoxville, Tenn.

OVERHEAD DOOR CO. OF TEXAS
1317 Plowman Ave., Dallas, Tex.

OVERHEAD DOOR CO. OF UTAH
206 S. W. Temple, Salt Lake City, Utah

OVERHEAD DOOR SALES CO.
Box 124, Rutland, Vt.

OVERHEAD DOOR CO. OF VIRGINIA, INC.
210 E. Franklin St., Richmond, Va.

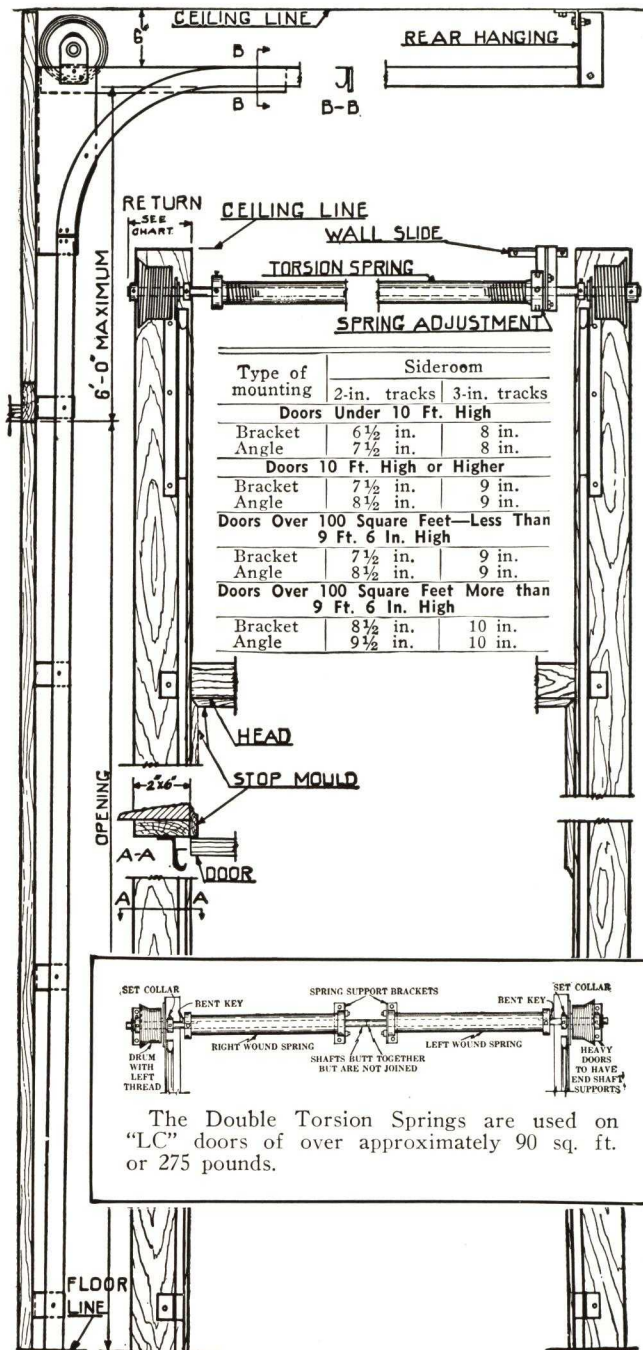
OVERHEAD DOOR CO. OF WASHINGTON STATE
Spokane Sash & Door Co., Spokane, Wash.

OVERHEAD DOOR CO. OF WEST VIRGINIA, INC.
502 Chapline St., Wheeling, W. Va.

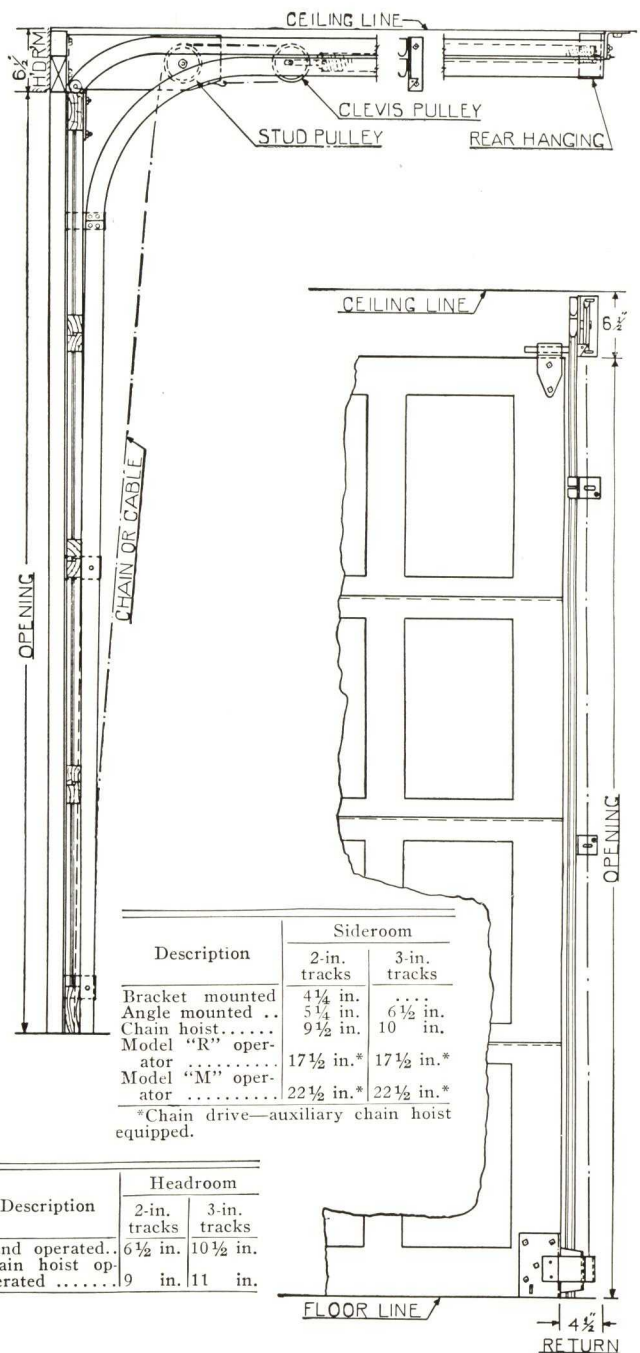
OVERHEAD DOOR CO. OF WISCONSIN, INC.
1736 No. Second St., Milwaukee, Wis.

OVERHEAD DOOR CO. OF WYOMING
15th St. and Bent Ave., Cheyenne, Wyo.

MODEL "LC" DOORS WITH VERTICAL TRAVEL
HIGHER THAN REGULAR



MODEL "LH" DOORS REQUIRING ONLY 6 1/2-IN.
HEADROOM ABOVE HEADER



"OVERHEAD DOORS" are designed to be installed in such a manner, that when open, clearance will be available for elevating a car upon a greasing hoist. Vertical travel from the header to the underside of the horizontal track cannot exceed 6 ft. "LC" doors may be erected upon 2 or 3-in. track. For *Side Room*, see chart above which includes both brackets and angle mounted track.

"LC" equipment is adapted to nearly all doors made in either wood or steel. Torsion spring with cable and drums are standard equipment. If "LC" equipment is required on large or heavy doors, consult the Engineering Department for detailed information.

Openings in which the clear space above the header is limited, require the use of Low Headroom Equipment. The door is carried by the regular vertical and horizontal tracks while the top of the door is guided by a second horizontal track. Low headroom equipment will permit installation in cases where the ceiling is but 6 1/2-in. above the header or lintel. Controls may be used with the following headroom requirements:

Model	Track	Headroom with control
Model "J"	2 in.	9 1/2 in. Pulley recessed; 13 in. not recessed.
Model "A"	2 in.	9 1/2 in. Pulley recessed; 13 in. not recessed.
Model "R"	2 in.	9 1/2 in.
Model "M"	2 in.	10 1/2 in.

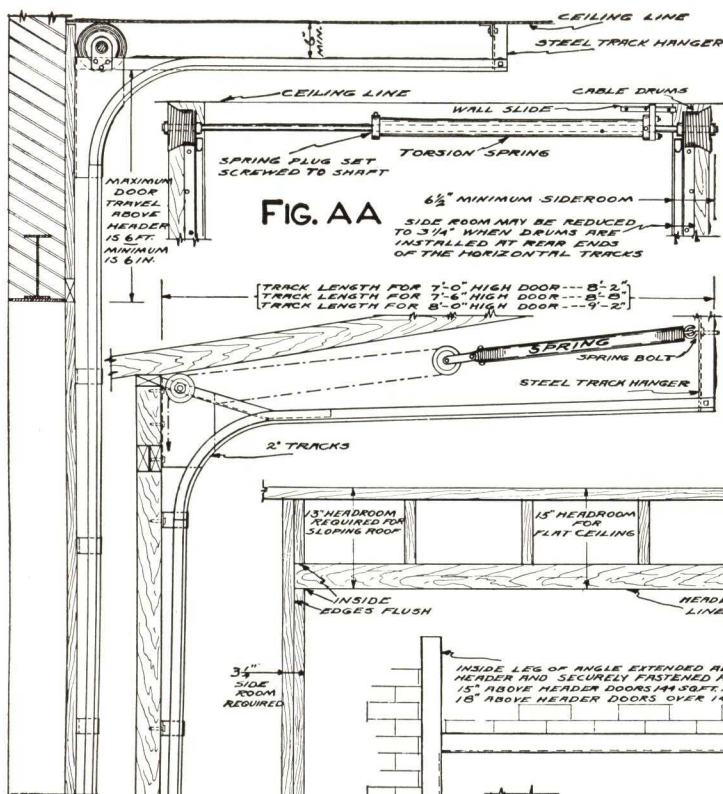


FIG. AA

Fig. A—"LC" Construction (Auto Lift Clearance). Headroom 14 in. minimum. Doors may be installed to be within 6 in. of ceiling. Door may be made to follow ceiling line. 2-in. bracket mounted tracks, torsion spring, cable, taper drums, ball bearings and cross-header shaft. Steel Jamb's use angle mounted track. "LC" equipment adapted to nearly all doors.

Fig. AA—Typical installation of torsion spring, cross-header shaft, drums and cable.

Fig. B—Stock doors and up to 144 sq. ft., Track One. Headroom 15 in., sideroom 3 1/4 in.—see Fig. C. 2-in. bracket mounted track, independent helical springs. Torsion springs may be used—see Fig. A. Steel jamb's, use angle mounted track, Fig. D. (See Low Headroom.)

Fig. C—Ideal jamb construction for frame buildings. Headroom, slope ceiling 13 in. Note 2x4 arrangement and 2x6 casing. All inside edges flush.

Fig. D—Ideal steel jamb construction for masonry. Note inside member extends above header. Jamb's should be flush fastened throughout.

Fig. E—Doors to 144 sq. ft., Track Two. Headroom 15 to 18 in., sideroom 5 1/4 in. Doors overlap jamb 1 in. on either side—see Fig. D. 2-in. angle mounted track, independent springs. Torsion spring—see Fig. AA. See double torsion springs. (See Low Headroom.)

Fig. F—Doors over 144 sq. ft., Track Three (3-in. track is bracket mounted), Track Four (3-in. track is angle mounted). Headroom 18 to 24 in. (see Fig. G.), sideroom 5 3/4 in. Springs independent (pairs) or torsion—see double torsion springs. (See Low Headroom.)

Fig. G—Ideal jamb construction for all doors. Casings, header, should all be flush inside.

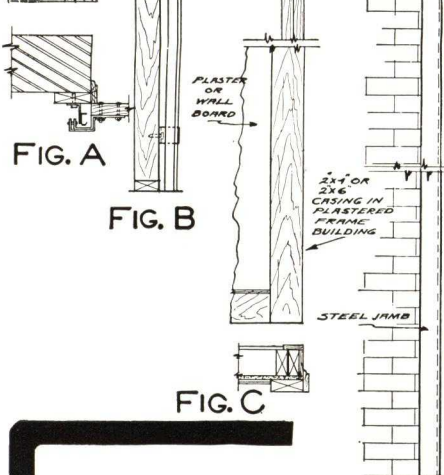


Fig.	Head Room (inches)	Side Room (inches)
A	15	6 1/2-10
B	15	3 1/4
E	18	5 1/4
F	18	5 3/4
F*	24	5 3/4

*With double springs.

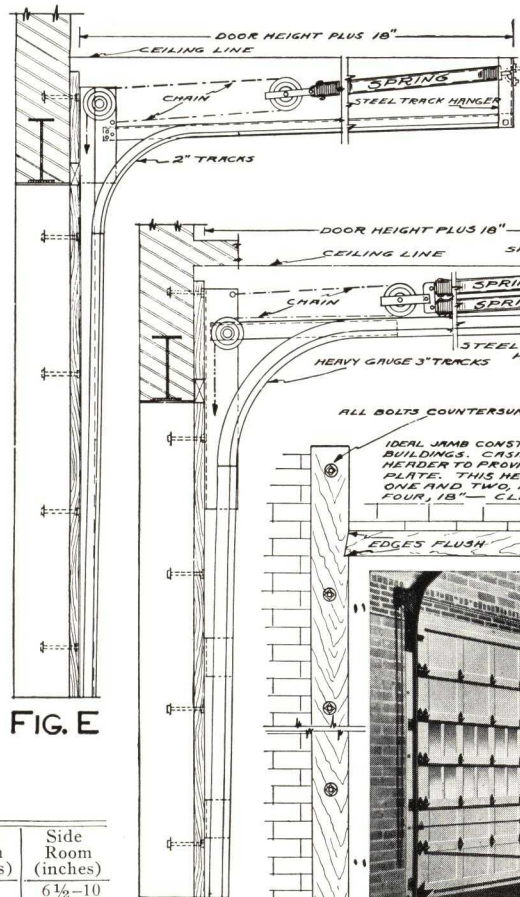
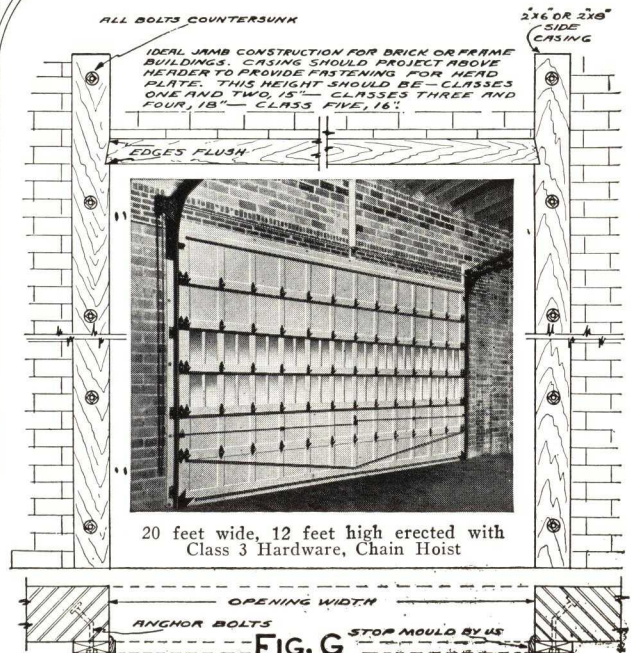


FIG. F



20 feet wide, 12 feet high erected with Class 3 Hardware, Chain Hoist

MEMORANDA

RICHARDS-WILCOX MANUFACTURING CO.

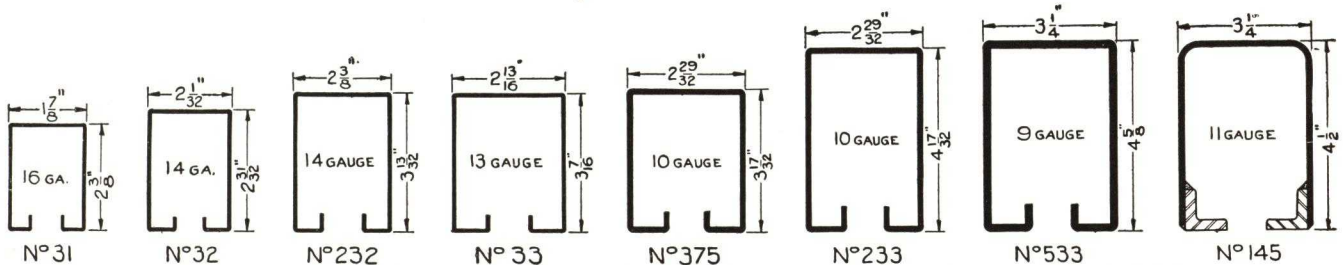
INCORPORATED

Manufacturers of Door Hangers and Hardware Specialties

AURORA, ILL.

BRANCHES IN ALL PRINCIPAL CITIES
For Other R-W Products, see File Index

R-W LOCK JOINT TROLLEY TRACKS



All the Above Tracks Are Manufactured for Use with Genuine R-W Patented Lock-joint Brackets, Assuring Positive Alignment and Preventing Separation of Track Sections at Joints

STRAIGHT AND PARALLEL SLIDING DOOR EQUIPMENT

Hanger No.	Track No.	For doors weighing, lb.	Thickness of doors, in.	Top of door to bottom of track, in.	
				Minimum	Maximum
20 1/2 B	31	300	1 3/4 - 2 1/2	1 3/16	2 5/16
27 1/2 B-1	31	300	1 3/4 - 2	1 3/16	2 5/16
27 1/2 B-2	31	300	2 1/4 - 2 3/4	1 3/16	2 5/16
28 1/2 B-1	32	400	1 3/4 - 2	1 3/16	2 5/16
28 1/2 B-2	32	400	2 1/4 - 2 3/4	1 3/16	2 5/16
29 1/2 B-1	232	600	1 3/4 - 2	1 1/8	2 1/2
29 1/2 B-2	232	600	2 1/4 - 2 3/4	1 1/8	2 1/2
123 1/2 B-1	33	800	1 3/4 - 2	1 1/4	2 3/8
123 1/2 B-2	33	800	2 1/4 - 3	1 1/4	2 3/8
150 1/2 B-1	33	800	1 3/4 - 2	1 1/4	2 3/8
150 1/2 B-2	33	800	2 1/4 - 3 1/2	1 1/4	2 3/8
499-1	233	1200	1 3/4 to 2	1 1/4	2 3/8
499-2	233	1200	2 1/4 to 3 1/2	1 1/4	2 3/8
155 1/2 B	375	1500	2 1/4 to 3 1/2	5 1/2	6 3/4
149-1	145	2000	1 3/4 to 2 1/4	1 3/4	3 1/4
149-2	145	2000	2 1/2 to 3 1/4	1 3/4	3 1/4
149-3	145	2000	3 1/2 to 4 1/4	1 3/4	3 1/4
598-1	533	2000	1 3/4 to 2 1/4	1 3/4	3 1/4
598-2	533	2000	2 1/2 to 3 1/4	1 3/4	3 1/4
598-3	533	2000	3 1/2 to 4 1/4	1 3/4	3 1/4
1098-1	533	3000	1 3/4 to 2 1/4	5 1/2	6 1/2
1098-2	533	3000	2 1/2 to 3 1/4	5 1/2	6 1/2
1098-3	533	3000	3 1/2 to 4 1/2	5 1/2	6 1/2
1049-1	145	3000	1 3/4 to 2 1/4	5 1/2	6 1/2
1049-2	145	3000	2 1/2 to 3 1/4	5 1/2	6 1/2
1049-3	145	3000	3 1/2 to 4 1/4	5 1/2	6 1/2

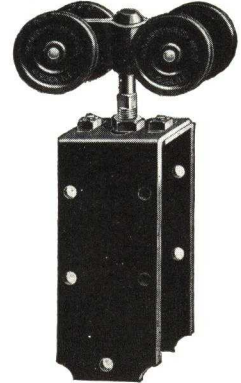
R-W LOCK JOINT TROLLEY TRACKS

Track No.	Gauge	Outside measurements		Standard lengths, ft.
		Width, in.	Height, in.	
31	16	1 7/8	2 3/8	Up to 12
32	14	2 1/8	2 3/8	Up to 12
232	14	2 3/8	3 1/8	Up to 12
33	13	2 13/16	3 7/8	Up to 12
233	10	2 29/32	4 1/2	Up to 12
375	10	2 29/32	3 1/2	Up to 12
*145	11	3 1/4	4 1/2	Up to 12
533	9	3 1/4	4 5/8	Up to 12

*This track has a steel angle iron tread 1/4-in. thick.



R-W No. 20 1/2 B Ball
Bearing Hanger



R-W No. 150 1/2 B Ball
Bearing Hanger

To specify. Furnish and install Richards-Wilcox Ball Bearing Hanger No. (see table) and Track No. opening ft. wide, ft. high, doors ins. thick.

Note: State whether overhead or wall attachment.

R-W NO. 235 "SLIDASIDE" GARAGE DOOR EQUIPMENT

R-W "Slidaside" is made for several types of right-angle door installations. Set AA single door; BB double doors where there is 2 ins. or more space between jamb and side wall. Set CC single doors; DD double doors where there is less than 2 ins. space between jamb and side wall. Set EE single doors; FF double doors where there is 26 ins. or more space

R-W NO. 235 "SLIDASIDE" GARAGE DOOR SETS FOR NO. 31 TRACK

Cat. No.	† Width of opening from, ft.	* Max. weight of each door, lb.	‡ Min. headroom, in.	Space jamb to side wall, in.
235-AA	8-10	200	9	2 or more
235-BB	8-10	200	9	2 or more
235-CC	8-10	200	6 3/8	Less than 2
235-DD	8-10	200	6 3/8	Less than 2
235-EE	8-10	200	6 3/8	26 or more
235-FF	8-10	200	6 3/8	26 or more
235-GG	8-10	200	6 3/8	26 or more
235-HH	8-16	200	6 3/8	26 or more
235-JJ	8-10	200	6 3/8	No limit
235-KK	12-20	200	6 3/8	No limit

*For doors weighing 200-350 lbs. each specify 232 track.

*For doors weighing 350-600 lbs. each specify 33 track.

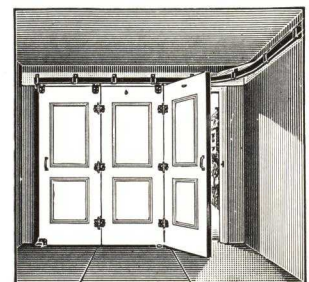
†Be sure to specify actual width of opening.

‡For minimum headroom for heavy doors, see Catalog A-55.

between jamb and side wall, curved corner track used. Set GG 2 doors hinged together; set HH 2 pairs of doors hinged together where there is 26 ins. or more space between jamb and side wall, curved corner track used.

The JJ set is for 3 doors hinged together sliding around the corner on curved track, and the KK is for 2 groups of 3 doors hinged together, one group sliding around one corner, the other group sliding around the opposite corner. No limit to distance between jamb and side wall, curved corner track is used.

Specify whether doors are to be locked from inside and from outside, or if to be locked from inside only.



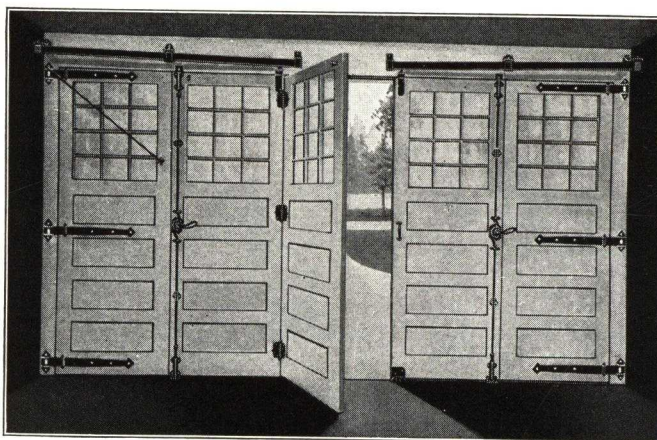
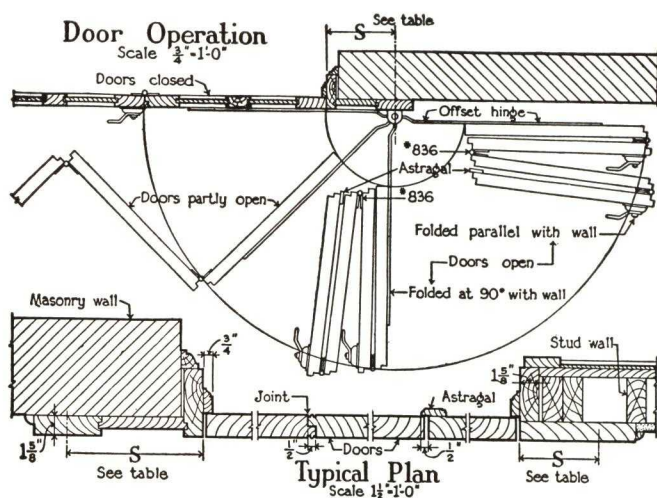
No. 235-JJ Set, Three Doors
Hinged Together Sliding
Around the Corner on
Curved Track

For opening with 6 doors, 3 doors slide around each corner on curved track, specify 235-KK

GARAGE DOOR EQUIPMENT

For Sliding Folding Doors

Opening From 8 to 30 Feet Wide

SlidetiteSlidetite Garage Door Equipment
In-Opening Set 1035-B5-31

NO. 1035 "SLIDETITE" STANDARD EQUIPMENT SETS

Number of doors	Maximum weight of each door using Track No.			"S" minimum, in.	
	31 100 lb.	232 175 lb.	33 250 lb.	Doors opening at 90° Thickness of: + in.	Opening parallel with wall, in.
3	1035-B3-31	1035-B3-232	1035-B3-33	2 doors + 2 1/4	1 1/2
4	1035-B4-31	1035-B4-232	1035-B4-33	3 doors + 2 3/4	1 1/2
4	1035-B4 1/2-31	1035-B4 1/2-232	1035-B4 1/2-33	2 doors + 2 1/4	1 1/2
5	1035-B5-31	1035-B5-232	1035-B5-33	3 doors + 2 3/4	1 1/2
6	1035-B6-31	1035-B6-232	1035-B6-33	3 doors + 2 3/4	1 1/2
7	1035-B7-31	1035-B7-232	1035-B7-33	4 doors + 3 1/4	1 1/2
8	1035-B8-31	1035-B8-232	1035-B8-33	5 doors + 6 1/4	1 1/2
8	1035-B8 1/2-31	1035-B8 1/2-232	1035-B8 1/2-33	4 doors + 3 1/4	1 1/2
9	1035-B9-31	1035-B9-232	1035-B9-33	5 doors + 6 1/4	1 1/2
10	1035-B10-31	1035-B10-232	1035-B10-33	5 doors + 6 1/4	1 1/2

Minimum headroom where two doors fold in one direction: No. 31 track = 6 ins., No. 232 track = 8 1/4 ins.; No. 33 track = 8 1/2 ins. When three doors fold in one direction: No. 31 track = 8 1/4 ins.; No. 232 track = 11 1/4 ins.; No. 33 track = 11 1/2 ins. When more than 3 doors fold one way, the figure for No. 31 track is increased to 9 ins.

Note: To designate sets for out-opening doors, prefix the letter "O" to the first numeral, thus O1035. All dimensions for out-opening sets are the same as above except the dimension "S" where the plus figures for sets O1035-B3 and B4 1/2 is 4 1/2 ins.; for sets O1035-B4, B5 and B6 is 5 1/4 ins.; for sets O1035-B7 and B8 1/2 is 8 1/4 ins.; for sets O1035-B8, B9 and B10 is 9 ins.

No. 1035 Equipment—Operation—This hardware is available for openings from 8 to 30 ft. wide containing from 3 to 10 sliding-folding doors. Plan types at right show how many doors fold toward each jamb in the different arrangements. The weight of the doors is carried by hangers running in overhead trolley tracks.

When open, the doors are compactly folded together and swing clear of the jamb line opening, standing either at an angle to the front wall or, where space is sufficient, folded parallel with the front wall.

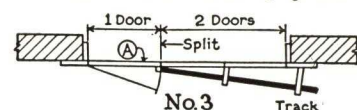
Although in-folding is recommended, "Slidetite" equipment is equally adapted to doors opening out.

Specification—Furnish and install in accordance with the manufacturer's erection details, Richard-Wilcox "Slidetite" Garage Door Equipment as follows:

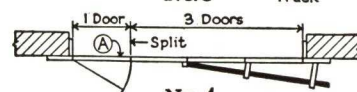
Doors (number or otherwise locate): No. "Slidetite" for opening wide, high; door thickness

PLAN TYPES

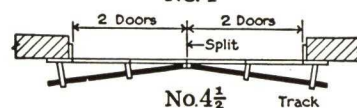
NOTE: Grouping of doors may be reversed to swing from either jamb from split.
NOTE: Door "A" is a free swinging door.



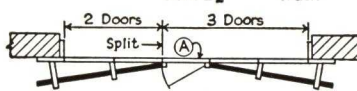
No. 3



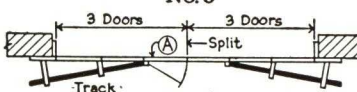
No. 4



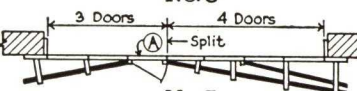
No. 4 1/2



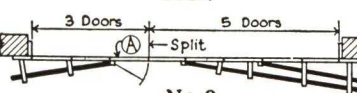
No. 5



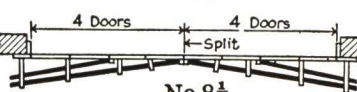
No. 6



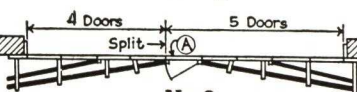
No. 7



No. 8



No. 8 1/2



No. 9



No. 10.

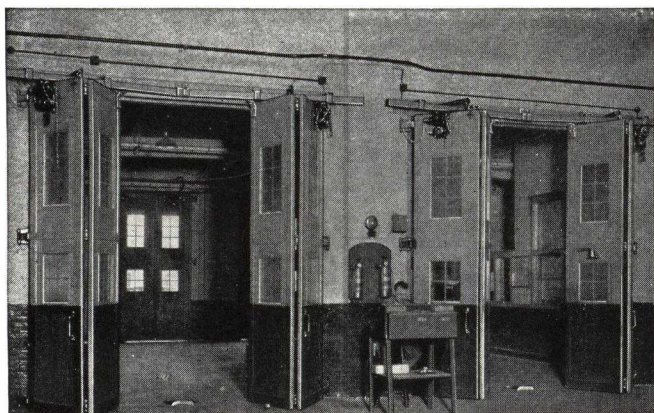
Note: If there is more than one opening and the equipment varies, list each door separately.

R-W AUT-O-DOR ELECTRIC DOOR OPERATORS

The Richards-Wilcox Aut-O-Dor Operators are noted for their sturdy construction, simplicity of design, and absolute dependability. There are thousands of these sturdy mechanisms installed throughout the United States and foreign countries, many of these installations having been in service anywhere from six to twelve years. There is one company which has now purchased more than 240 units of this equipment over a period of twelve years, and another company which has purchased 150 units in six years. This in itself should be conclusive proof of the reliability of this equipment.

For Swinging or Folding Doors

Our No. 1300 Operator requires one unit for each door or group of doors folding to the right and one unit for the doors folding to the left. Although the unit is small in size, we have embodied in our compact design every important feature that should be incorporated in a door operating mechanism. The operator works on the crank arm principle, which gives a slow start to the movement, the speed becoming rapid in the middle of the cycle of operation and then slowing down gradually at the end of the cycle thereby eliminating any jerk or jar on the operating mechanism. The crank arm is driven through a clutch so in case there is any obstruction to the free movement of the doors, the clutch will slip thereby preventing any damage to the operating mechanism. By a slight pull on a release chain hanging conveniently at each side of the opening, the doors may be opened manually with the same ease as though they were entirely hand operated. All gears are cut gears enclosed in a housing and running in oil. The motor is loosely connected to the motor frame, thereby automatically providing the proper tension to the drive belt. Due to the neat design and the total absence of complicated levers, this equipment appeals to the architect who is anxious not to detract from the interior appearance of the building.



For plain swinging doors, sliding-folding doors, swinging gates, cooler doors in packing plants, trap doors in coal mines, deflectors on conveyor belts, and for any other service where there is small reciprocating motion, specify our No. 1300 Electric Operator.

For Sliding or Overhead Type Doors

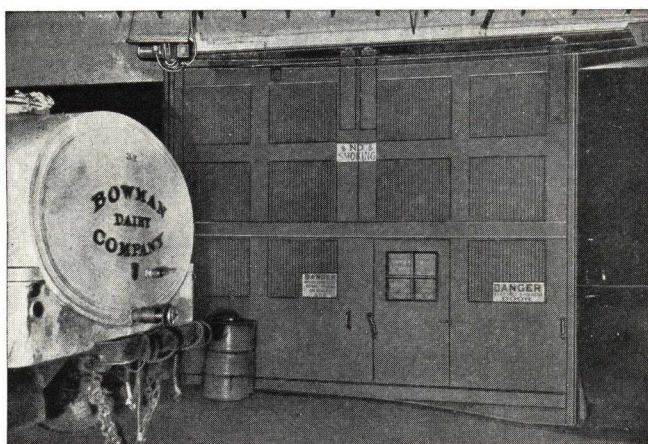
For all types of straight sliding doors or gates regardless of size, we recommend our No. 1250 Operator. This equipment, in like manner, is compact in size, the doors being driven through a friction clutch with a release provided for hand operation in case of power failure. These operators are built in sizes from 1/4 h.p. on up. These operators are equipped with anti-friction bearings throughout, with precision ball bearings on the motor shaft and selected roller bearings on the slow speed



Aut-O-Dor Operators for

- Plain Swinging Doors
- Sliding-Folding Doors
- Sliding Doors
- Overhead Doors
- Swinging Gates
- Sliding Gates
- Cooler Doors in Packing Plants
- Trap Doors in Coal Mines
- Deflectors on Conveyor Belts

shaft. The worm gear is a manganese bronze of a composition specially developed for this service. The worm is of high carbon steel properly processed to assure long life. The gear reduction and electric brake are integral with the motor proper.



On overhead doors for openings up to 120 sq. ft. in area and not more than 8 ft. in height, for residential use or for situations where service is not heavy, we recommend as an inexpensive electric operator our No. 1251. This operator is controlled by constant pressure type push buttons. For industrial or commercial uses in openings up to 200 sq. ft. in area and not more than 16 ft. in height, specify No. 1253 Electric Operator. This operator is controlled by "open" and "close" push buttons and is reversible at the end of each cycle of operation. For larger openings or for openings less than 200 sq. ft. in area where it is desired to control the operators by "open," "stop," and "close" push buttons with reversal at any point in the operation, specify No. 1254. The No. 1253 and No. 1254 Operators use the same operating unit as described under No. 1250 in the preceding paragraph and have the same general characteristics.

Time Switch for Fire Station Use

For fire department use, we recommend our motor driven time switch. By a slight pull on a pendant switch cord hanging conveniently over the driver's seat, the doors will automatically open, remain open a pre-determined set time, and then automatically close. A second pull on the pendant cord automatically resets the timing. In summer the doors may be opened electrically by means of wall switches independent of the time element, remaining open indefinitely, but when the cord is pulled above the driver's seat, the doors will remain open and then automatically close after the fire apparatus has left the building.

R-W HEAVY HINGES

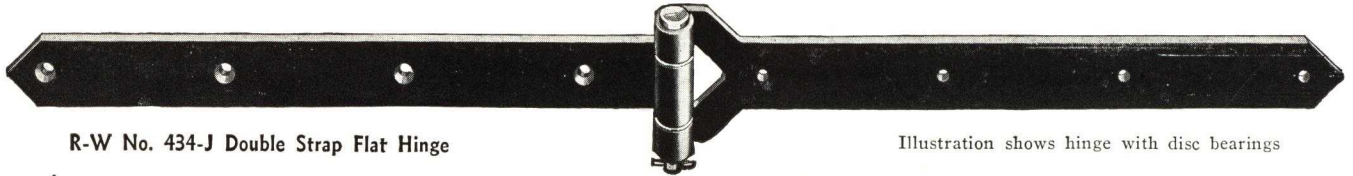


R-W No. 434-C Single Straight Strap Hinge



R-W No. 434-B Reverse Pad Offset Hinge

All No. 434 Hinges are made either DB (disc bearing) like cuts, or BB (ball bearing). Straps are $\frac{3}{8}$ x 2 $\frac{1}{2}$ in.; $\frac{3}{8}$ x 3 in. or $\frac{1}{2}$ x 3 in., and made in any length up to 8 ft. Other types No. 434 Hinges are also available.



R-W No. 434-J Double Strap Flat Hinge

Illustration shows hinge with disc bearings



R-W No. 1035 and No. 1045 Offset Hinge with Surface Pintle

No. 1035 Straps are 2 $\frac{1}{2}$ in. wide and from 18 to 48 in. long. No. 1045 Straps are 3 in. wide and from 30 to 48 in. long. Regularly furnished with disc bearings, but can be furnished with cadmium plated ball bearing units.



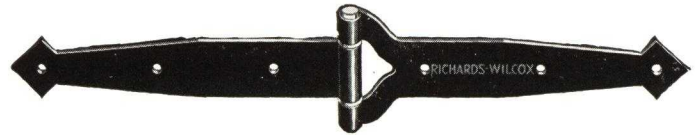
R-W No. 1036 Hinge with Mortise Pintle

No. 1036 Straps are 2 $\frac{1}{2}$ in. wide in 10 to 24 in. lengths. Pintles 6 in. high are furnished with straps 2 $\frac{1}{2}$ in. wide; 7 in. pintles with straps 3 in. wide. Furnished either disc or ball bearing.



R-W No. 1039 Reversible Pintle Hinge

The 10 and 12-in. hinges have plain bearings, and the 18 and 24 in. size have disc bearings. Can be used as a reverse pad hinge or a mortised pintle hinge.



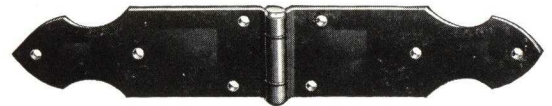
R-W No. 1040 Double Strap Surface Hinge

For use on in-opening doors. Each leaf is 14 in. long, 2 $\frac{1}{2}$ in. high, $\frac{1}{4}$ in. wrought steel. Furnished either disc or ball bearing as desired.

OFFSET SURFACE HINGES

Cat. No.	Size of leaf, in		Offset, in.	Stock, gauge
	High	Wide		
*636	7	4	$\frac{3}{4}$	No. 12
*636	12	4	$\frac{3}{4}$	No. 10
*836	7	4	1 $\frac{1}{2}$	No. 12
*836	12	4	1 $\frac{1}{2}$	No. 10
1636	7	4	$\frac{3}{4}$	No. 5
1636	12	4	$\frac{3}{4}$	No. 5
1836	7	4	1 $\frac{1}{2}$	No. 5
1836	12	4	1 $\frac{1}{2}$	No. 5

*Also made in other sizes. See Catalog No. 60.

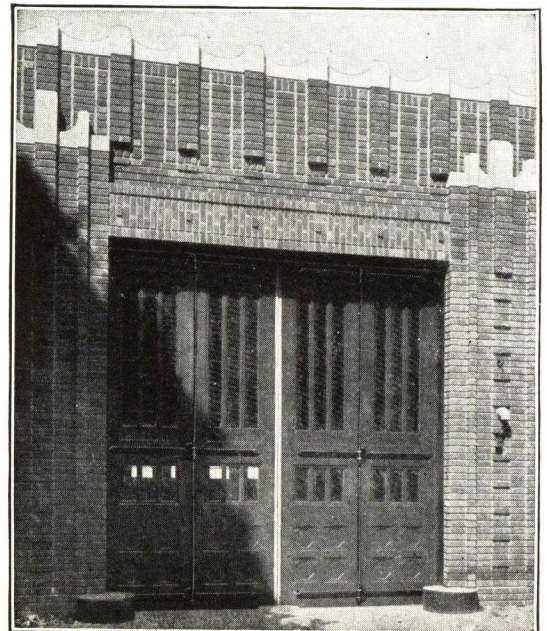


Offset Surface Hinges
Nos. 636, 836, 1636 and 1836

R-W No. 434 INDUSTRIAL DOOR HARDWARE

No. 434 door hardware is especially designed to meet the requirements of roundhouse, shop and large warehouse doors. It is used with the four-unit type of door construction which has proved most satisfactory for car and locomotive door openings. With this equipment, the doors are opened so that they present only one-half of their area to the wind. The upper corners of the center doors are supported by trolley hangers which hold the doors true to line and guide them as they are opened and closed. With only a 12-in. column between adjacent openings, these doors fold back out of the way and leave an entirely clear doorway.

No. 434 hardware consists of hangers, tracks, brackets, hinges and locking bolts. Specify width and height of opening and thickness of doors. Specify No. 434 x 175 where each leaf of a four-door unit weighs up to 400 lbs. Specify No. 434 x 375 where each leaf of a four-door unit weighs up to 500 lbs. Specify No. 434 x 233 where each leaf of a four-door unit weighs up to 600 lbs. Specify No. 434 x 145 where each leaf of a four-door unit weighs up to 800 lbs.

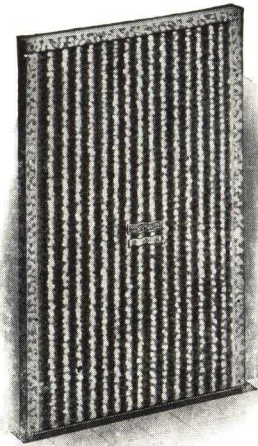


R-W FIRE DOORS



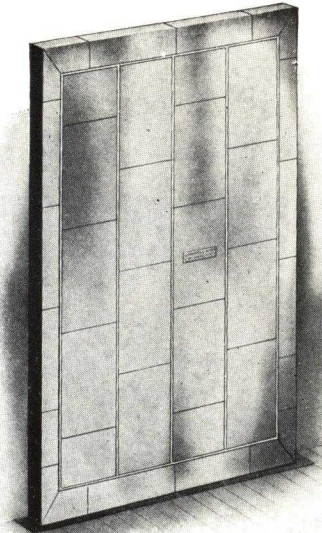
R-W No. 647 FyeR-Ward

A flush surface door, 1 $\frac{13}{16}$ inches thick. Makes an attractive appearing door which can be grained if desired, to look like a wood door. It weighs only 4 $\frac{1}{2}$ to 5 lbs. per sq. ft. Doors bear the Underwriters' label



R-W No. 447 FyeR-Wall

A corrugated sheet metal door, 2 $\frac{5}{8}$ inches thick. Weighs 5 lbs. per sq. ft. Bears the Underwriters' label

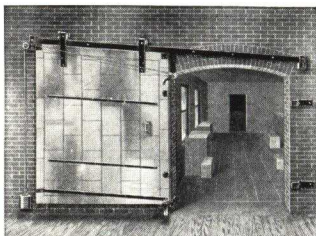


R-W No. 446 Tin Clad

This door has wood core and is tin clad. Made in two-ply (1 $\frac{3}{4}$ inch thick) and 3-ply (2 $\frac{5}{8}$ inch thick). Two-ply doors weigh 6 lbs. per sq. ft., and three-ply doors weigh 8 lbs. per sq. ft.

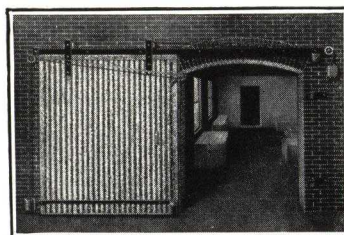
The R-W line of Fire Doors and Hardware is inspected by the Underwriters' Laboratories, Inc., under the direction of the National Board of Fire Underwriters, and bears the Underwriters' label.

Many doorway openings which should be protected by fire doors are not, for the simple reason that the ordinary fire door would not harmonize with the surroundings. Here is where the R-W No. 647 FyeR-Ward door fits in. It is a door of distinction and character; a door which enhances rather than detracts from its surroundings. All of the metal work of this door is galvanized steel, the outside face being No. 22 gauge. The door presents an entirely flush surface on both sides, made up from steel panels about 10 inches wide extending the full height of the door. The door panels are channel shaped interlocking members, with the legs of the channels forming the panels on each side of the door staggered so that there is a flange every 5 inches measured in the horizontal plane, through the full height of the door. Steel rods, approximately 18 inches on center, extend through the door horizontally through holes in the flanges of the channels, serving to unite the two sides of the door into a rigid construction. A sheet of corrugated asbestos is installed between the metal sheets forming the two sides of the door. This door carries the same credit for insurance rates as the three-ply tin clad door.



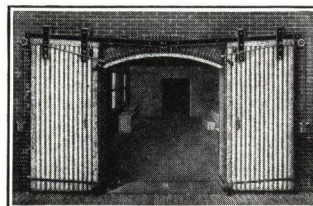
R-W No. 201 Single Link Flat Track Fixtures

This fixture is for single sliding doors and requires 13 $\frac{1}{2}$ in. on side wall toward which door closes and width of opening plus 19 in. on the opposite side. Fusible link is exposed in the opening. When specifying width and height, do not say doors when you mean openings, as doors must lap 4 in. on each side and at top



R-W No. 1303 Single Link Flat Track Fire Door Fixtures

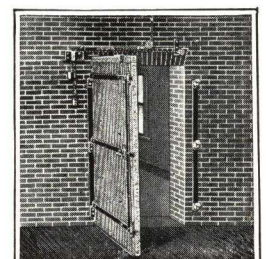
This fixture is used for openings where there is not enough headroom to place track on an incline of $\frac{3}{4}$ in. to the foot. Two sets of weights are used to balance the door. The back weights are held in position by a fusible link. In case of fire, this link fuses and allows back weights to drop, and the front weights then pull the door shut. Same style as No. 201 except that it operates on level track. Has one fusible link which is exposed in the opening



R-W No. 1204 Single Link Flat Track Fire Door Fixtures

This fixture is the same as No. 201 except that it is applied to pairs of doors. Designed to meet special conditions, such as not sufficient space on one side to slide a large door, or if an overhead carrier system track passes through the opening.

This type has one fusible link on each door, and both are exposed in the opening



R-W No. 1406 Automatic Fire Door Fixtures

The automatic link and cord arrangement on this fixture extends above the opening to ceiling, and when used with doors on both sides of wall same extends through, so that the fusing of link on either side will cause the doors to close. No. 643 Door Closer and Check may be substituted for weight closing device if desired. Fixtures furnished for either flush or lap doors

R-W APPROVED AND LABELLED SWINGING FIRE DOOR INSTALLATIONS

For Class B, C, D and E Openings

These doors may be mounted in standard structural channel frames, or sheet metal frames with butt hinges or half surface hinges, and fire door type locks or latches and No. 1643 door closers. The No. 647 door is neat in appearance and presents a flush surface.

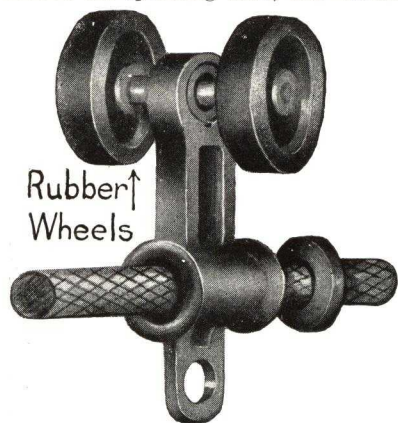
The door is 1 $\frac{1}{8}$ in. thick and weighs 4 $\frac{1}{2}$ to 5 lbs. per sq. ft. Described in detail on page 5.



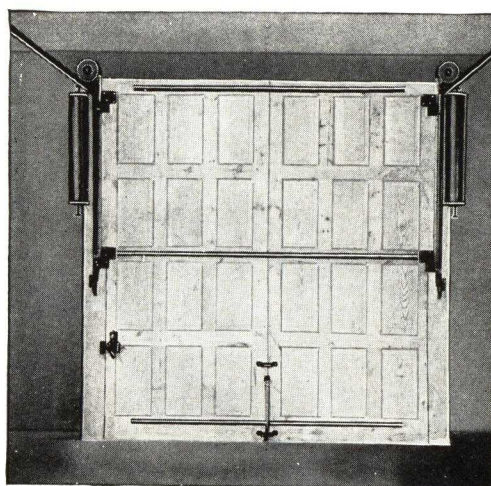
R-W THEATRE CURTAIN EQUIPMENT

These hangers have soft tread rubber wheels and operate in an enclosed steel track. They are practically noiseless in operation and inexpensive. Hangers have a loop at the bottom to receive an operating cord, and curtain may be operated from either end. Specify No. 690 curtain track and No. 687 curtain hanger.

The hanger is furnished in either ball bearing or plain bearing type. If ball bearing type is required, specify No. 687 BB, and No. 687 PB where plain bearing is desired.



R-W NO. 1299 "TOPFLITE" GARAGE DOOR EQUIPMENT



R-W No. 1299 "Topflite" Door

This is a one-piece turnover door, counterbalanced by weights which assures a permanent fixed adjustment. The door rises vertically 3 in. before swinging out, and even then does not swing out at right angles with the wall line, but travels upward and outward at the same time so that the door can be easily operated from the outside without danger of having it swing out abruptly, causing injury. This feature permits the door to be tightly closed and locked, even if snow and ice have gathered underneath. When open, door is entirely inside the garage.

This door requires 6-in. minimum headroom. It can be installed with only 3 in., if necessary, but the vertical lift is not then available. Side wall space of 9 in. is required on each side of door if weights are hung on front wall. Weights can be hung on back wall, if desired; this of course requires extra cable and cable pulleys. The vertical stiles for this door should be 6 $\frac{1}{2}$ in. wide.

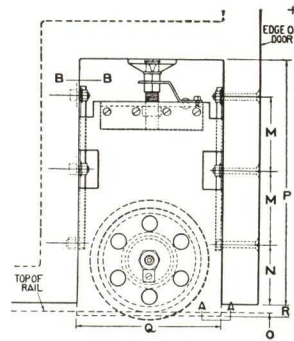
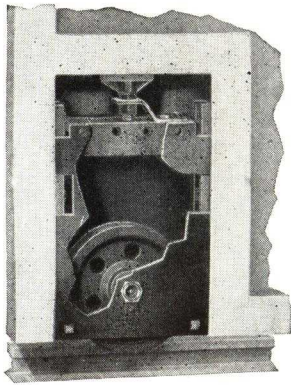
R-W TROLLEY TRACK "OVER-WAY" CONVEYOR SYSTEMS FOR LIGHT LOADS



The R-W overhead conveying equipment line includes a complete series of enclosed type trolley tracks, and Tru-Tred steel-beam tracks, and trolleys suitable for handling any type of material overhead from the lightest loads of a few ounces up to 4 tons. Complete information shown in our Catalogs A-50 and A-64.

R-W TOP AND BOTTOM ROLLERS FOR AIRPLANE HANGAR DOORS

No. 573 and No. 673 Bottom Roller for Straight Slide Doors



*DIMENSIONS OF NO. 573 AND NO. 673 ROLLERS

Roller	M	N	*O	P	Q	R	Wheel	
							Tread diameter	Over-all diameter
573	6	5	$\frac{3}{4}$	20	12	$1\frac{1}{2}$	$8\frac{5}{8}$	$9\frac{7}{8}$
673	$16\frac{1}{2}$	$2\frac{1}{2}$	$\frac{3}{4}$	22	$15\frac{1}{2}$	$1\frac{1}{2}$	11	$12\frac{1}{4}$

*These dimensions are normal. Adjustment is provided to raise the door $\frac{3}{4}$ in. or lower it $\frac{1}{2}$ in. All dimensions in inches.

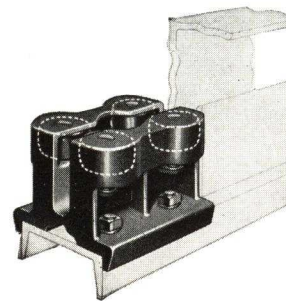


No. 573 and No. 673 Bottom Rollers come assembled as complete units ready to be set into spaces provided in the doors to receive them. Each unit is quickly, easily, and firmly attached to the door by bolts through the side members of the roller. Made entirely of malleable iron and steel. The tread of the wheel is machined.

No. 573 Bottom Rollers are designed for use on doors weighing up to 3000 lbs. and No. 673 Bottom Rollers are designed for use on doors weighing up to 7000 lbs. No. 573 Bottom Rollers are equipped with double row ball bearings; and No. 673 Bottom Rollers are equipped with double Timken bearings. All bearings are protected from dust and grit by felt washers and are lubricated by Alemite or Zerk fittings. A large diameter bearing plate transmits the weight of the door to the top of the heavy vertical adjusting screw. Means are provided for positively locking the vertical adjusting screw in place.

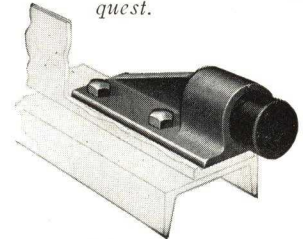
No. 782 Top Guide is designed for use with single angle top guide members in the structure of the building. They are suitable for use on doors 4 in. or more in thickness. The rollers are provided with self-lubricating graphited bronze bearings.

No. 589 Bumpers are also designed for use with single angle top guides. The rubber bumper is $1\frac{3}{4}$ in. in diameter.



R-W No. 782 Top Guide

Description of complete line of hangar door equipment will be submitted on request.



R-W No. 589 Bumper

R-W NO. 448 "SuperR-Way" DOORS

Adapted To—SuperR-Way doors are especially recommended for railroad freight sheds, baggage rooms, warehouses, airplane hangars, shops, round houses and for all factory purposes where strength and permanence are essential. This is a slow burning door and for all ordinary purposes is practically fire safe.

Frame—Each SuperR-Way door has a steel frame formed of $2\frac{1}{2}$ -in. steel angles. All hinges, overhead trolley track carriers, top guide rollers and bottom rollers (in other words all door supports) are fastened directly to the steel frame. This provides a "steel to steel" construction which insures long life and prevents sagging, warping, and pulling apart common to ordinary doors.

Wood Units—These are slightly rounded $1\frac{3}{4}$ -in. squared tongue and groove wood strips which are dipped before assembling. They are fitted into the steel frame and spiked every 4 in. through the tongue and groove, piece by piece to each other. The spikes are thus imbedded between the strips—not a spike exposed anywhere. This forms a rigid structure of unusual strength. The ordinary SuperR-Way door is $2\frac{1}{4}$ in. thick, but large size doors are sometimes made 3 in. thick. These doors are suitable for straight sliding, sliding fold, or hinged doors.



Construction of No. 448 Door

ROWE MANUFACTURING CO.

Manufacturers of Ro-Way Overhead Type Doors and Electric Operators
GALESBURG, ILL.

RO-WAY OVERHEAD TYPE DOOR

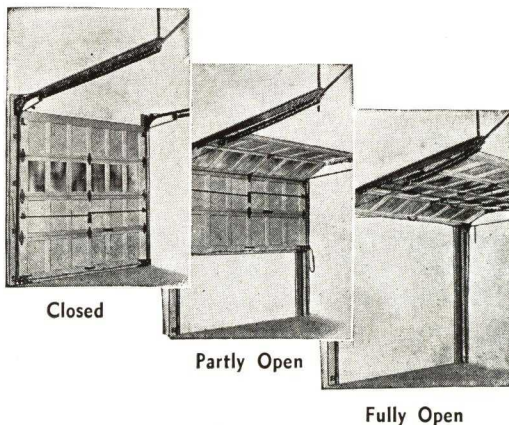
Description

Ro-Way Overhead Type Doors open "Overhead and Out of the Way" leaving the floor space and sidewalls within the building entirely clear. Horizontal sections, approximately 2 ft. high, operate on ball bearing track rollers and move to the overhead position in especially formed steel tracks.

Door Sections

All joints between stiles and rails are mortised and tenoned, waterproof casein glued, and steel doweled. The number of sections and panels is determined by the height and width of doors as follows:

Section Schedule		Panel Schedule	
Opening height	Number of sections	Opening width	Number of panels
Up to 8 ft. 6 in.	4	Up to 10 ft. 6 in.	6
8 ft. 7 in. to 10 ft. 6 in.	5	10 ft. 7 in. to 12 ft. 6 in.	8
10 ft. 7 in. to 12 ft. 6 in.	6	12 ft. 7 in. to 14 ft. 6 in.	10
12 ft. 7 in. to 14 ft. 6 in.	7	14 ft. 7 in. to 16 ft. 6 in.	12
14 ft. 7 in. to 20 ft. 0 in.	Varies	16 ft. 7 in. to 30 ft. 0 in.	Varies



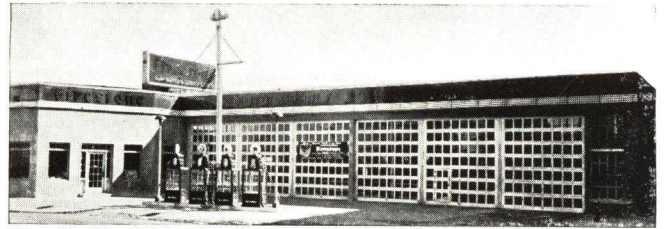
Hardware

All track rollers and chain sheaves are ball bearing with hardened shafts and ball races. Specially formed 2-in. tracking is supplied on doors up to 170 sq. ft. in area; heavy duty 3-in. track is recommended on doors containing over 170 sq. ft. Two-inch vertical tracks are mounted on brackets or continuous angle irons for attaching to jambs; 3-in. vertical tracks regularly are mounted on 2½x3-in. continuous angle iron brackets. Adjustable extension springs are used on all "Regular Lift" Doors; "High Lift" Doors, used over hydraulic car lifts, are equipped with torsion springs. Locking equipment consist of two ¼x¾-in. slide bars which engage in slots in vertical tracks; operated by key from exterior, and by spring latch from interior. Doors are regularly supplied with chain; cable is available as optional equipment.

Hardware, including tracking, is thoroughly cleaned and then made rustproof by Parkerizing Process, and finish coat of metal paint.

Stock Materials

Stiles and rails made of finest grade Sitka Spruce, 1¾ in. thick. Minimum stile and rail widths are 5⅝ in.



Doors Installed for Firestone Tire & Rubber Co., Maple Street, Holyoke, Mass.

Large doors have wider members. Wood panels are laminated 3-ply Fir ⅜ in. thick and manufactured with waterproof glue. Residential doors are available with 1⅜-in. thick stiles and rails, and ⅝-in. thick Fir panels.

Glass Sections

Any or all sections may be left open for glass. Glass not furnished unless specified.

Door Struts

Steel stiffening bars are supplied on doors over 12 ft. 6 in. wide.

Complete Door Equipment

The Ro-Way Door Line includes standard size doors (8 ft. x 7 ft.; 8 ft. x 7 ft. 6 in.; 8 ft. x 8 ft.), special size doors, chain hoists, high lift torsion spring doors, removable mullions, pass doors and electric operators.

Installation Requirements

Ro-Way Overhead Type Doors are extremely flexible so that they may be adapted to unusual opening conditions. Whenever possible, however, the following installation dimensions should be maintained:

Headroom required*—16½ or 13½ in. for 2-in. track; 21 in. for 3-in. track.

Sideroom required**—4½ in. for 2-in. track; 5½ in. for 3-in. track. (Extremely wide doors require more.)

*Special equipment is available, which permits installation when the available headroom is as low as 7½ in.

**Sideroom may be reduced ¾ in. by using ¾-in. thick mould.

Special Designs

Ro-Way Doors can be built to conform to the architecture of a particular building.

Write for Architects' Manual No. D-78.

Specifications

Overhead Type Doors shall be "Ro-Way" as manufactured by the ROWE MANUFACTURING Co., Galesburg, Ill.

Sections shall have 1¾-in. thick stiles and rails of Sitka Spruce with mortised and tenoned joints waterproof glued and steel doweled. Panels shall be three-ply Douglas Fir.

Vertical and horizontal tracks shall be especially formed from 13-gauge steel. All hardware, including tracks, shall be made rustproof by Parkerizing Process and finish coat of metal paint. Locking equipment shall consist of ¼x¾-in. steel bar extending through slot in each vertical track; lock bar shall be key operated from exterior and by thumb spring latch from interior. Extension spring shall be securely mounted as integral part of horizontal track assembly; action of springs shall be such that pull is diverted to upper track bracket on wall.

Track rollers and sheaves shall be full ball bearing. All track roller and sheave shafts shall be case hardened.

RESIDENTIAL GARAGE DOORS

Model J

For residential use, where quiet operation is necessary, the Model J has many advantages. Door Sections are built strong, like commercial doors, yet are distinctly residential in appearance—four panels to each section provide wide glass openings or wood panels. Section 3 (next to top) is regularly left open for glass—any or all may be left open.

Door travels in perfect balance because each cable lifts exactly the same number of pounds—no side drift—no turnbuckles or adjusting devices needed to equalize the door. The Ro-To Live Spring (patented) uses each end of the torsion spring for lifting power—no dead ends. Energy from each end of the live floating spring is applied to each cable drum—one drum revolves clockwise—the other anti-clockwise.

Vertical tracks attach directly to door jamb—no track brackets used. Ball bearing steel track rollers have built-in rubber tires—will not stretch or become loose. Cast steel preformed lifting cables are used. These features insure quieter operation.

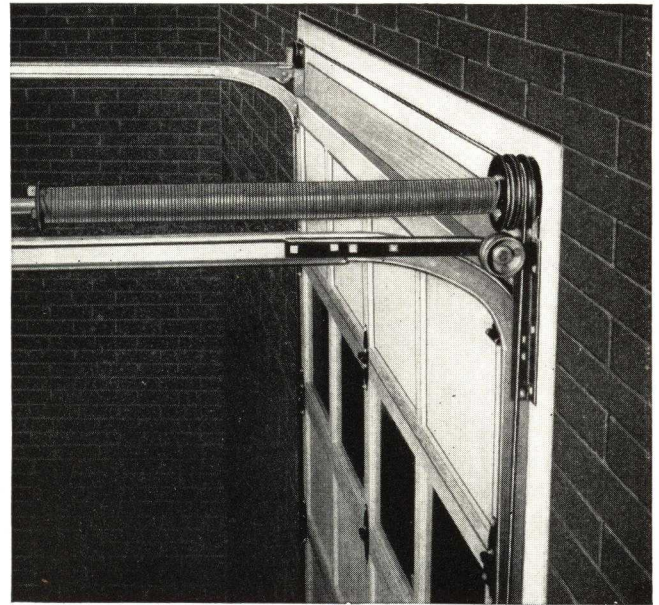
Model J Doors are supplied from stock in Standard Sizes, 8 ft. wide x 7 ft. high, 7 ft. 6 in. high or 8 ft. 0 in. high. Special sizes, less than 65 sq. ft. in area are available.

Normal headroom requirement is 14 in.; special construction permits installation where headroom is as little as 9 in. Sideroom requirement is 3¾ in.

Specifications

Overhead Type Door shall be Ro-Way Model J, as manufactured by the ROWE MANUFACTURING Co., Galesburg, Ill.

Sections shall have 1¾-in. thick stiles and rails; mortised and tenoned joints water-proof glued and steel doweled. Panels shall be three-ply Douglas Fir.



Ro-To Live Spring Perfectly Balances Door in All Positions

Vertical and horizontal tracks shall be especially formed from 13-gauge steel. All hardware, including tracks, shall be made rustproof by Parkerizing Process and finish coat of metal paint. Locking equipment shall consist of ¼x¾-in. steel bar, which engages strikes at both sides of door; lock bar shall be key operated from exterior and by thumb spring latch from interior.

Torsion spring shall be securely mounted as integral part of horizontal track assembly; spring assembly shall be such that lifting cables are self-equalizing to prevent side drift of door.

Steel track rollers shall have built-in rubber tires to provide quiet operation. All track rollers and sheaves shall be full ball bearing with hardened shafts.

ELECTRIC CONTROLS FOR OPERATORS

The Ro-Way Operator permits opening the door by simply pressing a button. A key switch or pull chain located in driveway is available for additional convenience.



Ro-Way Hand Operated Electric Control

A wide variety of other types of control switches may be had to provide maximum convenience and service. In case of power failure, Ro-Way Operators may be quickly disconnected to permit manual operation.

The Ro-Way Electric Operator Line includes controls for both residential and commercial doors. A special inexpensive operator is available for the smaller doors.

Heavy duty operators may be had for large doors in commercial or industrial buildings.

A large selection of control switches is offered for all types of service. Write for special electric operator catalog No. D-74.

Specifications

Electric Operator shall be as manufactured by the ROWE MANUFACTURING Co., Galesburg, Ill. Control shall be of the (constant contact two-button type) (single button momentary contact type) (toggle switch instantaneous reversing type) (three-button momentary contact type). (Strike out types not applicable.) Motor shall be wired for 110-volt, one-phase, 60 cycle, a-c. Motor shall be protected by thermal cut-out switch.

MEMORANDA

THE STANLEY WORKS

Member of The Producers' Council, Inc.

NEW BRITAIN, CONN.

NEW YORK, N. Y., 100 Lafayette Street
CHICAGO, ILL., 61-67 West Kinzie Street
CLEVELAND, OHIO, 1135 Builder's Exchange Building

LOS ANGELES, CAL., American Bank Building, 129 West Second Street
SAN FRANCISCO, CAL., 818 Monadnock Building
SEATTLE, WASH., 568 First Avenue, South

For Stanley Magic Doors, see File Index

STANLEY "ROLL-UP" DOORS

Practical, Easy Operating Spring Balanced Door Operation
Doors and Hardware Complete

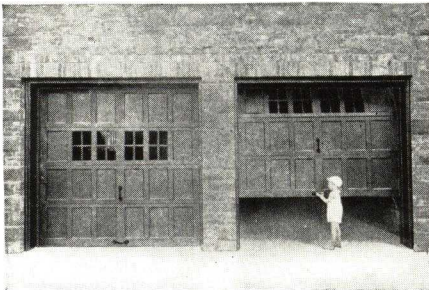
Doors roll up vertical tracks and rest on horizontal tracks when fully open. Large as well as small doors operate easily under all conditions.

Hardware, except outside handles, is inside out of the weather. Each door is provided with a heavy cylinder sliding bolt (with an adjustable stop strike) which engages in a slot in the track.

A cord is provided for closing, with hand chain operation for large doors. Ball bearing rollers insure smooth, easy operation.

Doors regularly furnished unpainted and unglazed. Balanced before shipping for single or double strength glass. If other types are used order should so specify.

TYPES OF STANLEY "ROLL-UP" DOORS



No. 2711

Residential Garages

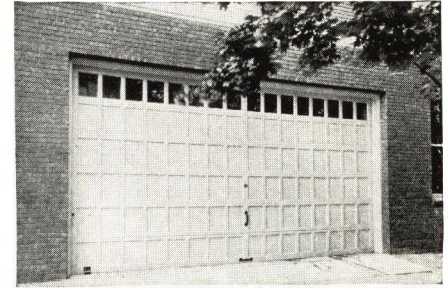
Stock sizes 8x8 ft., 8x7 ft. 6 in., 8x7 ft.
1 3/4 or 1 3/8 in. thick—4 panels high



No. 2715

Commercial Buildings

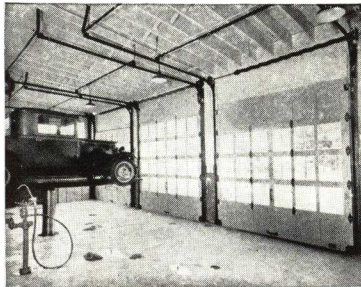
Doors 8x9 ft. to 175 sq. ft.
1 3/4 in. thick—4 or more panels high



No. 2712

Commercial and Industrial Buildings

Doors over 175 sq. ft. 1 3/4 in. thick
Hand chain operation



No. 2715HL

Service Stations

With high ceilings for hydraulic lifts
Same sizes as 2715



No. 2715MP

For Service Stations, Warehouse, Commercial Buildings, etc.

Same sizes as 2715—with movable center posts

Specificational Data

Doors

Furnished in four or more horizontal sections, with edges of each section rabbetted. Holes and mortises for hardware made at the factory. Made with No. 1 pine stiles and rails, doweled and assembled with waterproof casein glue. Panels are three-ply fir veneer, with the center ply grain running opposite the outside plies. Sanded and free from knots.

Doors can be furnished to match any style of architecture. Special doors including tin-clad and steel doors, doors with built-in pass doors, high-lift doors for clearing cars on hydraulic lifts, and doors with movable center posts furnished to order.

Hardware

Hinges—Size 7 7/8 x 2 5/8 ins., of heavy wrought steel, bolted through the door.

Rollers—Three-piece construction, formed together. Fitted with tool steel ball bearings and assembled permanently to

hinges. Have 1/2-in. axial movement to accommodate shrinkage or swelling of door. Doors over 8x8 ft. furnished with graduated cam rollers which engage in track brackets, insuring 100% weather-tight installation.

Track—13-gauge wrought steel. Vertical track equipped with heavy brackets which hold it firmly against door jambs. Horizontal track bolted to vertical track and to angle iron at rear. Crossed turnbuckle braces prevent spreading. Suspended from ceiling by chains.

Springs—Coil springs arranged vertically along side of door (No. 2711) or torsion spring over header (Nos. 2715-2712).

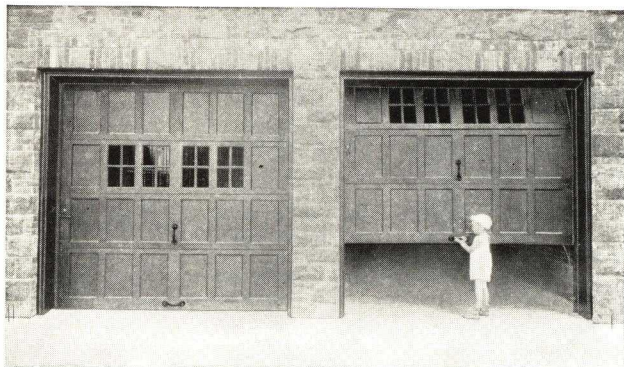
Locking Bolt—Heavy cylinder sliding bolt (with adjustable stop strike) engages in slot in track. Backset 2 in., throw 2 1/4 in. Furnished complete with cylinder and two keys.

Aircraft Cable—3/8 in. diameter, 7 strands 19 wires each, test 3200 lbs.

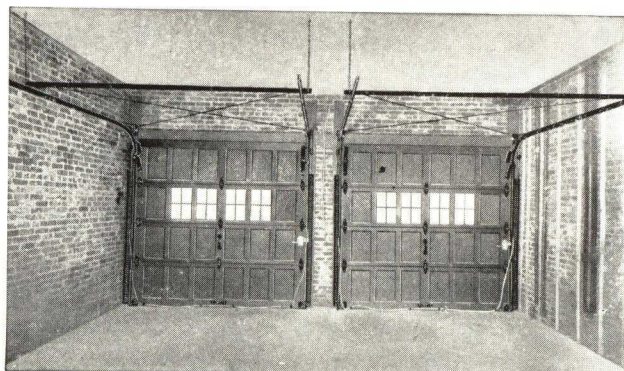
Note: Hardware regularly furnished in Japanned finish, with locking bolt, lag screws and bolts Cadmium-plated.

STANLEY 2711 "ROLL-UP" DOORS For Residential Garages

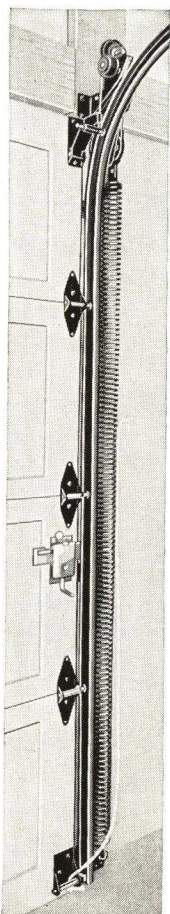
Furnished Complete with Doors and Hardware
Stock Sizes 8'x8', 8'x7'6" and 8'x7'. Coil Springs at Side of Door



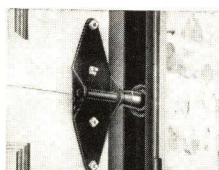
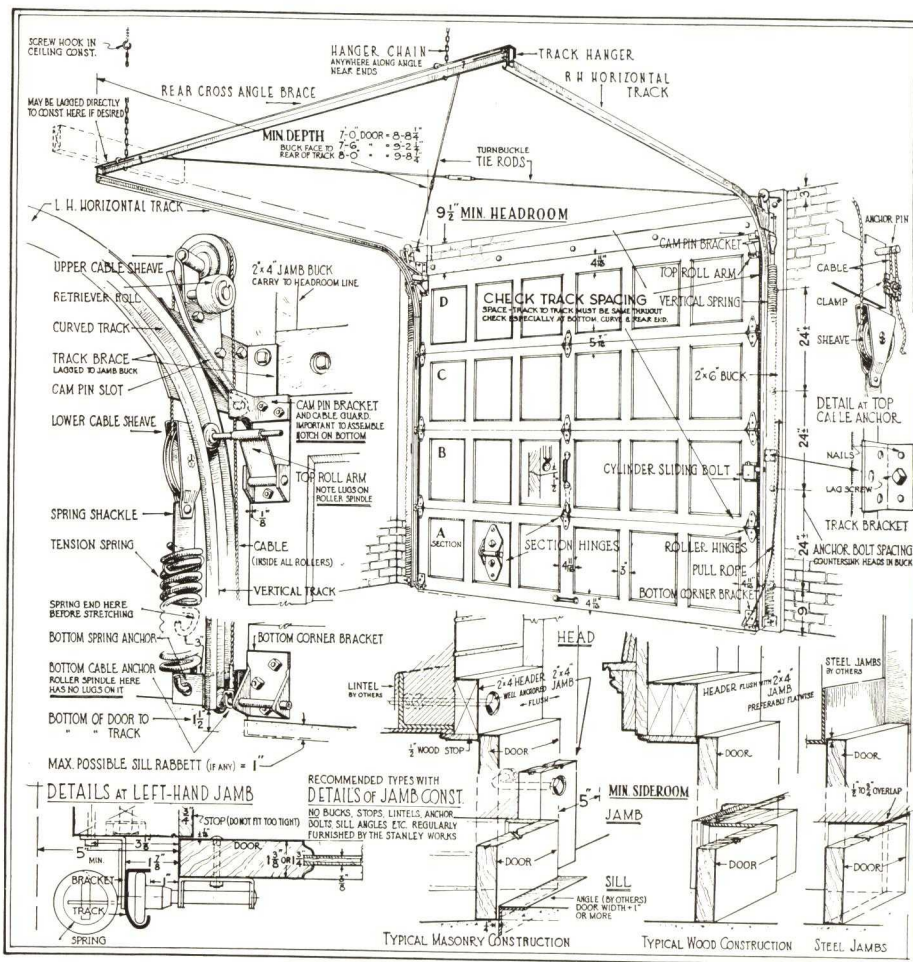
Stock 8x8-ft. Door—Outside View



Inside View



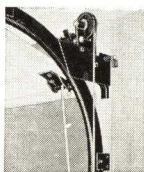
Showing Spring Arrangement



Side Hinge and Roller



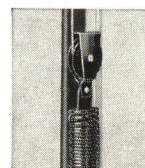
Cylinder Sliding Bolt



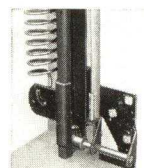
Top Pulley and Cable



Cam Pin and Bracket



Spring Adjustment Plate



Bottom Bracket

STANLEY 2715 "ROLL-UP" DOORS

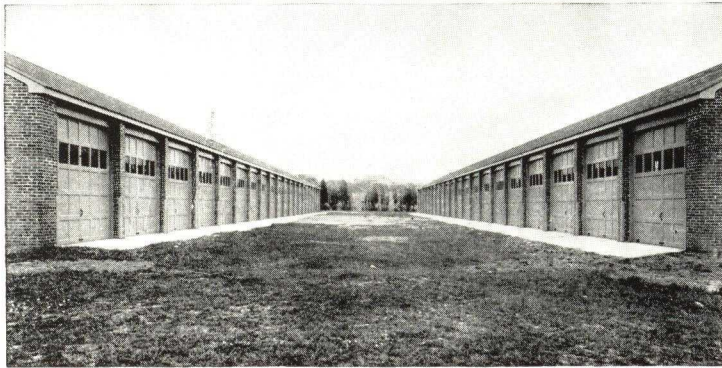
For Commercial Buildings, Service Stations, etc.

Furnished Complete with Doors and Hardware

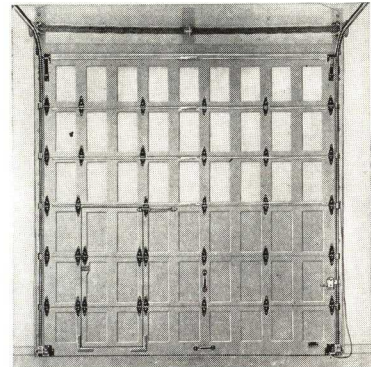
Stock Sizes from 8'x9' to 175 Sq. Ft. Special Sizes to Order. Overhead Torsion Spring

High-lift doors for clearing cars raised on hydraulic lifts are similar to type shown, with longer vertical tracks to permit doors to raise a maximum of 5 feet above header. Doors with

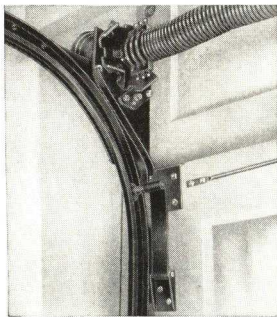
movable center posts are also similar to type shown, except that the torsion spring is mounted at rear of track. Door sections are individually cammed against side jams.



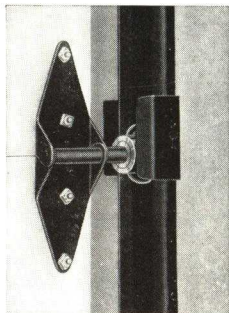
Battery of Doors, Size 10x11 Ft.



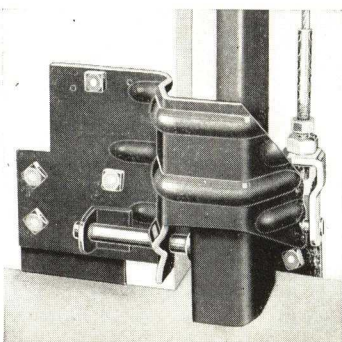
Inside View 12x12-ft. Door



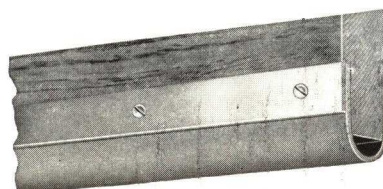
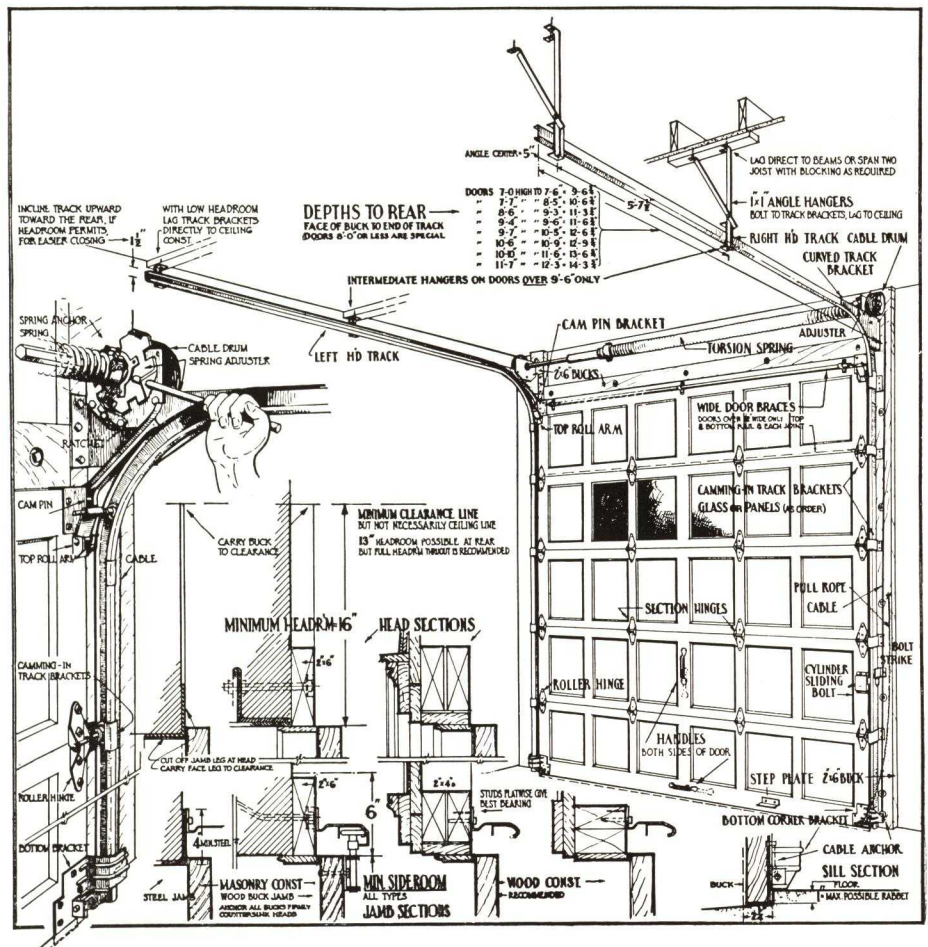
Showing Spring Arrangement



Side Hinge and Roller



Bottom Bracket



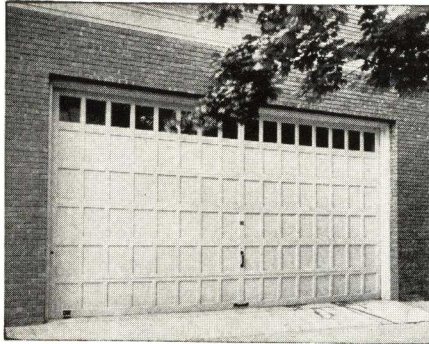
Rubber Weatherstrip (left) obtainable when desired. The rubber is flexible, and when door is closed affords a weather-tight installation. Also acts as a cushion for the door when coming into the closed position. Attached to door with metal strips.

STANLEY 2712 "ROLL-UP" DOORS

Extra Large or Very Heavy Doors for Commercial and Industrial Buildings

Furnished Complete with Doors and Hardware

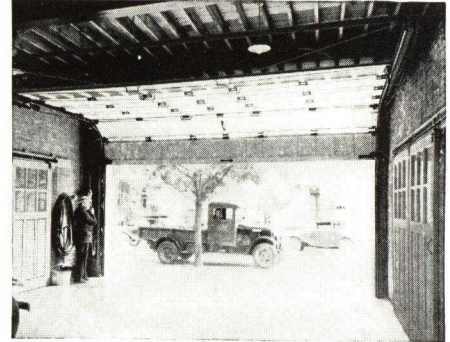
Made in Sizes 175 Sq. Ft. and Over. Overhead Torsion Springs



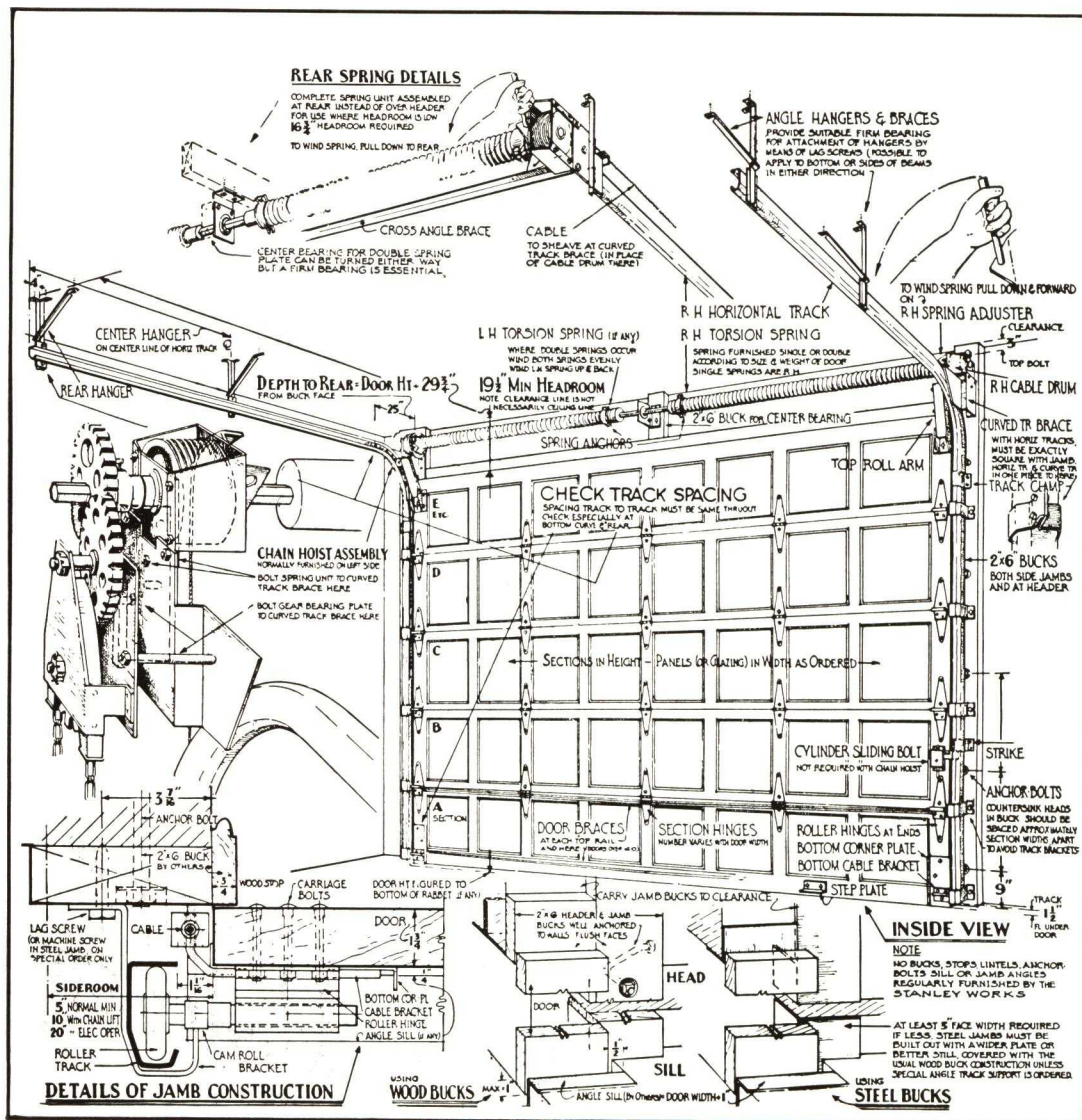
"Roll-Up" Door 20x12 Ft., Outside View

All hardware is extra heavy and the track is angle iron mounted. Each door section is equipped with a turnbuckle truss-rod extending the full width of the door, which strengthens it and prevents buckling. Graduated cam rollers are used on each section, engaging in track brackets, and forcing each section of the door tightly against the jambs. Hand chain operation is standard equipment, with electric operators available on order.

Furnished with step plate to assist in closing.



Inside View



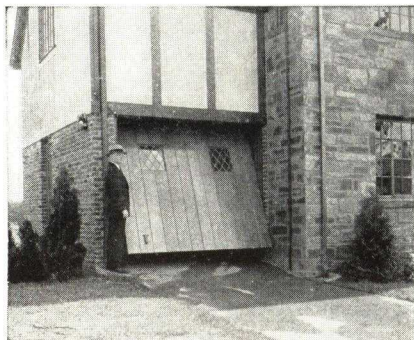
STANLEY "SWING-UP" DOOR HARDWARE

Hardware Only Furnished

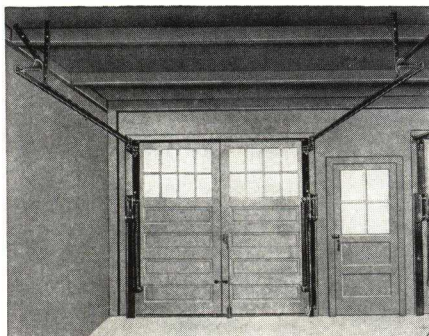
No. 2732 for Light Doors
Doors to 8'x8' and 200 lbs.

No. 2730 for Medium Weight Doors
Doors to 16'x9' and 500 lbs.

No. 2734 for Heavy Doors
Doors to 16'x12' and 750 lbs.



8x8-ft. Door (2730), Outside View



8x8-ft. Door (2730), Inside View



16x10-ft. Door (2734), Outside View

OPERATION

Designed on the pivot principle, swinging the one-piece door up into the open position through the use of heavy coil springs and angle iron lifting arms, where it rests on horizontal tracks. The operation is smooth and easy, due to perfect counterbalancing by the springs.

The door can be left open in any position for light or ventilation. Doors are carried completely into the building, reducing height of opening only 4 in. The garage need be no longer than the car, as the door will operate with the rear bumper resting against it.

GENERAL CONSTRUCTIONAL DATA

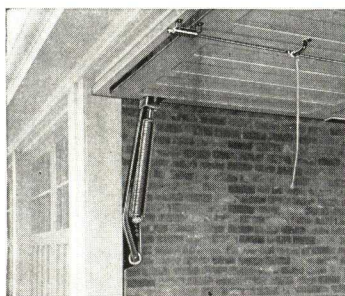
Employs standard door sections cleated together for most openings, although the hardware lends itself to any door treatment.

Hardware is exceptionally sturdy, with heavy heat treated coil springs of ample capacity. Heavy steel plates attached to hanger brackets and housings extend along the sides, acting as both side stops and weatherstrips. Angle iron braces at top and bottom securely fasten door sections together.

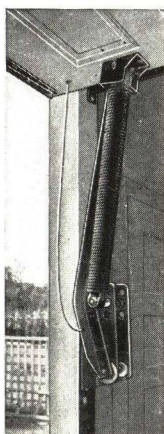
Track is 13-gauge for No. 2730 and No. 2732, while that for No. 2734 is $\frac{1}{8}$ in. thick, angle iron mounted.

A unique safety device prevents accidental closing of the door. Rubber bumpers at rear of track prevent slamming or jarring.

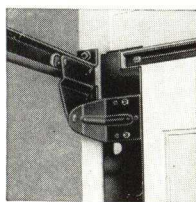
A locking bolt securely locks door in center (for doors over 10 ft. wide, the bolt locks door on both sides). Furnished complete with cylinder and two keys.



Showing Door Completely Inside



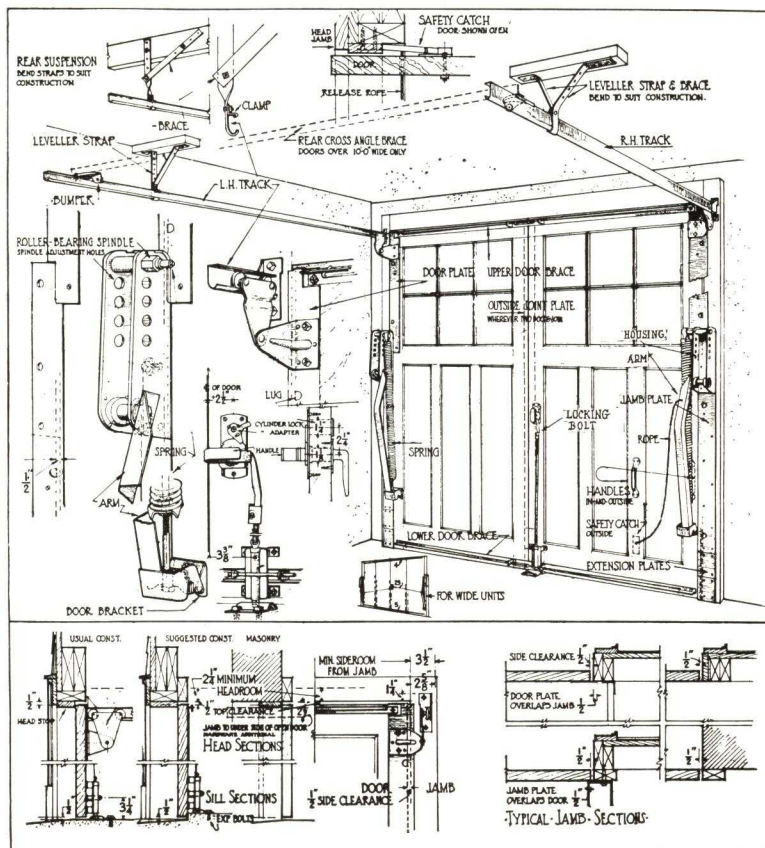
Showing Spring-door in Open Position



Hanger Bracket



Rear Track and Bumper



HUCK-GERHARDT COMPANY, INC.

Manufacturers of Wel-Bilt Overhead Operating Doors
Luzerne and G Streets, PHILADELPHIA, PA.
DISTRIBUTORS IN ALL PRINCIPAL CITIES

TROUBLE-FREE OVERHEAD OPERATING DOORS FOR RESIDENTIAL, COMMERCIAL AND INDUSTRIAL USE

The HUCK-GERHARDT COMPANY, INC., with its long experience in the wood-working field, was splendidly qualified to undertake the design and manufacture of an overhead operating door which would eliminate many of the troubles besetting users of such doors in the past. Extensive investigations among door owners brought to light several problems which have been solved in the Wel-Bilt door. Some of these, their causes and the solutions are described below.



Difficult Operation

A common complaint was the increasing difficulty in operation. This resulted from lack of proper clearance for free travel, failing or inadequate materials and weakening springs. The Wel-Bilt Door is designed and constructed to give freedom of operation and special attention has been given to the spring which is custom-built for each door and will maintain its proper tension for finger-tip operation during the life of the door.

Noisy Operation

Positive alignment, ball bearing rollers, cable operation, out-of-the-way spring suspension and cushioned closing are some of the features which assure quiet operation of the Wel-Bilt Doors.

THESE FEATURES MAKE WEL-BILT DOORS DIFFERENT

The continuous ease of operation of Wel-Bilt Overhead Operating Doors is due to "engineered performance." To accuracy in manufacture and assembly is added a number of special features designed exclusively for the Wel-Bilt Door. The more important of these features are described below.

Custom Designed Extension Springs

Most door springs require many adjustments during operation, but the Wel-Bilt Door Spring has been designed to perform the moment it has been fitted into place. This feature was a matter of long experimentation to find the right combination of material and design. The "secret" of its operation lies in the fact that each spring is designed for a particular door and operating conditions. As a result, Wel-Bilt springs retain maximum load capacities—saving many dollars in spring maintenance, replacement and adjustment costs.

Concealed Cable Operation

Tests proved that a cable was the quietest and easiest operated. The Wel-Bilt Cable is finest Airplane type, with a safety factor greater than 6 to 1. Concealed in vertical position, it may be lubricated without danger of soiling hands or clothing in door operation.

The cable is swaged to a specially designed clamp and clevis pin of the reinforced corner bracket, an arrangement that will resist as great a strain as the cable itself. This Wel-Bilt feature effectively eliminates the ordinary structural failure at this point.

Combination Hinge and Roller Carrier

On both sides of the door, the unit acts as both end hinge and roller carrier. Using a separate shaft which oscillates in the sleeve, eliminates the binding common where the fixed hinge pin acts also as a roller shaft—permitting lubrication. (Patented.)

Multiple Place Locking

This exclusive Wel-Bilt device performs a dual duty. Two lock rods are operated from a center swivel plate, the locking ends entering an adjustable keeper in the vertical track. The swivel plate is notched to allow the door to lock securely even though some obstruction prevents the door from closing completely. The beveled bolt closes the door tightly as shown below in Weather-Sealing feature.

GENERAL SPECIFICATIONS—COVERING ALL WEL-BILT DELUXE AND STANDARD OVERHEAD OPERATING CUSTOM DOORS

Doors to be overhead type hinged horizontal sections, operating free from jamb resistance in upward and downward travel, accurately counterbalanced with a pair of helical, oil-tempered, japanned finished springs, operated with galvanized aircraft cables and to be closed tightly against stops or jambs with individual closing mechanism for each section, equipped with locking device in conjunction with lock cylinder and night latch closing door snugly to floor, all hardware to be rustproofed and to be the Wel-Bilt Overhead Operating Door Type (specify DeLuxe or Standard with symbol) as manufactured by the HUCK-GERHARDT COMPANY, Inc., Philadelphia, Penna.

Weather Leakage

This complaint led to the specially designed Wel-Bilt Weather Sealing described below which guarantees positive closing.

Rapid Deterioration

With some doors weather conditions led to rapid deterioration. In the Wel-Bilt Door the materials and construction have been especially planned to take care of this condition and the hardware—even the nuts and screws—are plated to assure rustproofness and long life.

The Wel-Bilt Door

Special design, materials and first class workmanship overcome these faults and make the Wel-Bilt Door render that *plus* value which guarantees satisfaction to the architect and owner.

Types of Wel-Bilt Doors

Well-Bilt Doors are manufactured in two types, Custom and Stock. Each of these is also made in De Luxe, Standard or Special types. For description of the features, differences and limitations of each type see page 3.

Weather Sealing—Freedom of Operation

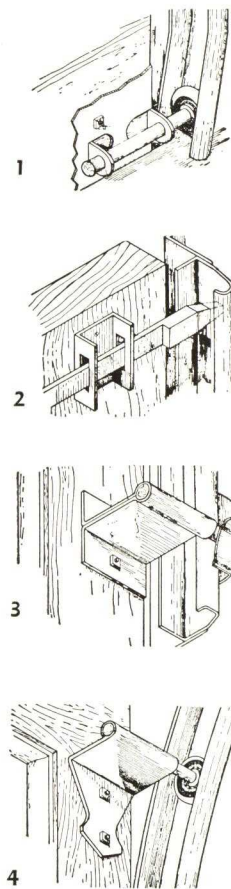
Ease of operation—a major requirement—engineered into the Wel-Bilt Door—the pitched track removing door from jambs for upward and downward travel. Wel-Bilt Sectional Weather Sealing is the forcing of each section against the jambs when in closed position. Four separate devices are used to assure tight closing regardless of the size of the door, or of the condition of jamb construction.

1. To close the bottom section, the lower part of the vertical track is pitched toward the jamb, so that the roller action forces the section to a tight close. This construction removes door from jambs for free operation.

2. The bolt on the Wel-Bilt Locking Device is beveled two sides. When the lock is turned the bevel on the inside operates to force this section tighter against the jamb. (Patented.)

3. A special Wel-Bilt Closing Device consists of a slotted bracket fastened to the vertical track. A bracket-supported arm on the door section engages this slot on the downward motion of the door and the section is thus guided to a tight fit. (Patented.)

4. The track is so designed that the roller on the top section of the door forces it into tight closing position.



WEL-BILT OVERHEAD OPERATING DOORS FOR RESIDENCES

On the preceding page are described the features of Wel-Bilt Doors which make them unique in their field. The points covered there are of especial importance in doors for residential use but in addition "Eye Appeal" and design harmonious with that of the architecture of the dwelling are of equal importance.

Stock doors for Residential use are described below but special designs of Wel-Bilt Doors either DeLuxe, Standard, or Special type are offered to meet a wide variety of architectural conditions.

The three section door in heights 6 ft. 6 in. to 7 ft. 6 in. usually adapted for private garage use offers smooth, easy action in a gracefully proportioned door at a very attractive price.

The Wel-Bilt Door is readily adaptable to meet period design—Georgian, Colonial and Spanish planked types have met the full approval of architects who have specified them. Available in any wood specie.

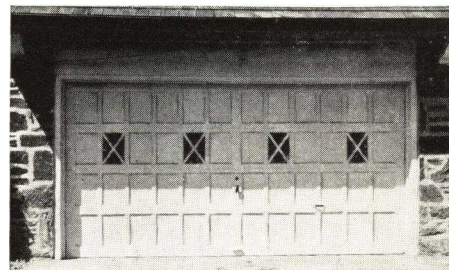
Motor operation is also available with remote control that permits opening or closing from the car.

The pictures on this page illustrate a few of the many varieties of Wel-Bilt Doors for Residential use.

If there is any doubt in your mind as to whether a Wel-Bilt Door can be built to meet the design you have in mind, we invite you to write our Engineering Department. This department is constantly engaged in designing Wel-Bilt Doors to meet unusual conditions. Detailed specifications on page 3. Areas to 100, 100 to 144 sq. ft.



Planked Design



Two Car Residential

WEL-BILT OVERHEAD OPERATING DOORS FOR COMMERCIAL AND INDUSTRIAL USE

The sound designing and construction of the Wel-Bilt Door is nowhere better evidenced than in the arduous service demanded by industry. In service stations, in large industrial plants, for municipal buildings, store fronts and public garages, Wel-Bilt Doors are giving all their owners ask.

These doors are subject to hard use. Operating, compared with residential use, is multiplied many times. In such service, the value of the Wel-Bilt Spring Construction is especially noticeable because it eliminates constant service adjustment.

Larger doors are given special construction to assure rigidity. For doors 10 ft. and over in width or height, the horizontal track is reinforced the entire length with angle iron.

Each section of a door 12 ft. and over in width is reinforced with a steel strut. For doors over 16 ft. 3 in. in width, the sections have the additional reinforcement of strut and truss rods.

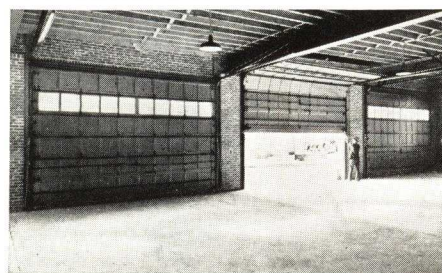
Special structural reinforcements for doors over 100 sq. ft. and over 144 sq. ft.—areas and over. Heavy duty hardware assembly available in all sizes. See detail, pages 5-6. For other construction data see table on page 4.

All-glass panel construction is also available where specified for service station, open market, or other installation where maximum lighting is important.

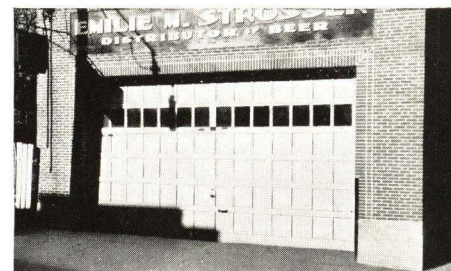
Special design for high lift doors and special operating devices including Chain Hoist, Motor Operators with sub-station control are given on later pages.

In addition to the above variations, Wel-Bilt offers accessories to meet special conditions, such as movable center posts, automatic Opening Device for use in Fire Houses or other points where instant opening is a valuable feature, braking device for retarding door travel, Pass Doors.

In the designing of doors for Industrial and Commercial use, we invite you to make full use of our Engineering Department.



Opened Door Leaves No Obstructions



Provides an Inviting Entrance

Doors for Special Purposes

The services of the Wel-Bilt Engineering Department are available to assist the architect and engineer in the designing of doors for special requirements. Wicket doors, hangar doors, metal covered doors, unusual patterns to conform to architectural design have been developed to meet every condition.

WEL-BILT STOCK DOORS

Wel-Bilt Stock Doors are available in three types, DeLuxe, Standard and Special. Detailed specifications for these are given in the table on page 3. The Stock Door sizes are 8 ft. wide by 7 ft., 7 ft. 6 in., or 8 ft. high. In addition, the Standard and Special are also available in 6 ft 6 in. height. Sections: Height 7 ft. to 8 ft. in four sections; 6 ft. 6 in., 7 ft. and 7 ft. 6 in. high also available in three sections.

These doors are economical enough for use in residences and certain commercial and industrial buildings where the convenience and satisfaction of this type of door has previously been prohibited because of cost.

Four Section Stock Door, All Panel



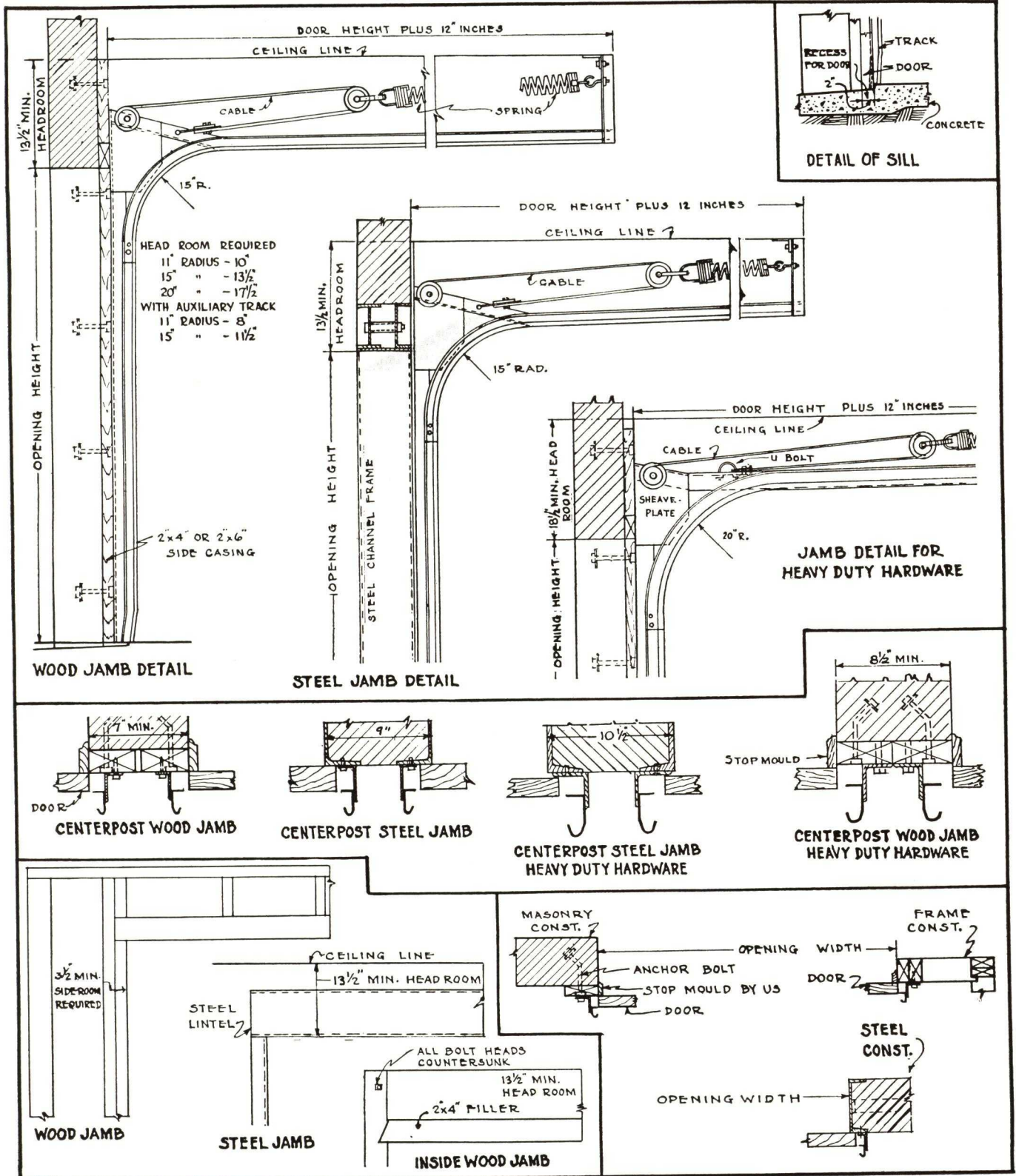
WEL-BILT CUSTOM DeLUXE AND STANDARD OVERHEAD OPERATING DOORS

	Up to 100 Sq. Ft.			100 Sq. Ft. to 144 Sq. Ft.			Over 144 Sq. Ft.		
	DeLuxe Type W	Standard Type B	DeLuxe Type E	Standard Type I	DeLuxe Type L	Standard Type L	DeLuxe Type L	Standard Type L	DeLuxe Type L
WOOD	Idaho White Pine	Douglas Fir	Idaho White Pine	Douglas Fir	Idaho White Pine	Douglas Fir	Idaho White Pine	Douglas Fir	Douglas Fir
PANELS	Solid Panels, raised both sides	Laminated Panels	Solid Panels, raised both sides	Laminated Panels	Solid Panels, raised both sides	Laminated Panels	Solid Panels, raised both sides	Laminated Panels	Laminated Panels
THICKNESS	1 3/8" or 1 3/4"	1 3/8" or 1 3/4"	1 3/8" or 1 3/4"	1 3/8" or 1 3/4"	1 3/8" or 1 3/4"	1 3/8" or 1 3/4"	1 3/8" or 1 3/4"	1 3/8" or 1 3/4"	1 3/8" or 1 3/4"
STILES AND RAILS	Doweled, 5/8"x3 1/2"—5" and assembled with waterproofed glue.	The horizontal joints between sections are made with a ship-lap construction.	Doweled, 5/8"x3 1/2"—5" and assembled with waterproofed glue.	The horizontal joints between sections are made with a ship-lap construction.	Doweled, 5/8"x3 1/2"—5" and assembled with waterproofed glue.	The horizontal joints between sections are made with a ship-lap construction.	Doweled, 5/8"x3 1/2"—5" and assembled with waterproofed glue.	The horizontal joints between sections are made with a ship-lap construction.	Doweled, 5/8"x3 1/2"—5" and assembled with waterproofed glue.
TOP RAIL	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"
BOTTOM RAIL	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"
END STILE	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"
LOCK STILE	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"
INTERMEDIATE RAIL	3" x 3" x 3/8"	3" x 3" x 3/8"	3" x 3" x 3/8"	3" x 3" x 3/8"	3" x 3" x 3/8"	3" x 3" x 3/8"	3" x 3" x 3/8"	3" x 3" x 3/8"	3" x 3" x 3/8"
MULLION	3" x 3" x 3/8"	3" x 3" x 3/8"	3" x 3" x 3/8"	3" x 3" x 3/8"	3" x 3" x 3/8"	3" x 3" x 3/8"	3" x 3" x 3/8"	3" x 3" x 3/8"	3" x 3" x 3/8"
TRACK	2" rolled steel (13 gauge) or 3" heavy duty	2" rolled steel (13 gauge) or 3" heavy duty	2" rolled steel (13 gauge) or 3" heavy duty	2" rolled steel (13 gauge) or 3" heavy duty	2" rolled steel (13 gauge) or 3" heavy duty	2" rolled steel (13 gauge) or 3" heavy duty	2" rolled steel (13 gauge) or 3" heavy duty	2" rolled steel (13 gauge) or 3" heavy duty	2" rolled steel (13 gauge) or 3" heavy duty
VERTICAL TRACK	Angle Mounted 2 1/2" x 1 1/2" x 3/8"	Bracket Mounted 2 1/2" x 1 1/2" x 3/8"	Angle Mounted 2 1/2" x 1 1/2" x 3/8"	Bracket Mounted 2 1/2" x 1 1/2" x 3/8"	Angle Mounted 2 1/2" x 1 1/2" x 3/8"	Bracket Mounted 2 1/2" x 1 1/2" x 3/8"	Angle Mounted 2 1/2" x 1 1/2" x 3/8"	Bracket Mounted 2 1/2" x 1 1/2" x 3/8"	Angle Mounted 2 1/2" x 1 1/2" x 3/8"
HORIZONTAL TRACK	Partially Reinforced Angle 2x1 1/2" x 3/8"	Reinforced full length Angle 2 1/2" x 1 1/2" x 3/8"	Partially Reinforced Angle 2x1 1/2" x 3/8"	Reinforced full length Angle 2 1/2" x 1 1/2" x 3/8"	Partially Reinforced Angle 2x1 1/2" x 3/8"	Reinforced full length Angle 2 1/2" x 1 1/2" x 3/8"	Partially Reinforced Angle 2x1 1/2" x 3/8"	Reinforced full length Angle 2 1/2" x 1 1/2" x 3/8"	Partially Reinforced Angle 2x1 1/2" x 3/8"
ROLLERS	Tread one piece. Ball bearing for 2" track—1 1/8" dia.	Medium Duty Spring and Stationary Ball Bearings	Tread one piece. Ball bearing for 2" track—1 1/8" dia.	Medium Duty Spring and Stationary Ball Bearings	Tread one piece. Ball bearing for 2" track—1 1/8" dia.	Medium Duty Spring and Stationary Ball Bearings	Tread one piece. Ball bearing for 2" track—1 1/8" dia.	Medium Duty Spring and Stationary Ball Bearings	Tread one piece. Ball bearing for 2" track—1 1/8" dia.
SHEAVES	Medium Duty Spring and Stationary Ball Bearings	Medium Duty Spring and Stationary Ball Bearings	Medium Duty Spring and Stationary Ball Bearings	Medium Duty Spring and Stationary Ball Bearings	Medium Duty Spring and Stationary Ball Bearings	Medium Duty Spring and Stationary Ball Bearings	Medium Duty Spring and Stationary Ball Bearings	Medium Duty Spring and Stationary Ball Bearings	Medium Duty Spring and Stationary Ball Bearings
SPRINGS	Special custom made and tested, helical, oil tempered extension springs, japanned, horizontally mounted.	Special custom made and tested, helical, oil tempered extension springs, japanned, horizontally mounted.	Special custom made and tested, helical, oil tempered extension springs, japanned, horizontally mounted.	Special custom made and tested, helical, oil tempered extension springs, japanned, horizontally mounted.	Special custom made and tested, helical, oil tempered extension springs, japanned, horizontally mounted.	Special custom made and tested, helical, oil tempered extension springs, japanned, horizontally mounted.	Special custom made and tested, helical, oil tempered extension springs, japanned, horizontally mounted.	Special custom made and tested, helical, oil tempered extension springs, japanned, horizontally mounted.	Special custom made and tested, helical, oil tempered extension springs, japanned, horizontally mounted.
SPRING SUPPORT	Springs kept clear of track by taut adjustable wire support. (DeLuxe only or as specified)	Springs kept clear of track by taut adjustable wire support. (DeLuxe only or as specified)	Springs kept clear of track by taut adjustable wire support. (DeLuxe only or as specified)	Springs kept clear of track by taut adjustable wire support. (DeLuxe only or as specified)	Springs kept clear of track by taut adjustable wire support. (DeLuxe only or as specified)	Springs kept clear of track by taut adjustable wire support. (DeLuxe only or as specified)	Springs kept clear of track by taut adjustable wire support. (DeLuxe only or as specified)	Springs kept clear of track by taut adjustable wire support. (DeLuxe only or as specified)	Springs kept clear of track by taut adjustable wire support. (DeLuxe only or as specified)
CABLE	Galvanized Aircraft cable, tensile strength 4200 lbs.	Galvanized Aircraft cable, tensile strength 4200 lbs.	Galvanized Aircraft cable, tensile strength 4200 lbs.	Galvanized Aircraft cable, tensile strength 4200 lbs.	Galvanized Aircraft cable, tensile strength 4200 lbs.	Galvanized Aircraft cable, tensile strength 4200 lbs.	Galvanized Aircraft cable, tensile strength 4200 lbs.	Galvanized Aircraft cable, tensile strength 4200 lbs.	Galvanized Aircraft cable, tensile strength 4200 lbs.
LOCKS	Standard make cylinder, Night Latch in combination with Wel-Bilt locking device	Standard make cylinder, Night Latch in combination with Wel-Bilt locking device	Standard make cylinder, Night Latch in combination with Wel-Bilt locking device	Standard make cylinder, Night Latch in combination with Wel-Bilt locking device	Standard make cylinder, Night Latch in combination with Wel-Bilt locking device	Standard make cylinder, Night Latch in combination with Wel-Bilt locking device	Standard make cylinder, Night Latch in combination with Wel-Bilt locking device	Standard make cylinder, Night Latch in combination with Wel-Bilt locking device	Standard make cylinder, Night Latch in combination with Wel-Bilt locking device
WEATHER-PROOF	Encased Lock Assembly	Encased Lock Assembly	Encased Lock Assembly	Encased Lock Assembly	Encased Lock Assembly	Encased Lock Assembly	Encased Lock Assembly	Encased Lock Assembly	Encased Lock Assembly
FINISH	DuLux Finish	DuLux Finish	DuLux Finish	DuLux Finish	DuLux Finish	DuLux Finish	DuLux Finish	DuLux Finish	DuLux Finish
SMALL PARTS	Rustproof	Rustproof	Rustproof	Rustproof	Rustproof	Rustproof	Rustproof	Rustproof	Rustproof
PAINT	Primer lead, zinc and oil	Primer lead, zinc and oil	Primer lead, zinc and oil	Primer lead, zinc and oil	Primer lead, zinc and oil	Primer lead, zinc and oil	Primer lead, zinc and oil	Primer lead, zinc and oil	Primer lead, zinc and oil
BOTTOM CORNER BRACKET	Reinforced Bottom Corner Bracket Assembly	Reinforced Bottom Corner Bracket Assembly	Reinforced Bottom Corner Bracket Assembly	Reinforced Bottom Corner Bracket Assembly	Reinforced Bottom Corner Bracket Assembly	Reinforced Bottom Corner Bracket Assembly	Reinforced Bottom Corner Bracket Assembly	Reinforced Bottom Corner Bracket Assembly	Reinforced Bottom Corner Bracket Assembly
<p>HEAVY DUTY HARDWARE</p> <p>Door—DeLuxe or Standard—Type T—Door—As described for area either DeLuxe or Standard.</p> <p>Hardware—Track 3" (11 gauge), 20" radius only. Rollers—tread in one piece steel—2 1/8" dia. Vertical and horizontal track both angle reinforced full lengths, 3x2x1/4". Dual top and hinge roller carriers, heavy duty ball bearing stationary and spring sheaves, reinforced bottom corner bracket assembly. Cable, tensile strength 4200 lbs. Wel-Bilt "Sectional Weather Sealing," pitched track for free operation. DuLux finished, small parts rustproofed.</p> <p>Special Design—Wel-Bilt Doors of special design and construction can be built to meet any type of architecture or specialized operating condition. Our engineering department will gladly co-operate.</p>									
<p>SPECIAL RESIDENTIAL DOOR</p> <p>Door—For two-car garage. Widths, 14 to 16 ft.; heights, 6'6" to 8'. Three sections in height, 6'6" to 7'6"; four sections in heights, 7' to 8'; thickness, 1 3/8" to 1 3/4".</p> <p>Door—Same as "Standard" Specifications.</p> <p>Hardware—Vertical track, bracket mounted; horizontal track, reinforced full length angle 2"x1 1/2"x1/4". Cable, tensile strength 2,800 lbs. Hardware finished in Finflex, small parts rustproofed.</p> <p>Special Wood—Door may be made of any specie of lumber, in varied thicknesses.</p>									

STOCK DOORS

	DeLuxe			Standard		
	W & H	Sec- tions	Panels	W & H	Sec- tions	Panels
4—Section Doors (DeLuxe) third section from bottom only open for glazing.	8' x 7'	3 or 4	4	8' x 6 1/2'	3	6
	8' x 7 1/2'	3 or 4	4	8' x 7'	3 or 4	6
	8' x 8'	3 or 4	4	8' x 7 1/2'	3 or 4	6
	8' x 8'	3 or 4	4	8' x 8'	3 or 4	6
4—Section Doors (Standard) bottom section always open for glazing or glazed as desired.	8' x 7'	3 or 4	4	8' x 6 1/2'	3	6
3—Section Doors two bottom sections always paneled. Remaining section in either panel or glass open for glazing or furnished glazed.	8' x 7 1/2'	3 or 4	4	8' x 7'	3 or 4	6
DeLuxe—Glass sections 8 lights wide.	8' x 8'	3 or 4	4	8' x 7 1/2'	3 or 4	6
Standard—Glass sections 6 lights wide.	8' x 8'	3 or 4	4	8' x 8'	3 or 4	6
Doweled, waterproof glue, ship-lap construction.	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"
Idaho White Pine	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"
Solid Panels, raised both sides	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"
Douglas Fir	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"
Laminated Panels	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"	4 1/2" x 1 1/2" x 3/8"
2" rolled steel (13 gauge)	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"
Angle Mounted	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"
Bracket Mounted	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"
Partially Reinforced Angle, 2x1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"
Ball bearing, tread is one-piece steel, 1 1/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"
Light duty, spring and stationary ball bearing	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"
Wel-Bilt custom springs	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"
Galvanized Aircraft cable, tensile strength 4200 lbs.	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"
Standard make cylinder night latch in combination with Wel-Bilt locking device	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"
Encased Lock Assembly	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"
Wel-Bilt Sectional Weather Sealing pitched track for free operation	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"
DuLux Finish	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"
Rustproof	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"
Primer lead, zinc and oil	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"
Mill White	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"	2 1/2" x 1 1/2" x 3/8"

HEAD ROOM—JAMB DETAILS—WEL-BILT DOORS



NOTES

Head Room—As indicated on above and following illustrations is the space required for operation—and should be kept clear of all obstacles extending back on level a distance of at least 1 ft. more than the height of the door, and for the full width, including required side room.

Side Room—Is the clearance on both sides of opening necessary for track installation, varying as illustrated, if door overlaps jambs, heavy duty track, chain hoist, etc. This space should be kept clear for equipment and spring installation.

Wood Jambs (Facings)—Should be flush with side of opening and

must extend from floor to and above head or lintel at least 13 1/2 in.—or for distance of head room requirements. Casings may be 2 x 4 in. if door does not overlap jambs, or 2 x 6 in. if door overlaps—securely bolted to the wall—with lintel flush with jambs on inside.

Steel Jambs—Require angle mounted vertical track, secured to steel jambs with machine screws. In all cases doors should overlap steel jambs 1 in. on each side.

Center Post or Pier—See details for requirements on both Head and Side Room—wood or steel jamb construction.

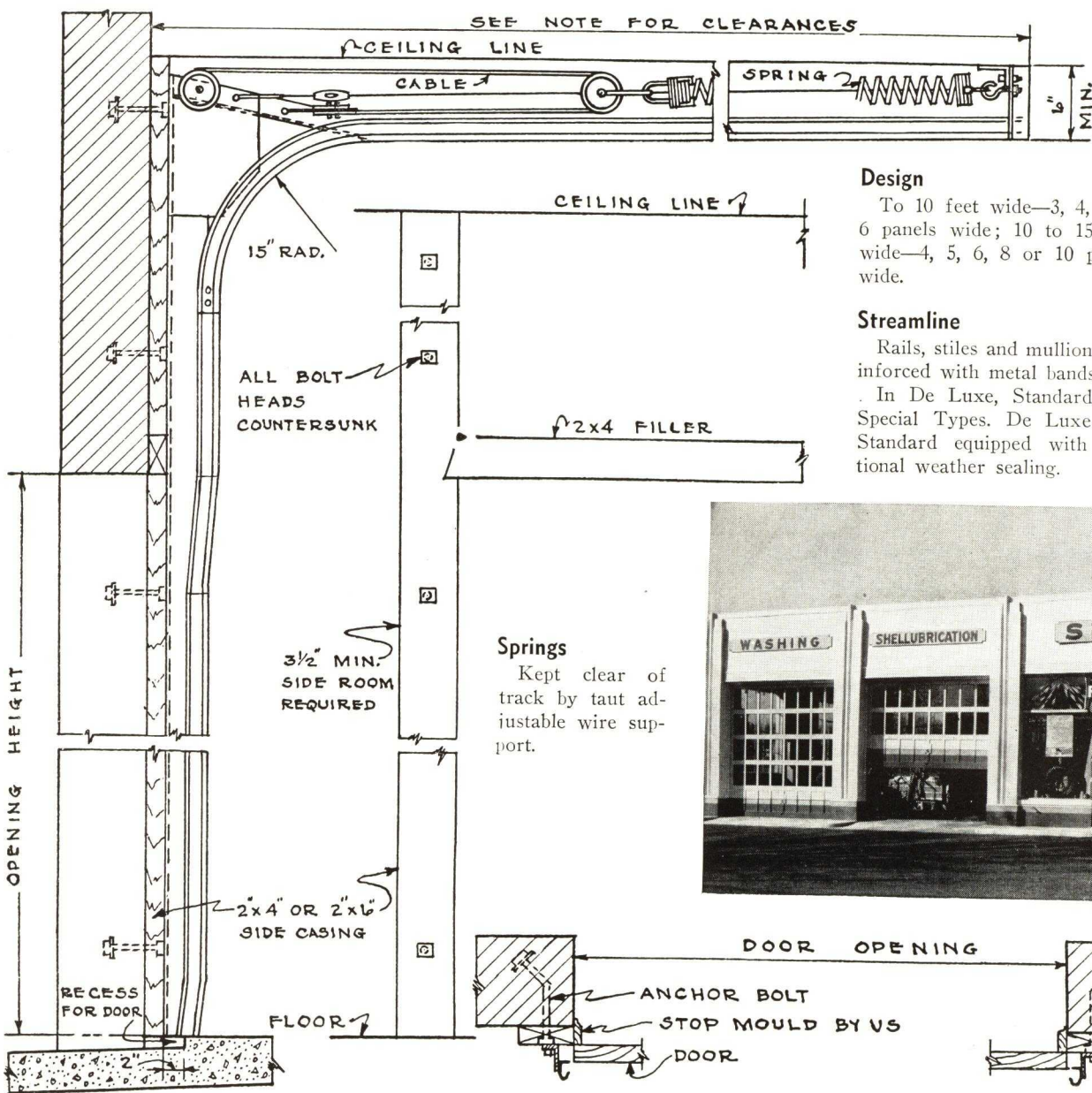
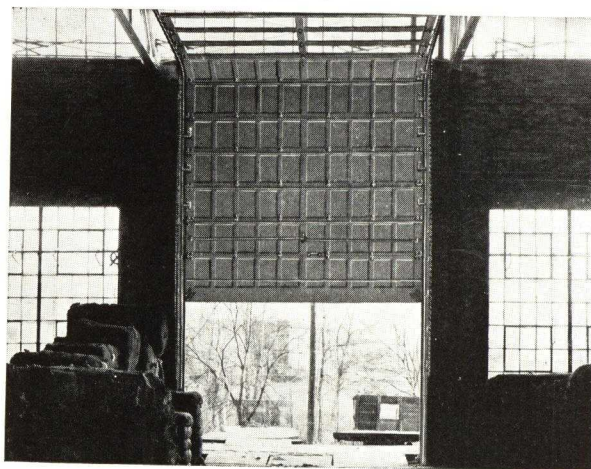
WEL-BILT HIGH LIFT OVERHEAD OPERATING DOORS

For Service Stations using Hydraulic Lifts, Loading Platform, or all other points where the ceiling height for operating purposes is required, Wel-Bilt offers the High Lift Overhead Operating Door.

The Wel-Bilt High Lift Door is constructed to give free operation. Vertical track is pitched away from lintel giving absolute clear travel and the full opening clearance—equipped with Wel-Bilt sectional weather sealing.

For maximum working light, visibility and appearance, full glazing of all sections, except the bottom, is the usual practice. Either glass or panel arrangement may be constructed to conform to any architectural design and still retain normal sectional requirements.

Working drawings covering practical details are shown on this page. Note that one characteristic of the Wel-Bilt Door is especially valuable in the High Lift type. This is the fact that Wel-Bilt Doors work efficiently in an exceptionally small amount of head room.

**Design**

To 10 feet wide—3, 4, 5 or 6 panels wide; 10 to 15 feet wide—4, 5, 6, 8 or 10 panels wide.

Streamline

Rails, stiles and mullions, reinforced with metal bands.

In De Luxe, Standard and Special Types. De Luxe and Standard equipped with sectional weather sealing.

Springs

Kept clear of track by taut adjustable wire support.

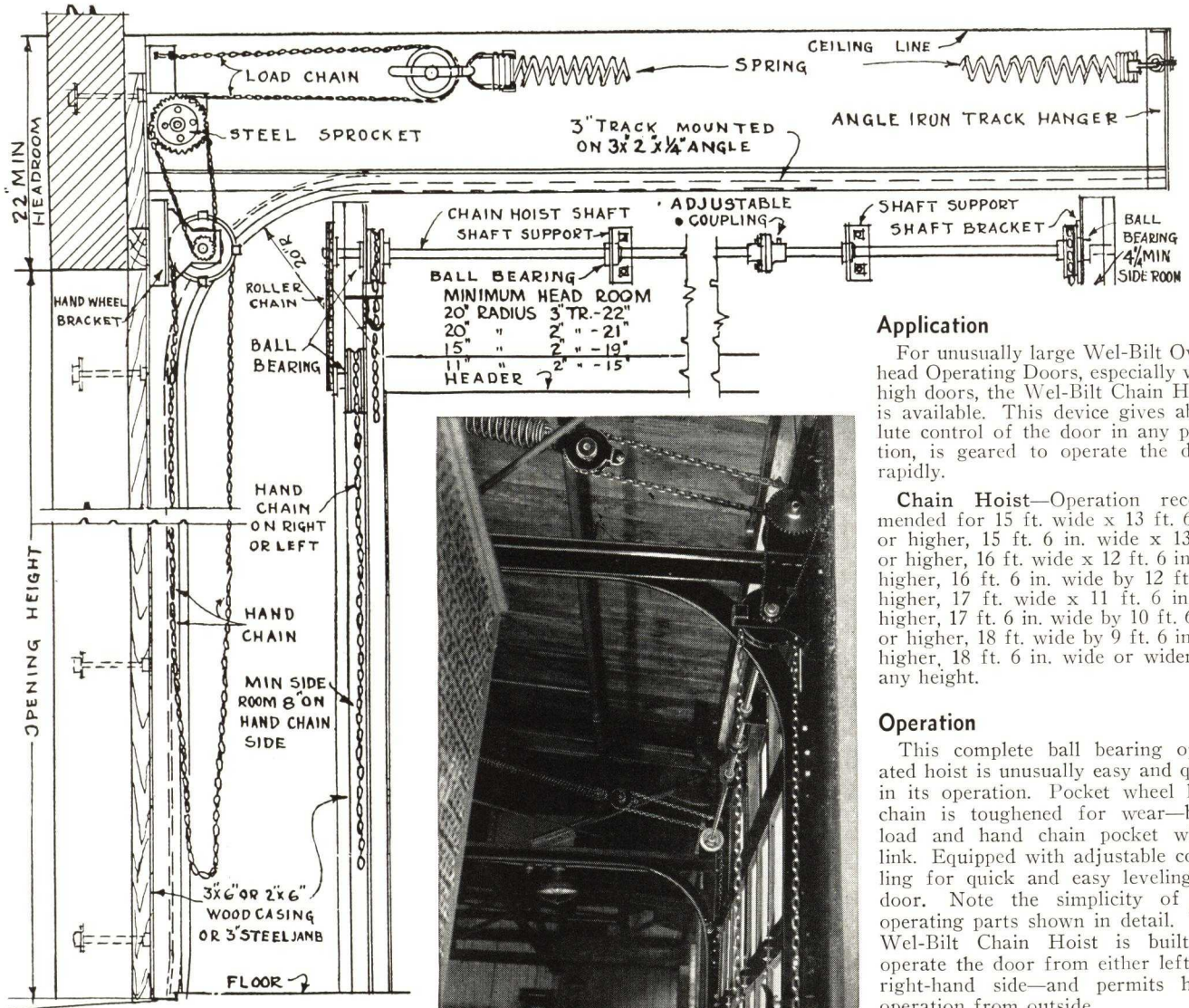


DETAIL AT SILL

CASING & JAMB DETAILS

CLEARANCES—Opening Height Plus High Lift Requirement.

WEL-BILT CHAIN HOIST OPERATORS FOR HIGH OR LARGE DOORS



Application

For unusually large Wel-Bilt Overhead Operating Doors, especially very high doors, the Wel-Bilt Chain Hoist is available. This device gives absolute control of the door in any position, is geared to operate the door rapidly.

Chain Hoist—Operation recommended for 15 ft. wide x 13 ft. 6 in. or higher, 15 ft. 6 in. wide x 13 ft. or higher, 16 ft. wide x 12 ft. 6 in. or higher, 16 ft. 6 in. wide by 12 ft. or higher, 17 ft. wide x 11 ft. 6 in. or higher, 17 ft. 6 in. wide by 10 ft. 6 in. or higher, 18 ft. wide by 9 ft. 6 in. or higher, 18 ft. 6 in. wide or wider by any height.

Operation

This complete ball bearing operated hoist is unusually easy and quiet in its operation. Pocket wheel load chain is toughened for wear—both load and hand chain pocket wheel link. Equipped with adjustable coupling for quick and easy leveling of door. Note the simplicity of the operating parts shown in detail. The Wel-Bilt Chain Hoist is built to operate the door from either left- or right-hand side—and permits hand operation from outside.

MOTOR OPERATORS FOR WEL-BILT DOORS

An extremely popular accessory on Wel-Bilt Doors for both Residential and Commercial use. The positive action of the electric motor in both opening and closing makes the operation of the door completely automatic.

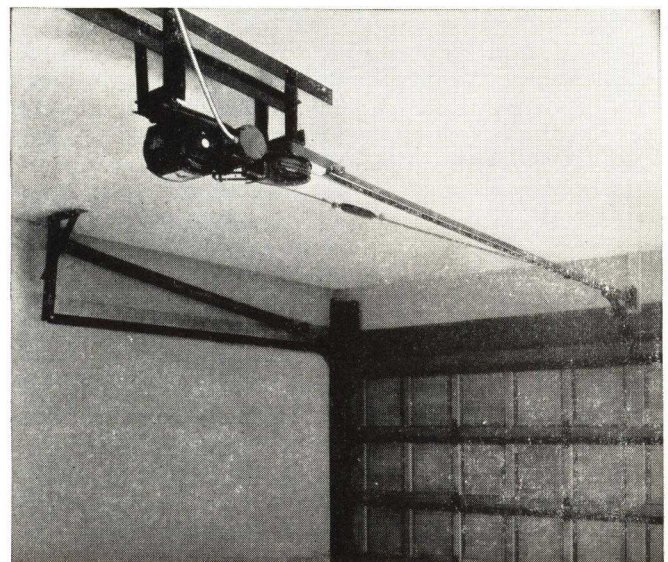
The Wel-Bilt Motor Operator is a most efficient, quiet and economical accessory. Moreover, it permits the installation of remote control.

For Residential Use—A repulsion induction motor raises or lowers the door with momentary push button control. The action is rapid, quiet, positive. A concealed magnetic roadway switch and car magnet give automatic operation from the driver's seat. This permits the opening or closing of the door upon entering or leaving; momentary switch permits operation from within garage or residence.

For Commercial Use—Where more frequent stopping, starting and reversing is necessary, this motor is reversible at any position, includes special internal control system, special relay control panel, limit switch, consisting of one thermal cut-out switch, one momentary open, one momentary close, one momentary stop. Door may be stopped, opened, closed, or reversed from any position. For extremely wide door dual lifting arms are used. This system is adaptable to multiple sub-station control. The advantage of being able to operate a public garage door from the office or from the back shop is obvious.

Operator requires at least 2 in. above highest point of door travel, 13 1/2 in. head room requires 15 1/2 in., 8 in. requires 10 in.

Depth—a distance of 45 in. additional is required for 15 in. radius, 50 in. for 20 in. radius—example, door 8 ft. high, 15 in. radius track, requires 11 ft. 9 in. garage depth or clearance.



THE ATCHISON REVOLVING DOOR CO.

MAIN OFFICE AND FACTORY
INDEPENDENCE, KAN.

LOCAL REPRESENTATIVE



AGENCIES IN 70 OF THE PRINCIPAL CITIES OF THE UNITED STATES AND CANADA
Consult City or Telephone Directory for Name of Nearest Representative or Write the Main Office

Products

REVOLVING DOORS, complete with wings, enclosures, cornices, pilasters, ornament (or without all trimming where these duplicate adjacent work). ADJOINING SWING OR SLIDING DOORS, TRIM, and ACCESSORIES.

In bronze, nickel silver, aluminum, monel metal, steel, stainless steel, micarta, formica, porcelain enamel, and all cabinet woods.

Wings alone furnished only for marble enclosures.

Service

Revolving doors are a specialty that require long experience and training for their successful manufacture, installation and service. During 30 years of continuous progress Atchison has developed a thoroughly experienced and capable sales and service organization in more than 70 cities throughout the country.

Engineering service is available to architects and owners by Atchison engineers and representatives who have had long experience in analyzing entrance problems. Their analyses will show the savings and economies resulting from a revolving door installation and recommendations of design, layout, material and construction suitable to the entrance.

Field service by trained and experienced revolving door men is an essential part of a successful revolving door installation. Atchison doors are installed and serviced by a capable and experienced field organization.

Capacity and Size

Capacity—A revolving door will pass 3,000 to 6,000 persons per hour, each direction. At a normal rate of walking a revolving door makes 15 complete revolutions per minute, each revolution providing unobstructed passage for four persons both IN and OUT. The normal capacity of a revolving door is therefore 3,600 persons in and 3,600 persons out per hour.

Size—Four wing doors are made from 5 ft. 6 in. to 7 ft. 6 in. in diameter. It is recommended that they be not less than 6 ft. 6 in. which will pass traffic most efficiently. Hotels or post offices find the larger doors up to 7 ft. 6 in. more suitable for the handling of luggage and bundles. Elsewhere, doors should not be larger than 7 ft. reducing the temptation for two persons to crowd into one pocket. Inside height varies from 6 ft. 10 in. to 8 ft., the near-standard being 7 ft. It is recommended that the height not exceed 7 ft. 6 in.

Three wing doors are especially adapted to small entrances where traffic is limited as for inside air-lock passages, for toilet room entrances, for dark rooms, and for X-ray rooms.

General Data

Sliding Doors—Of straight or circular design for night closing are furnished with simple, trouble-free supported hardware.

Flexed Walls—Enclosure walls may be hinged to obtain maximum clear width when wings are folded or rolled aside for the passage of automobiles or other large displays.

Screen Doors—For summer use may be attached directly to enclosure wall-ends or to enclosure extensions.

Speed Control—See Master Specification.

Ceiling Lights—10 in. spun polished metal domes or metal frames glazed with diffusing lenslite. Usually located in interior and exterior quarters midway between center and edge of ceiling.

Slot Closer—Is available for keeping ceiling slot of side-rolling doors closed at all times.

Burglar Locks—Of an automatic electric type provide instant locking of revolving doors. They may be controlled from any part of the building in any emergency.

Divided Lights—Applicable to wings and walls.

Base-plates—Recommended on wood doors to prevent floor-scrubbing or damage to walls or finish. Also recommended for use on metal doors for scribing to sloping floors.

Access to Mechanism—Space over door should be accessible for oiling and adjusting main bearing. Ceiling access panels can be had but are undesirable.

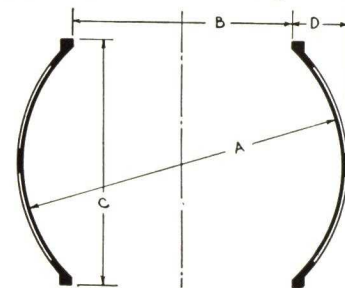
Patents—Cover exclusive features and while not relied on in pricing, infringements will be vigorously resisted.

DIMENSION DIAGRAMS
AND TABLES



3-Wing Door

A	B	C
4 ft. 6 in.	2 ft. 2 1/2 in.	4 ft. 2 in.
5 ft.	2 ft. 5 1/2 in.	4 ft. 7 in.
5 ft. 6 in.	2 ft. 8 1/2 in.	4 ft. 2 in.



4-Wing Door

A	B	C	D
5 ft. 6 in.	3 ft. 9 in.	4 ft. 2 1/2 in.	0 ft. 11 7/8 in.
6 ft.	4 ft. 1 in.	4 ft. 3 1/2 in.	1 ft. 0 7/8 in.
6 ft. 6 in.	4 ft. 5 1/4 in.	5 ft. 0 3/4 in.	1 ft. 1 3/4 in.
7 ft.	4 ft. 9 1/2 in.	5 ft. 5 in.	1 ft. 2 5/8 in.
7 ft. 6 in.	5 ft. 1 1/4 in.	5 ft. 9 in.	1 ft. 3 1/2 in.
8 ft.	5 ft. 6 in.	6 ft. 1 1/4 in.	1 ft. 4 3/8 in.

BRACELESS TYPE NTS WINGS PANIC-PROOF

Atchison Type NTS Braceless Wings are the result of over 30 years experience by a progressive revolving door manufacturer. Patents cover the valuable features of NTS and NTJ braceless wings. Both Types, NTS and NTJ, meet the requirements of the U. S. Government Specifications.

Mechanism

Type NTS and NTJ Braceless Wings are automatic, collapsible, panic-proof, having each of the four wings carried upon the center post disks, independently of the other three, by cored one-piece box hinges or hangers. The wings are held in radial revolving position (position 1) by spring-tensioned ball and socket catches, all stainless steel to eliminate corrosion. Hinges giving support at both top and bottom overcome torsion forces and eliminate twisting and racking.

The metal center post, to which the disks are secured, is suspended from a cup-and-cone ball bearing carried by a compact roller bearing overhead carriage assuring easy rolling aside in the "Atchison" truss-shaped channel.

The center pivot pin is stationary in a floor socket having a removable center piece for easy cleaning. The pivot is surrounded by roller bearings eliminating the possibility of wear and looseness at this important point.

Wings lock with ceiling keylocks, cylinder operated, using standard or master-keyed lock cylinders, and operate from exterior or interior.

Major Improvements

Releasing—Top and bottom hinges in NTS are simultaneously tensioned or released for folding purposes. They are connected by rods operating in preformed grooves in the inner stiles, with special powerful flush levers located breast high on facing sides of each pair of adjacent wings. Moving each flush lever tensions or releases both top and bottom ball catches. Rolling the wings aside only requires the throwing of two wing levers in one pocket and two wing levers and one center post lever in the opposite pocket, the latter simultaneously lifting the center pivot and releasing the overhead carriage latch.

This arrangement of tension operation levers is easily the outstanding development in ease of handling revolving door wings. Heretofore on all braceless type wings, as in NTJ, each hinge has had its individual tensioning lever making it necessary, when folding the wings, to kneel and reach down to operate the bottom tension levers and stretch or climb on a box or stepladder to reach the top tension levers, going into each of the four wing pockets successively to perform the eight operations.

Adjustment—The amount of holding power or collapsing pressure can be readily adjusted with an ordinary screwdriver from the inner edge of the hinges when the wing is turned about 45 degrees from radial position, without dismantling any part of the hinges.



Conway Building, Chicago, Ill.

GRAHAM, ANDERSON, PROBST AND WHITE, Architects



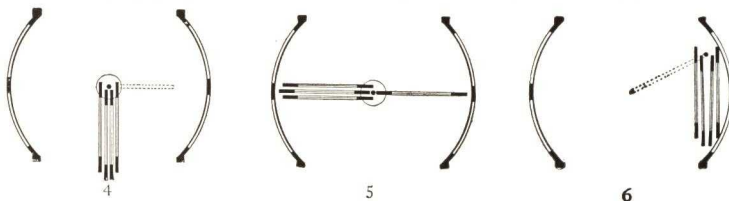
Automatic Pressure Variation—The special patented toggle device tensions the ball catches so that they have their maximum pressure and holding power when the balls are seated in the radial position sockets and least pressure when dislodged and riding on the face of the disk.

The leverage gained by the use of the toggle device allows the ball to seat less deeply into the holding socket and still have surplus holding power. This gives a safety factor as all possibility of the ball "freezing" in the socket is eliminated.

With the pressure of the ball against the face of the disk, there is no pressure against the pivoting Mechanism to cause wear and looseness. It also permits the free swinging of wings back to radial position.



Broadway-Continental Building, 1450 Broadway, New York, N. Y.
Type NTS, "Curved Wing" .050 (16 B&S ga.) Nickel Silver



Other Advantages

The center post is special shape with the inner edge of the wing shaped to fit and provided with a spring felt strip, making an absolutely weather and air proof contact.

Close fitting of fulcrum points and surplus power in the spring-tensioned releasable catches prevent development of undesirable looseness.

Disks are located away from ceiling and floor, making easier the rolling of wings aside, the entering of the center pivot into floor sockets, and the replacement of air-lock strips.

This simplicity and durability makes safe and easy operation even by inexperienced help.

Folding

An important feature is that the ball catches which hold the wings in radial position also hold them in all folded positions, requiring no folding bar or additional mechanism for that purpose. Separate sockets are so located on the disks that they automatically engage the balls when the wings reach their proper folded positions.

An exclusive feature is that the wings may be easily returned from folded to revolving position without operating the tension levers. A pull of sufficient force to disengage the ball from the folded position socket is all that is necessary to return the wings to normal rotating position where the balls snap into the radial sockets automatically.

Position 2, center folded—For ventilation or free passage. Door can be folded to this position in 15 seconds and returned to revolving position in 6 seconds.

Position 3, wings folded and rolled aside—giving large free opening for passing bulky objects or free traffic or ventilation. Door can be folded and rolled aside in 30 seconds and returned with equal speed.

Position 4, panic position—Pressure against the wings in excess of the pressure needed to rotate the door automatically releases the ball and socket catches, allowing the wings to swing freely and fold outwardly in one equally spaced pack giving free and unobstructed passage.

Position 5, locked position—The wearing surfaces of disks and hinges are so ample that in locked position a single wing may be used, without danger of wear, as a swing door, for exit purposes after-hours.

Position 6—Wings folded and rolled aside with diagonal ceiling slot. Of especial value to allow use of curved sliding doors or attaching of screen doors direct to enclosure wall-ends.

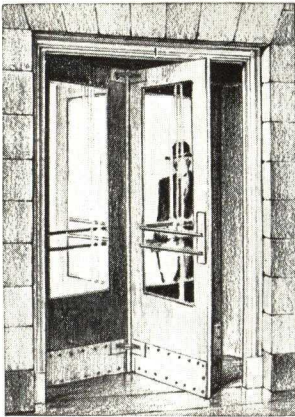
Type NTS and NTJ wings fold into the smallest pack possible, occupying only $3\frac{1}{4}$ in. in positions 2 and 3 and 8 in. in position 4 with all wings equally spaced.

CURVED WINGS

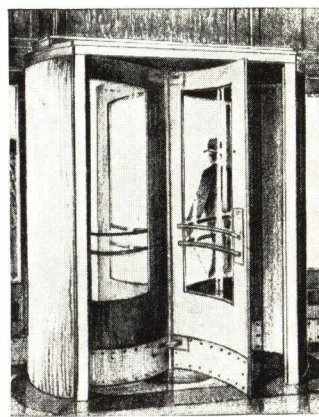
Curved Wings are an exclusive Atchison development. They are the *only* improvement ever made affecting the *primary* use of revolving doors—the revolving use wherein an entrance is always closed yet constantly open to traffic.

The shape of the wings does not, of course, increase the area within the circle, but it does divide this area into spaces so shaped that passage through a Curved Wing door is more than a fourth easier than passage through a straight wing door.

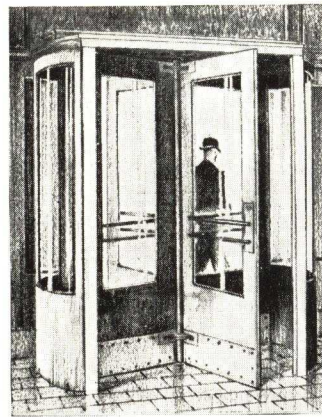
Curved Wings, following the contour of the enclosure walls (figure 6), have a more natural and handsome appearance when folded; are a natural traffic regulator eliminating any temptation for travel in the wrong direction; afford a safety factor because bent glass is less liable to breakage owing to the arched shape.



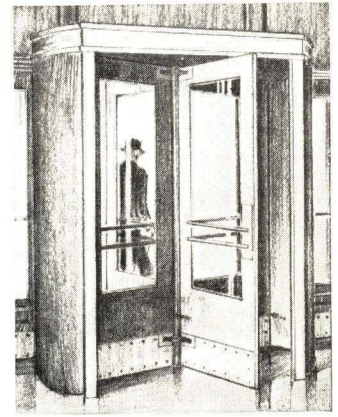
Design 1U
Walls—Unfinished Convex.
No Cornice or Roof



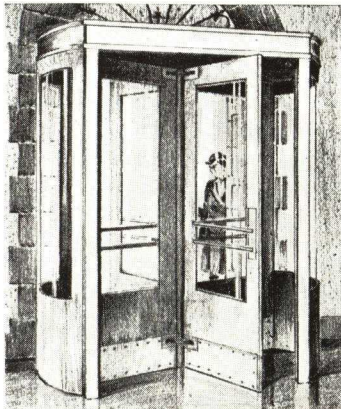
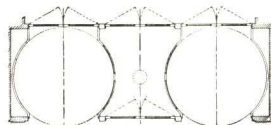
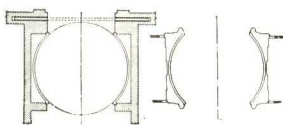
Design 1
Walls—Smooth Convex
These designs include 3-in. plain cornice,



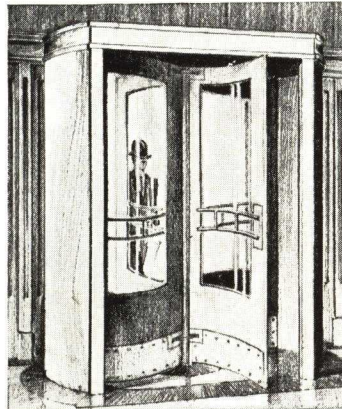
Design 1G
Walls—Bent Plate Glass



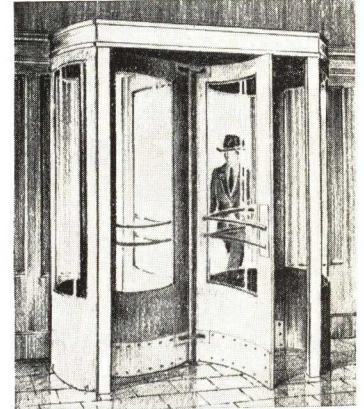
Design 2
Walls—Smooth Convex
These designs include 6 to 8-in.
plain moulded cornice, roof and trap
door



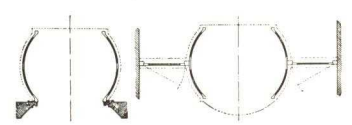
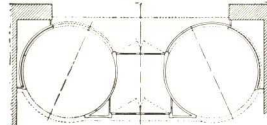
Design 2G
Walls—Bent Plate Glass



Design 3
Walls—Smooth Convex
These designs include 10 to 12-in.



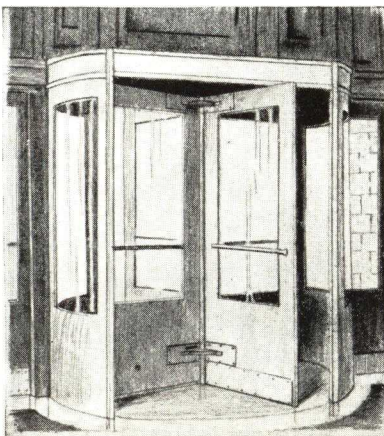
Design 3G
Walls—Bent Plate Glass



STANDARD DESIGN SCHEDULE

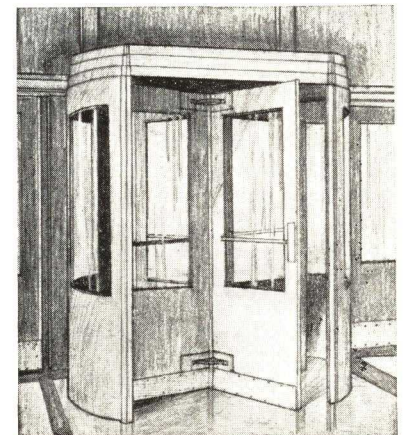
With Suggestive Layouts Applicable to Various Designs

Stock Doors



The Recovery

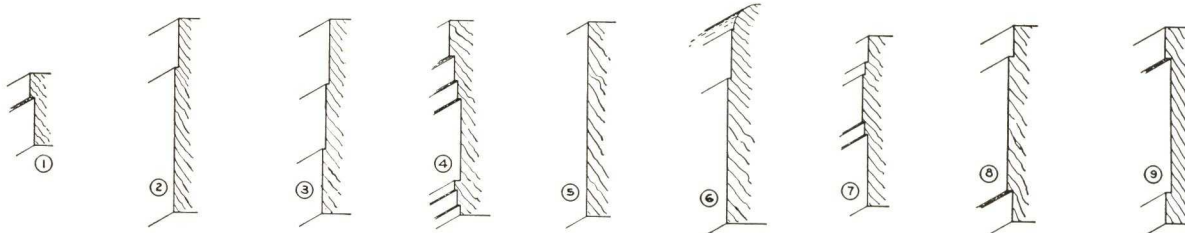
No. 70—7 x 7 ft.
No. 66—6 ft. 6 in. x 7 ft.
No. 60—6 x 7 ft.
No. 56—5 ft. 6 in. x 7 ft.
Design G—Glass in walls.
Design I—Solid flush walls.
Design U—Unfinished convex.
Cornice— { Recovery—8 in. plain band.
 { Moderne—8 in. modernistic.
Material—Birch.
Finish—4-coat rubbed varnish.
Mechanism—Type NTJ braceless, panic-proof
 side-rolling.
Hardware—Bronze.
Kickplates—5½ in. two sides.
Pushbars—One per wing.
Glass—¾-in. drawn.
Bottom rail height—27 in. from floor.



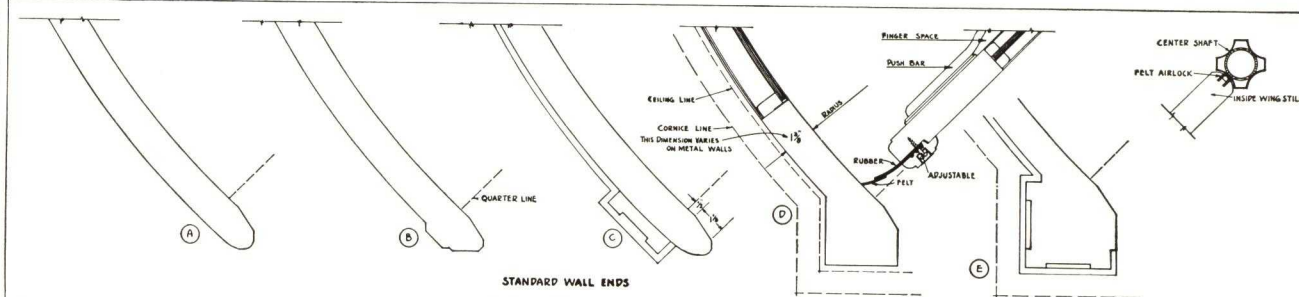
The Moderne

ATCHISON REVOLVING DOOR ~ RECOMMENDED DETAILS

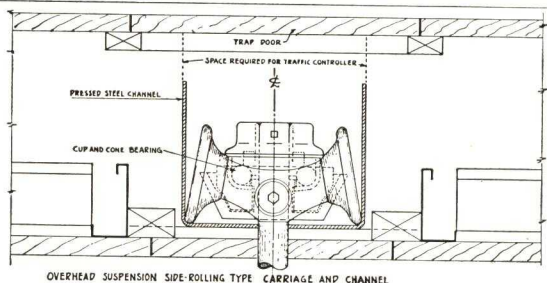
SCALE 1/2" = 1'-0"



STANDARD CORNICE PROFILES



STANDARD WALL ENDS



OVERHEAD SUSPENSION SIDE-ROLLING TYPE CARRIAGE AND CHANNEL

hesives to hardwood faced, laminated, waterproof cores.

Finish—Wood—Painter's finish regularly supplied in two grades, 3-coat gloss, or 4-coat rubbed varnish, or enamel in black or colors to approved samples.

Metal—To match adjacent work. Fine-lined natural or medium oxidized recommended, not lacquered. Samples on request.

Alumilite—The highly desirable, durable, and attractive electrolytic finish for aluminum is now available on revolving doors as a result of special construction technique developed by Atchison.

Hardware—Of heavy, plain beveled design, solid cast bronze, nickel silver, aluminum, or chromium plate. No other plating recommended.

Cylinder locks, standard or master-keyed, operant from inside or outside, optional.

Air-lock Strips—Consist of wide bottom rubber for flexibility, thick woven felt top strips, and tapered moulded side rubbers of anti-aging composition with piano-felt edges, all especially designed and selected for maintaining the air-lock with proper amount of friction.

Glass—Furnished in polished plate or drawn. Bottom rail height 18 in. from floor recommended to resist unusual twisting strains, 10 in. minimum limit.

STANDARD DESIGNS

These are shown on opposite page so arranged, numbered and lettered to show in schedule form the combination of various standard cornice and enclosure wall designs.

The standard design schedule is presented as a standard reference for basic designs. It is intended as a convenient base upon which the Architect may develop his individual designs of cornices, pilasters or wall-ends, and enclosure wall panels and glass openings in harmony with modern architectural treatment.

Illustrations in these pages are of actual installations of such designs. Thus, Conway Building—Graham, Anderson, Probst & White, Architects—(page 2) illustrates modern architectural modification of standard Design 3. Similar modification of Design 2G is illustrated on page 3.

Wood—Wings and enclosures of all cabinet woods veneered with 5-ply laminated waterproof construction, making one-piece or slab wall sections or wings with correspondingly greater strength.

Metal Covering—Wings and enclosures—bronze, nickel silver, aluminum, monel, steel, or stainless steel in .050 in. (16 B&S gauge) plate overlay applied with special metal holding cement, under power pressure, to hardwood faced laminated waterproof cores. One-piece metal sheets, or joints of hairline construction reinforced with riveted, sweated strips. This construction is recommended in preference to hollow metal for all except welded tubular aluminum wings, because of (1) greater stiffness to resist unusual twisting strains in wings, (2) less weight for necessary stiffness, reducing undesirable momentum and inertia effects, (3) lower cost, and (4) greater fire resistance.

Hollow Metal—Wings of hollow reinforced welded tubular construction fabricated from 1 1/4 x 5-in. rectangular seamless tubes. Enclosures in 12 to 14 B&S gauge on welded steel frames.

Hollow Welded Tubular Aluminum Wings—Developed in collaboration with Aluminum Company of America, are one-third to one-half the weight of any other wings, very strong and stiff, easy to revolve, and quick to stop.

Porcelain Enamel—On steel in any desired color or design.

Micarta, Formica and Other Composition Materials—May be used in place of wood or metal veneers in any color or design treatment or in combination with metal inlays. They are applied under pressure with special ad-

MASTER SPECIFICATION FOR ATCHISON REVOLVING DOORS

(Notes in italics are explanatory or advisory only and should not be included in the specification. Whenever words or phrases occur in the body of the specification in italics and parentheses, choose that word which applies to the particular door. Wherever the word "specify" occurs in italics and parentheses, add the particular word or clause applicable, optional with the writer.)

(1) Revolving Doors

Revolving door contractor shall furnish and install where specified and shown on plans ATCHISON REVOLVING DOORS, type (NTS or NTJ, braceless, panic-proof, side-rolling) (equipped with speed control) built of (specify).

(Note: For design see Standard Design Schedule, page 4.)

(2) Scope

Revolving door contractor shall include circular enclosure, flat ceiling (cornice) (pilasters) (sliding doors) (adjoining trim), revolving wings, hardware, glass, and complete mechanism (including speed control).

(3) Mechanism

(3a) Panic-Proof Device—

(3a1) The mechanism of the revolving door shall be so constructed that the four wings will fold from their revolving position to a wide open panic position instantly when a force somewhat greater than that necessary to revolve the wings is applied on any two wings.

(3a2) The tension holding the wings in their radial position shall be adjustable to a collapsing pressure of from 60 to 175 pounds quickly without disassembling any of the mechanism.

(3b) Radial Position Mechanism—

Each of the four wings shall be carried independently of each other by cored one-piece hangers pivoted to the center disks at both top and bottom of each wing. Each wing shall be held in radial revolving position by spring tensioned ball and socket catches of stainless steel contained in the disks and hangers. No brace arms, chains or cables will be permitted between the wings. Tensioning mechanism shall be so constructed that ball catches have maximum holding power when balls are seated in sockets and minimum pressure when dislodged and riding on face of disks. Top and bottom tensioning mechanisms shall be simultaneously tensioned or released for folding purposes by manually operated flush levers located at breast height on facing sides of each pair of adjacent wings.

Note: In type NTJ substitute for last sentence "Top and bottom tensioning mechanism shall be tensioned or released for folding purposes by manually operated levers located on each hanger."

(3c) Folding—

Mechanism shall permit the wings to be folded manually in a central position in pairs; rolled to one side of enclosure in pairs; in a central panic position with four wings folded like a book. Sockets shall be so located on disks to engage tension balls in folded position and hold wings without separate folding bar. Wings shall be manually returned to radial position without releasing of tension.

(3d) Overhead Mechanism—

(3d1) The center post carrying the wings shall be suspended from a cup-and-cone ball bearing carried in a 4-wheel, roller-bearing overhead carriage to roll aside in truss-shaped supporting channel.

(3d2) Center post shall be held in position by a locking device at top and by a socket in the floor. Bottom pivot shall not rotate in floor socket. Flush lever shall simultaneously release wings at top and bottom for free movement to sides of enclosure.

(4) Construction

(4a) For Wood Doors—Wings and enclosures shall be finished in (specify) veneer not less than $\frac{1}{8}$ in. thick in 5-ply waterproof laminated, one-piece slab construction.

(4b) For Metal Plate-Overlay Doors—Wings and enclosures are to be finished in .050 in. (specify metal) plate overlay on 5-ply hardwood faced waterproof, laminated slab construction cores. Metal shall be in one piece sheets or with hair-line joints properly reinforced, invisible on the finished surface.

(4c) For Hollow Metal Doors—Wings shall be constructed of $1\frac{1}{4}$ in. by 5 in. rectangular seamless tubing with welded joints and suitable reinforcements at hangers. Enclosures shall be built of (specify) gauge (specify metal) on welded steel frames.

Note: For hollow aluminum specify "special extruded sections."

(4d) For Micarta or Formica Doors—Wings and enclosures shall be built of (specify) sheets applied under pressure with special adhesives to hardwood-faced 5-ply laminated, waterproof cores.

(5) Finish

(5a) For Wood Doors—Wood surfaces exposed on finished work shall be sanded to a perfect finish and given (3 coat gloss varnish) (4 coat hand rubbed (color) enamel finish to approved sample).

(5b) For Metal Doors—All finished surfaces shall be brought to a smooth fine-lined surface and properly treated to match approved sample.

(5c) For Aluminum Doors—Satin fine line lacquered (Alumilite finish optional).

(6) Glass

All glass in revolving wings and enclosures shall be ($\frac{1}{4}$ in. American polished plate) ($\frac{3}{8}$ in. drawn plate).

(7) Hardware

The hardware shall include mortise bolt keylocks with (standard) (masterkeyed) cylinders, kickplates, pushbars and pushplates made of (specify).

(8) Ceiling Lights (Optional)

(8a) Two 10 in. spun (specify metal) dome ceiling lights shall be furnished, but not including lamps or wiring.

(8b) Two 10 in. flush hinged (specify metal) frame ceiling lights shall be furnished glazed with Lenslite including reflectors but no fixtures or wiring.

(9) Traffic Controller (Optional)

The speed of rotation of the revolving door shall be controlled by a mechanical traffic controller to be installed in the overhead mechanism. This device shall prevent spinning or excessive speed at all times and shall be readily adjustable for adapting to traffic requirements.

RECENT INSTALLATIONS

Akron Savings & Loan Co., Akron, Ohio
Apartment Hotel, Omaha, Neb.
Nicholas Building, Toledo, Ohio
Milwaukee Gas Light Co., Milwaukee, Wis.
City National Bank, Omaha, Neb.
Union and Planters National Bank, Memphis, Tenn.
Roosevelt Hotel, New Orleans, La.
City Hall, Kansas City, Mo.
National Life & Accident Insurance Co., Nashville, Tenn.
Central National Bank & Trust Co., Des Moines, Iowa

Palmolive Building, Chicago, Ill.
Manhattan Bank, Memphis, Tenn.
John Taylor Dry Goods, Kansas City, Mo.
Stewart Dry Goods, Louisville, Ky.
National Bank of Chester Co., West Chester, Pa.
Grosvenor Building, Providence, R. I.
Borough Hall, Staten Island, N. Y.
Potomac Electric Power Co., Washington, D. C.
Crescent Department Store, Spokane, Wash.
U. S. Post Office and Court House, San Antonio, Tex.
U. S. Post Office, Binghamton, N. Y.

GENERAL BRONZE CORPORATION

All-Metal Revolving Doors in Bronze, Aluminum, Nickel-Silver and Stainless Steel

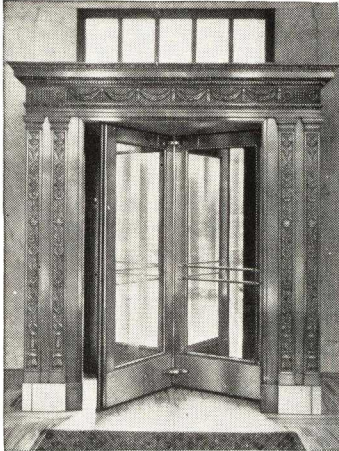
LONG ISLAND CITY, N. Y.

REPRESENTATIVES IN ALL CITIES

See File Index for our complete catalog on Windows; also our listing on Architectural Metal Work

TUBULAR METAL REVOLVING DOORS

Easy to Operate—Durable—Attractive—Reasonable in Cost



United States Court House,
New York, N. Y.

CASS GILBERT, Architect
JAMES STEWART & Co., Inc.,
Builders

Modern buildings require revolving doors of solid metal as built by General Bronze. These doors meet the most exacting requirements in design and operation and for length of service.

General Bronze Revolving Doors are sturdily built of solid bronze, aluminum, nickel-silver or stainless steel—detailed to harmonize with the architectural treatment. These doors provide for more even ventilation, save fuel, keep out dust and dirt and safeguard health. They reduce the cost of air-conditioning by eliminating extra peak loads, due to sudden blasts of hot or cold air. They are equipped with automatic, collapsible, panic-proof mechanism and may also be equipped with a Speed Regulator.

We recommend, when specifying the use of any metal in the fabrication of revolving doors, our standard tubular construction. The metal used will be free always from any dents caused by the severe treatment to which the doors may be subjected. The weight of the wings, counterbalanced on a center shaft, permits anyone to easily operate the doors. These doors have appearance, durability and represent the most modern form of construction.

Specifications

Scope—Furnish and install where shown on drawings, revolving doors as made by GENERAL BRONZE CORPORATION, of full automatic collapsible, panic-proof type, equipped with operating mechanism and (if desired) speed regulator to control speed of rotation, as herein described.

Revolving door manufacturer shall include circular enclosure, flat ceiling, cornice, revolving wings, hardware, glass, complete mechanism including speed regulator (if desired), and automatic slot closing device in ceiling.

Mechanism—The mechanism of the revolving door shall be full automatic collapsible, panic-proof, either the chain or braceless type. Each of the four revolving wings shall be held in their normal rotating position by hangers at both the top and bottom of the wings.

The mechanism shall be so constructed that the wings will fold from their revolving position to a wide open panic position, instantly, when a force greater than that which is necessary to revolve the wings is exerted on any of two opposing wings. The four wings thus collapsed shall fold on each other, like a book, in the line of egress. The tension holding the wings in their normal rotating position shall

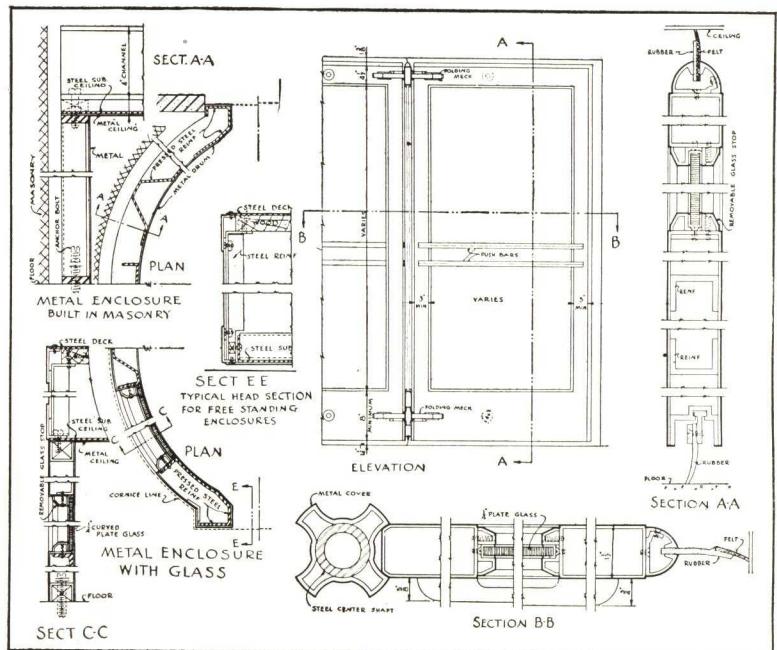
be readily adjustable to provide a collapsing pressure of from 60 to 175 pounds when applied at any point 42 inches or more from the floor on the outer stiles of two wings. Provision shall be made for varying such adjustment quickly without dismantling any of the hardware or fixtures.

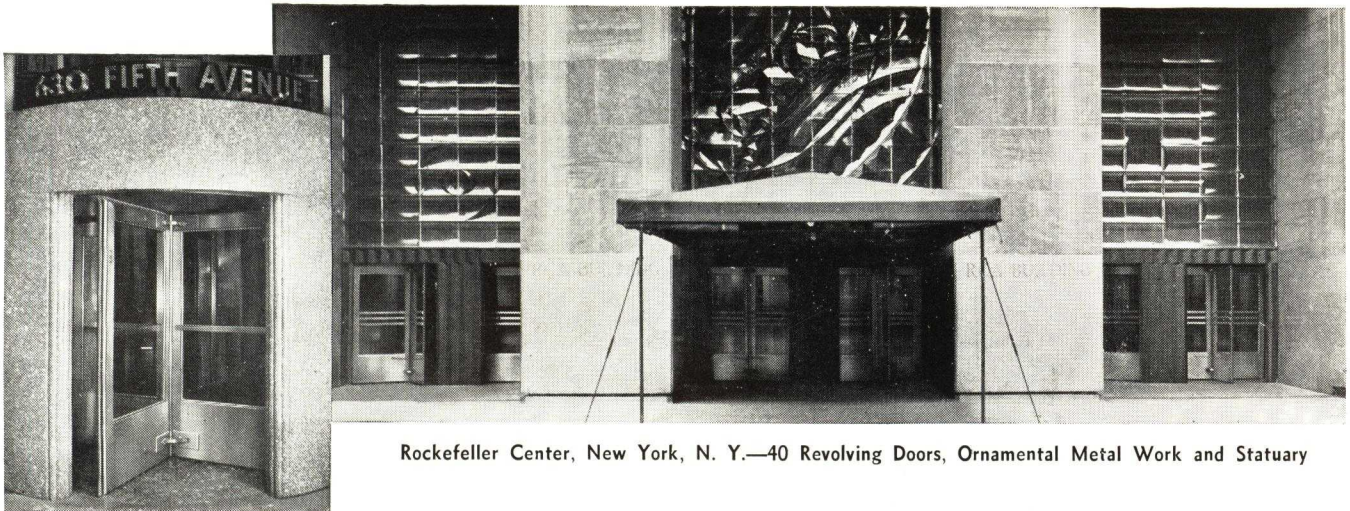
The mechanism shall also permit the wings to be folded manually in a central open position, in pairs; in a full open side position, in pairs; and in a central panic position with the four wings folded like a book. A simple manual release of the tension holding the wings in normal rotating position shall be provided to permit manual collapsing or folding of the wings without exerting the pressure needed for automatic collapsing of the wings. Each wing shall have self-contained in the supporting hardware a simple automatic device or a simple readily removable device to hold the wings in position when folded in pairs—this to hold the folded wings firmly in balanced position for rolling to the side of the enclosure and to retain them in that position until released.

The center shaft carrying the wings shall be supported overhead by a ball bearing in a universal mounting carried on a four-wheel trolley which, in turn, is set on a self-supporting steel track to permit the wings to be moved to the side of the enclosure when folded. This center shaft shall be held in position by a locking device in the overhead track and by a socket and pivot bolt in the floor. The bottom pivot shall not rotate in the floor socket.

The raising of the bottom pivot shall release the center shaft at both top and bottom, freeing it for movement to the side of the enclosure. Or this same action may be accomplished by raising the floor pivot and tilting the doors slightly from their perpendicular position.

Hardware—Hardware shall include keylocks and bronze push bars as shown. All locks to be keyed alike, and master-keyed (if desired).





Rockefeller Center, New York, N. Y.—40 Revolving Doors, Ornamental Metal Work and Statuary

Speed Regulator—(if included) the speed of rotation shall be controlled by a mechanical device to be installed in the overhead mechanism chamber in conjunction with the standard trolley. This device shall permit free rotation of the revolving wings up to any predetermined rate of speed, but prevent spinning at all times. An adjustment shall be provided to regulate the maximum speed to meet the particular traffic needs of each entrance.

Glass—All glass, excepting that for ceiling lights, shall be first quality $\frac{1}{4}$ -inch thick polished plate glass. (If required in enclosure walls, the glass shall be accurately bent to radius.) Glass for ceiling lights shall be best quality $\frac{1}{8}$ -inch thick frosted sheet glass.

Ceiling Lights—Provision shall be made in each revolving door ceiling for two flush lights, each having a removable glass cover. This work shall include reflector. The electric wiring, fittings, fixtures and lamps will be furnished and installed by another trade.

Material—Door Construction—Stile and rail shall be tubular shaped construction not less than 14 B&S gauge for bronze, and nickel silver, 10 B&S gauge for aluminum and 16 U.S. gauge for stainless steel. All to be of selected quality without any defects, free from twists and dents.

All joints shall be carefully machined. All corners and intersections shall be reinforced, carefully welded and finished to an even surface. All cut-outs to accommodate hardware and operating mechanism shall be properly reinforced, accurately formed and closely fitted to receive the hardware. Removable glass stops shall conform to detail, carefully mitred and fitted at corners and secured with oval head countersunk machine screws of composition to match balance of material. Screws to be equally spaced approximately 10 inches on center.

The enclosure shall be bronze, nickel silver, aluminum or stainless steel of not less than 14 B&S gauge for bronze, and

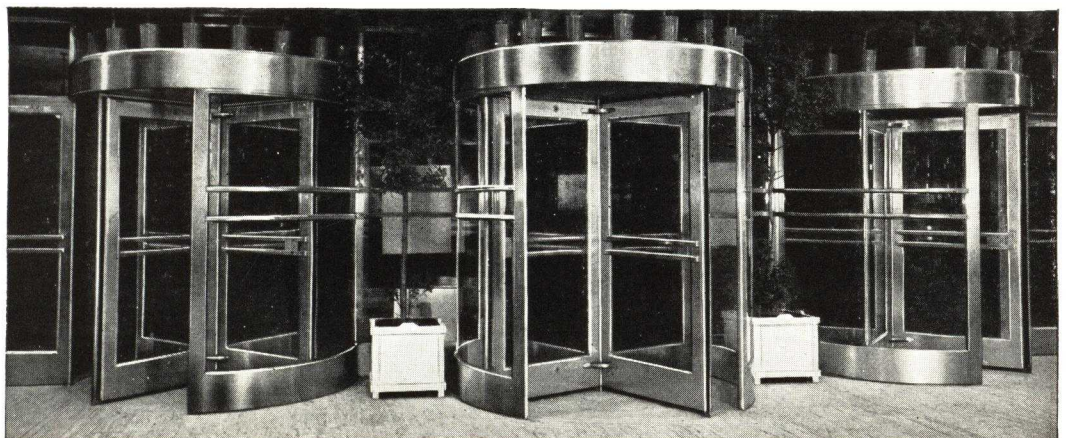
nickel silver, 12 B&S gauge for aluminum or 16 U.S. gauge for stainless steel. All sheet material must be of first quality patent level, free from dents and defects. Provide for each enclosure a complete skeleton frame of heavy steel, bent to a radius and reinforced with continuous vertical channel-shaped steel support, welded at intersections to a complete unit. Each intersection must be completely fitted to a flush joint and painted with heavy bitumastic paint to prevent electrolytic action between steel and other material. All sheet material shall be formed to radius or shape required by design. All intersections carefully machined, fitted, reinforced and secured to the steel construction by means of finished head machine screws or rivets as may be required. Exposed surfaces of the drum are to be finished to the required texture and colored as desired by architects or owners. Provide cut-out in the ceiling to receive ceiling light. Where enclosures are fully built in, provide a carefully fitted flush hinge panel in each ceiling for access to overhead mechanism. Provide automatic cover to close slots opening in ceiling when wings are in operation.

Typical Installations

Nemours Office Building, Wilmington, Del.
Lord & Taylor, New York, N. Y.
Emigrant Savings Bank, New York, N. Y.
Greenwich Savings Bank, New York, N. Y.
Thompson Restaurant, Suburban Terminal, Philadelphia, Pa.
Chrysler Car Salon, Chrysler Building, New York, N. Y.
Union Trust Company, Troy, N. Y.
New York Life Ins. Co., New York, N. Y.
The Cincinnati Enquirer, Cincinnati, Ohio
Office Building, 230 Devonshire St., Boston, Mass.
Union Trust Company, Washington, D. C.
Rockefeller Center (40 Doors), New York, N. Y.
Hershey Chocolate Co., Hershey Park, Pa.
Kress Building, New York, N. Y.
First National Bank, New York, N. Y.
Horn & Hardart Co., New York, N. Y.
U. S. Post Office, Chicago, Ill.
U. S. Post Office, Philadelphia, Pa.
U. S. Post Office, St. Louis, Mo.
10 East 40th Street (Office Building), New York, N. Y.
Bank of Canada, Ottawa

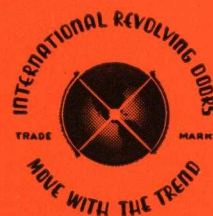
Lord & Taylor, New York,
N. Y.

STARRETT & VAN VLECK,
Architects



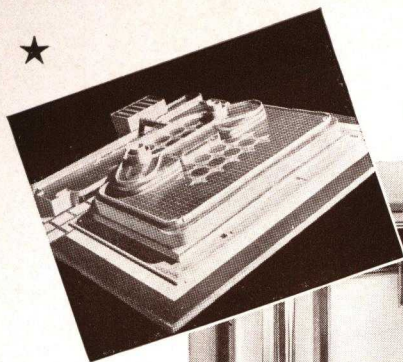
MEMORANDA

INTERNATIONAL REVOLVING DOORS



INTERNATIONAL REVOLVING DOOR CO.
EVANSVILLE, INDIANA. U.S.A.

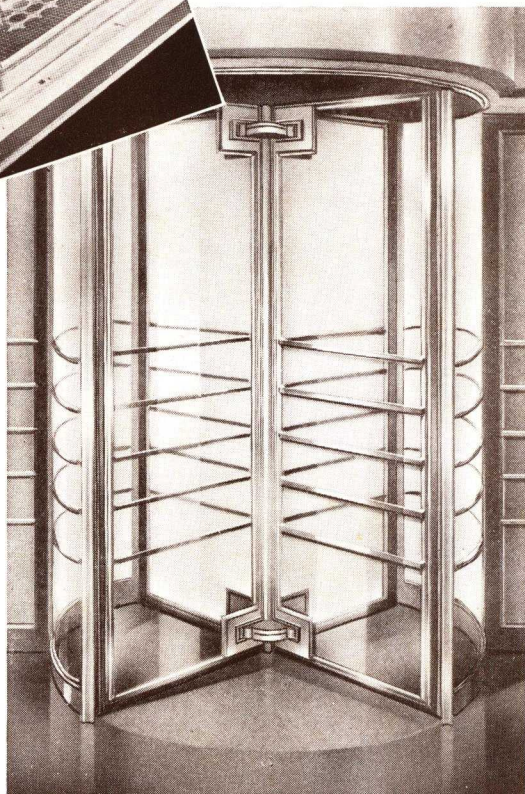
WIDELY USED IN MANY PROMINENT BUILDINGS



S. C. JOHNSON AND SON
RACINE, WIS.

Frank Lloyd Wright, Architect

S. C. Johnson and Son of Racine, Wisconsin, internationally famous as makers of Johnson's Floor Wax and "Glo-coat" selected International doors designed personally by Frank Lloyd Wright, Architect, for their modern office building. The doors are a patented "Crystal" design of bronze with a maximum of visibility.



CENTRAL
TOWER
BLDG.

San
Francisco,
Calif.

ALBERT F.
ROLLER,
ARCHT.



Originally the famous "Call Bldg.". One of the few buildings to survive the earthquake of 1906. Recently remodeled into one of the most modern buildings on the Pacific Coast. A modern International Revolving Door was installed in the main entrance.



STATE OFFICE
BUILDING
ALBANY, N. Y.

Wm. E. Haugaard,
Commissioner of
Architecture

International Revolving Doors have satisfactorily coped with the unusual conditions occurring at the entrance of this huge building. A dignified design in bronze, is in perfect accord with the building's architecture. Entire entrance of hollow bronze.

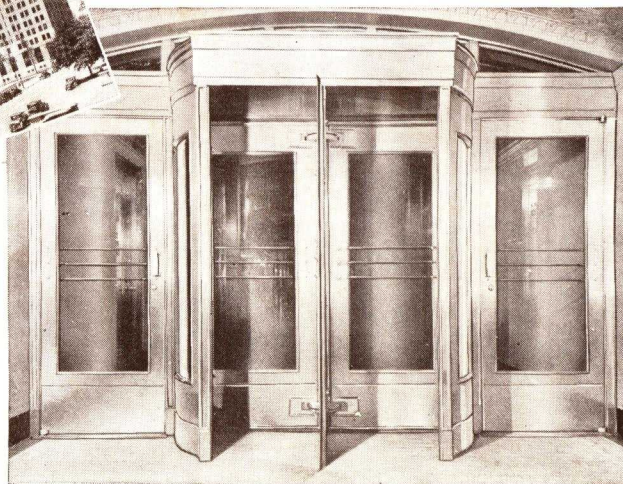


CUTLER SHOE STORE
CHICAGO, ILL.

Louis L. Abramson, Architect,
New York City, N. Y.

The most modern in design and one of the oldest shoe stores in Chicago, located in the famous Palmer House.

The bronze "Crystal" design International door was selected as being in harmony with the design of this outstanding store.



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INTERNATIONAL REVOLVING DOOR COMPANY

★ OF EVANSVILLE, INDIANA, U. S. A. ★

PRODUCTS ★ ★

Revolving Doors and all Revolving Door accessories—swing doors, sliding doors, panel work, transoms, etc.

Crystal Revolving Doors, providing greatest visibility and light, in keeping with modern trends. International Revolving Doors are furnished in all cabinet woods, also in Formica, aluminum, bronze, nickel silver, stainless steel and other metals.

DESCRIPTION

Smarter, adaptable; more dependable and economical—International Revolving Doors have altered previous conceptions of design and set new standards of operation.

Sweeping, curved enclosure walls—surfaced with modern metals, plastics and wood;—hardware, facia and pilasters harmonize with modern architecture.

The *Standard* line (described on pages 8 and 9) is made in all materials. There are no fixed models in this line; and size and design may be varied to

interpret any individual design or to meet any need.

The *Stock* line (shown on page 12) is an economy line of wood doors where low cost is combined with high quality through production economies.

DESIGN SERVICE

The International Revolving Door Company maintains a skilled engineering and designing department and is nationally represented in all principal cities. (See listing in telephone directory.)

International's personnel, or any of its representatives will cooperate with the architect in developing designs, in making surveys of entrance requirements to determine size and type of door best suited and develop figures as to cooling and heating losses.

FIELD SERVICE

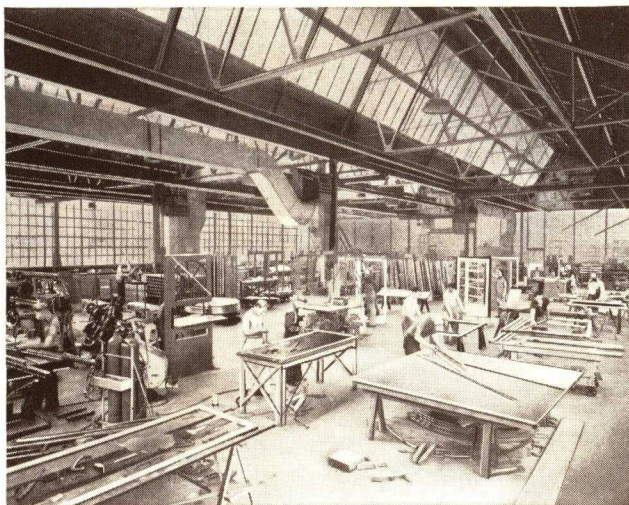
The International Revolving Door Company carries a complete stock of parts and service men are available to insure prompt servicing of all their installations.

★ A MODERN PLANT AND EFFICIENT MANUFACTURE ★

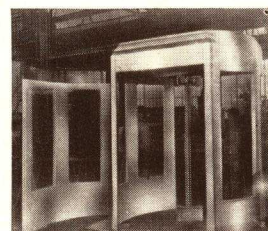


FACILITIES FOR FINE
METAL WORK

Pioneers in the development of improved technique for applying metal on wood, welding metals of light gauge, International has developed equipment for doing work of this nature equal to the finest cast work.



Corner of International's Modern Plant. Exclusively on production of modern revolving doors.

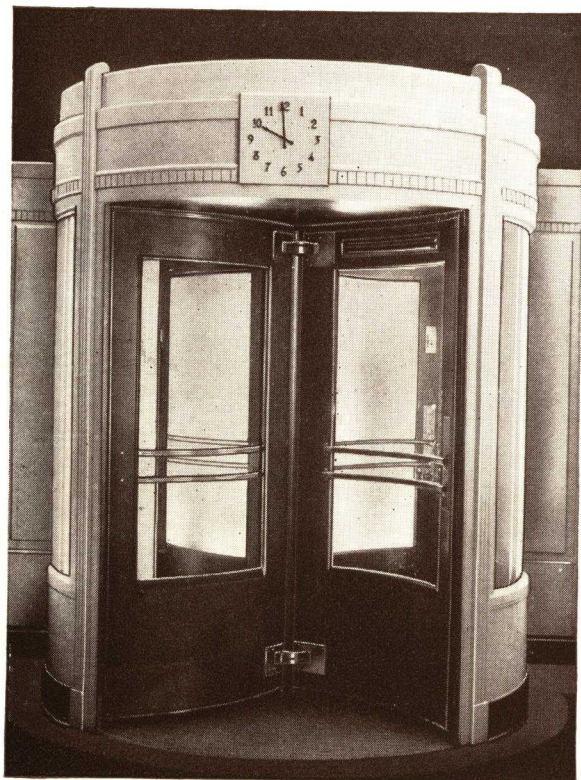


ASSEMBLED AND TESTED
BEFORE SHIPPING

International Revolving Doors are assembled, set up and tested at the factory before shipping, thus avoiding errors, defects and delay in erection. All of the mechanical features rigidly tested and inspected to insure proper operation when installed.



Aluminum Wings and Exterior: Walnut Interior
MILLER'S DEPARTMENT STORE—KNOXVILLE, TENN.
Archts: Barber & McMurry, Knoxville, Tenn.
Contrs: V. L. Nicholson Co., Knoxville, Tenn.



Birch Door: Natural and Enameled Finish
SMITH'S CAFETERIA—TOLEDO, OHIO
Archts: Mills, Rhines, Bellman & Nordhoff
Contr: J. H. Berkebile & Sons

REVOLVING DOORS LOWER HEATING AND COOLING COSTS!

Since a Revolving Door is *always* air sealed, infiltration losses are cut to a minimum. NO GUST of AIR—hot or cold—enters through an INTERNATIONAL REVOLVING DOOR.

Entrance draft velocities in tall buildings frequently reach 30 or more miles per hour, varying with wind velocity outside of building and the chimney-like draft action of the building varies according to its height and temperature inside and outside of the building. Operating under such conditions, a *swing* door admits 500 to 2,000 cubic feet of air per passage. A *swing* door vestibule admits 300 to 1,500 cubic feet per passage. Since a swing door is estimated to remain open for approximately two seconds per passage, air losses increase rapidly as traffic increases. When traffic reaches 1,800 persons in and out per day, air losses are equal to those caused by a door remaining constantly in an open position.

Under identical conditions an International Revolving Door admits only about 25 cubic feet of air per passage and varies imperceptibly with traffic increase.

During summer months Revolving Doors prevent hot, dust-laden air from entering an air-cooled building, thus, they have become a necessity in all modern buildings so equipped.

PAY FOR THEMSELVES

The material saving in heating and cooling costs effected by International Revolving Doors—permitting the use of smaller heating and cooling systems—pays for the cost of the door in a short time.

EASE OF OPERATION

Due to the aforementioned entrance draft velocities, swing doors are difficult to open and become an obstacle in building entrances. Modern, balanced REVOLVING doors eliminate this condition. Revolving doors handle a continuous flow of traffic at a uniform speed, in any weather.

TRAFFIC CAPACITIES

A revolving door in normal operation will revolve 10 to 12 times per minute. With each revolution it is possible for four people to pass in and four people to pass out, thus, a revolving door will permit approximately 2,500 people to pass in and 2,500 people to pass out per hour. With a greater speed in the revolutions of a door a larger number of passages can be taken care of.

COMPARATIVE AIR-LOSSES PER HOUR IN SWING DOORS AND REVOLVING DOORS

Height of Building	Average Draft Velocity M.P.H.	Cubic Feet of Air-Loss Per Hour 1,000 Passages, "In or Out"		
		Swing Door 2 Seconds Per Passage 3'0"x7'0"	Swing Door Vestibule 1 1/2 Seconds Per Passage 3'0"x7'0"	Revolving Door 7'0"x7'0"
10 Floors	14	862,400	646,800	67,300
20 Floors	16	976,450	734,600	67,300
30 Floors	18	1,108,800	831,600	67,300
40 Floors	20	1,232,000	902,960	67,300

(These figures will vary with the outside temperature and location.)

PANIC-PROOF MECHANISM

SIMULTANEOUS RELEASE PRINCIPLE

International Revolving Doors are equipped with the *Simultaneous Release* device. This patented device reduces the danger of obstruction during panic conditions to a minimum. When excessive pressure is exerted against any one wing, causing it to collapse, the other three wings are simultaneously released, thus, free to swing outward, forming an unobstructed passageway to the street.

By the use of an exclusive mechanical device, International doors are easier to collapse in a clockwise direction under panic conditions than in the normal operating direction, thereby offsetting the stack draft effect in tall buildings and high wind pressures from the outside.

The mechanism of the International door is so designed that it is possible for one man to reset the wings in revolving position, even with a high wind, in a minimum amount of time.

OFFICIAL TESTS ★ ★ ★ ★

"In order to determine the performance, a complete revolving door equipped with standard mechanism was tested at the Pittsburgh Testing Laboratory, developing the following facts:

COLLAPSING TEST UNDER LOAD

The spring plunger blocks being set to collapse at the pressures shown were applied by a spring balance at a point 42 inches above the floor on a 7 foot diameter door (as is generally required under building ordinances): air pressure was applied to one side of the door causing operation of the collapsing mechanism at static pressure equivalent to the wind velocities indicated below:

Spring Balance Collapsing Load,			
Lbs.	185	138	125
Equivalent Wind Velocity at Col-			
lapse (Miles per hour)	74	68	66

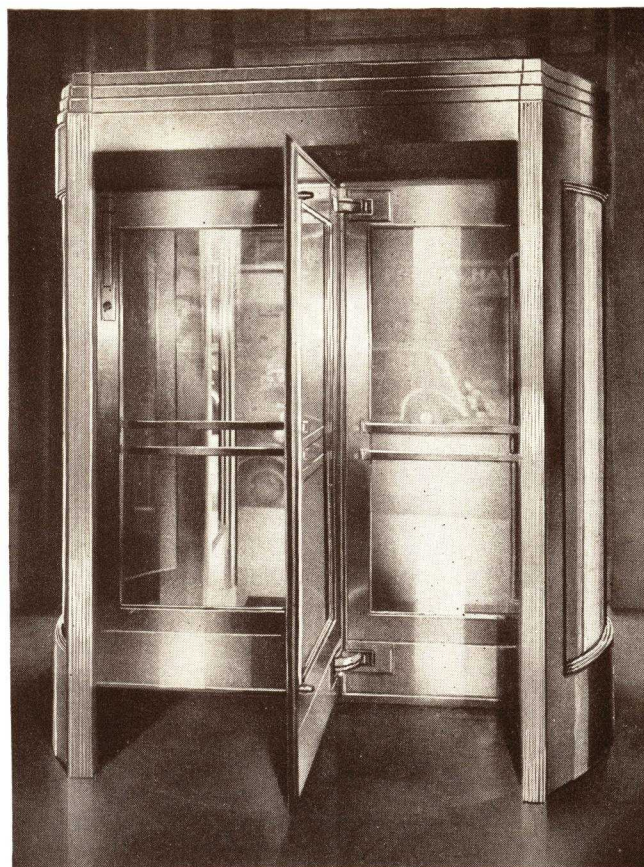
WEAR TEST UNDER LOAD

The mechanism was collapsed and reset under constant normal spring pressure 9,080 times after which no measurable wear of the steel plunger blocks or the bronze slots in which they operate was evident.

Assuming a single collapse each day, approximately twenty-five years would elapse to duplicate the operation of this test."

INDIVIDUAL RELEASE ★ ★ ★

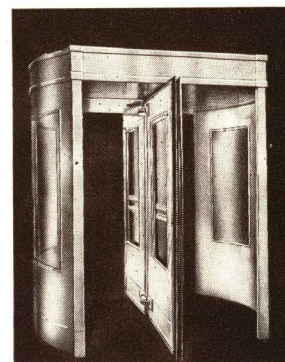
Although International believes that the Simultaneous Release Principle has proven its superiority in panic conditions, International Revolving Doors are also produced with individually collapsing wings for those who prefer them.



FOLDING POSITIONS: STANDARD DOOR



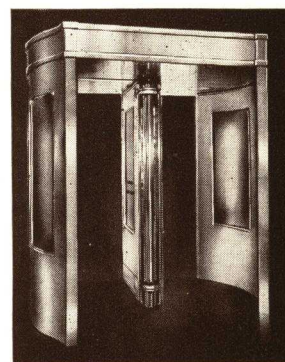
I. ONE WING COLLAPSED for passage of long objects.



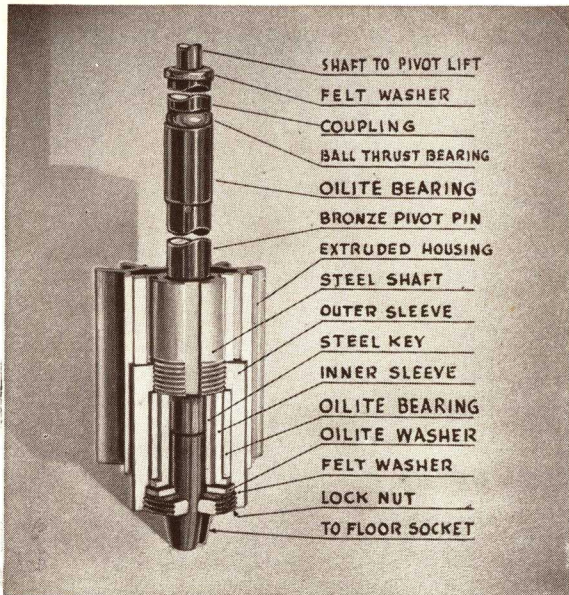
II. FOLDED CENTER POSITION for ventilation or temporary opening.



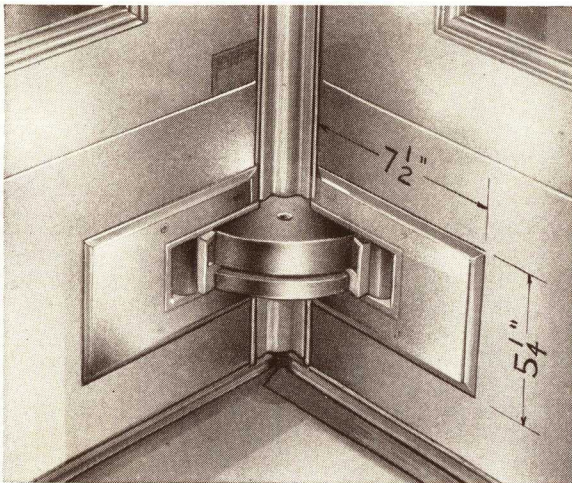
III. FOLDED TO ONE SIDE when revolving door not in use.



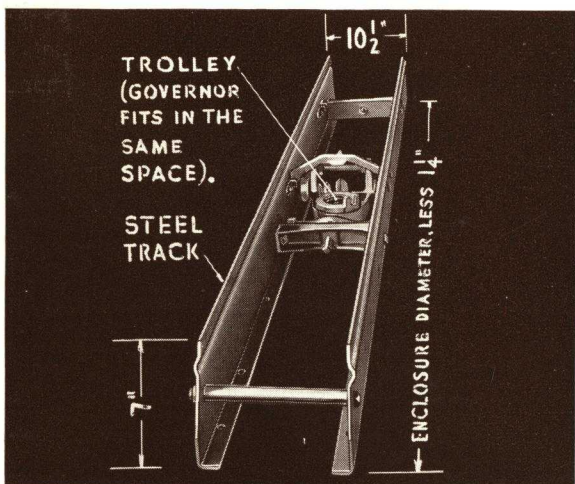
IV. PANIC POSITION as wings would collapse in case of emergency.



1. A CUT-AWAY SECTION OF LOWER PIVOT



2. PHOTO OF LOWER HANGER DISC ON A BRONZE DOOR



3. PHOTO OF TROLLEY ASSEMBLED AND PLACED IN STEEL TRACK

MECHANICAL FEATURES

Some of the exclusive mechanical features, which make International Revolving Doors proof against troubles common to ordinary revolving doors are:

1. LOWER PIVOT ★

Often a troublesome point in revolving doors, the International pivot has been carefully designed to require the minimum amount of replacements and attention. The pivot is of aluminum-bronze alloy. A rust-proof sleeve and Oilite bronze bearings eliminate any necessity for oiling. It is tightly sealed against dust and dirt, and requires no attention.

2. PANIC MECHANISM

Principles of operation are fully described on page 13. In the photo at left, note the extremely sturdy construction and the close fitting of all parts. If desired, the hanger plates as shown may be omitted on Hollow Metal or may be continued to form a kick plate on other construction.

3. ALL STEEL TROLLEY

In revolving position; a latch on top of the trolley holds wings firmly in center position. Raising the lower pivot releases this latch; door wings, suspended from the trolley, may be rolled (on four ball bearing wheels) to side of enclosure, and the pivot dropped into the second floor ferrule, the latch again engaging in this position. The main bearing of the trolley and the four wheels have ball bearings. The main shaft is on a swivel which allows a swing of 10 degrees from vertical. A stop screw in the track keeps latches properly adjusted. Other features are a special formed heavy steel track designed to support much greater weight than required of it.

4. PIVOT LIFT ★ ★ ★

A patented device which is simple in operation and yet prevents unauthorized persons from lifting pivot out of floor. This is accomplished by inserting a key in a hole and raising a cover plate. This pivot lifter has no projecting parts to damage or injure the door or operator and is completely foolproof.

THE "CRYSTAL" MODEL: large unobstructed glass areas for greater visibility

Modern architecture requires a maximum of light and a minimum obstruction of light admission areas. To meet this need, International developed new construction methods which permit narrow stiles and large, clear glass areas.

★ DESIGN ★

The condition of design is not limited. Any standard or special cornice design can be used. Architects may design a door to suit their needs, as long as the minimum dimensions in drawing below are followed.

DESCRIPTION

Hardware—Standard International panic mechanism, including standard track and trolley.

Lock—Since the outer stile is narrow the lock is incorporated with hanger plate.

Lights—Standard ceiling lights are used, or large translucent glass panels with lights above. Suggested also is a mirror ceiling of clear or tinted mirrors.

Glazing—Glass in walls and wings is $\frac{1}{4}$ -in. to $\frac{3}{8}$ -in. polished plate, depending upon size, etc. This glass may be clear or carry sand blasted designs.

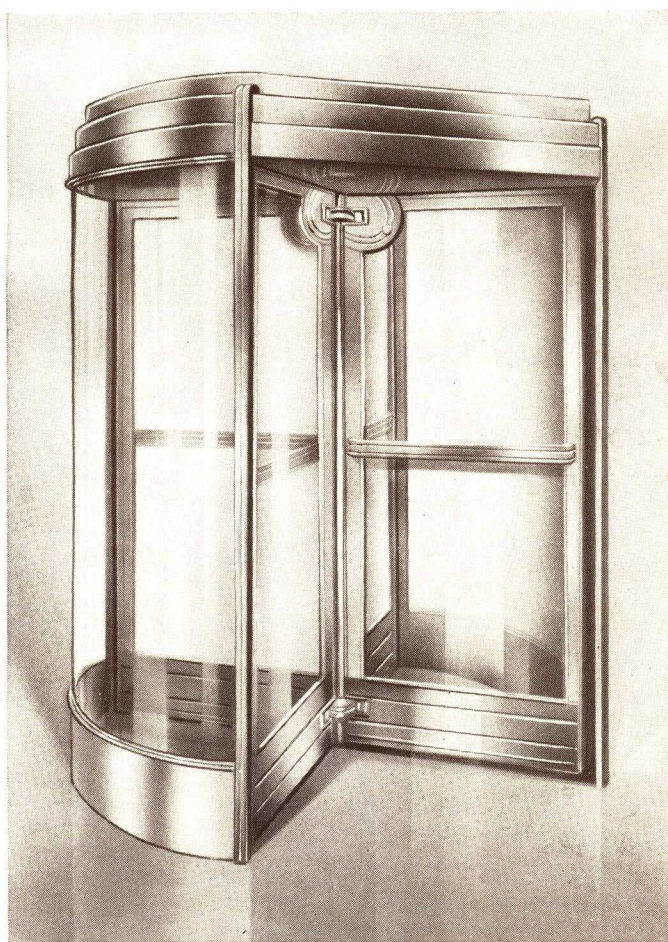
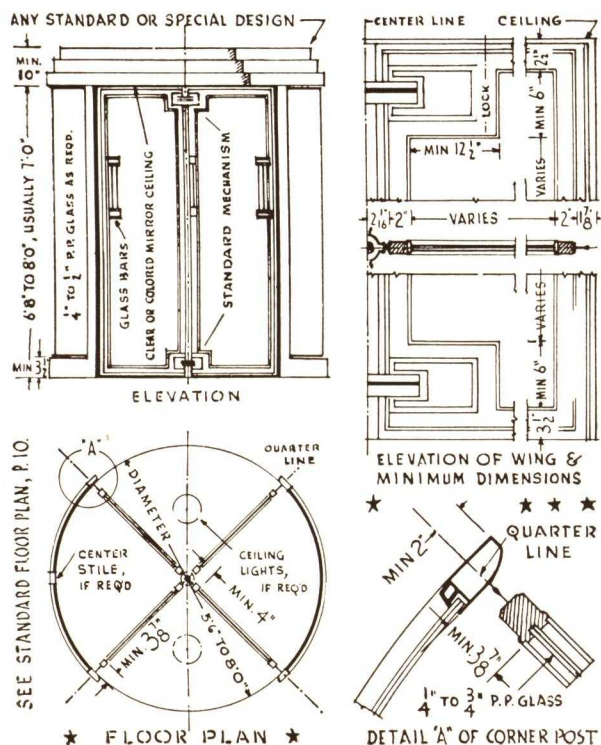
Push Bars—Standard or special metal, or glass rods set vertically. Push plates are not required.

Bottom Rail—May be as narrow as the top rail, but if so bars should be added (see page 2, S. C. Johnson and Son Building) to protect glass against breakage.

Pilasters—Glass Molds—Are special or standard (see pages 8, 9, 11). Floor plan may be standard (page 10) or as below.

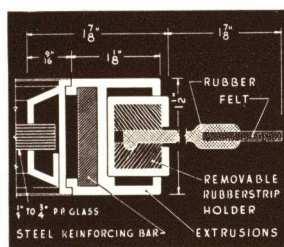
Strength—The Hollow Metal Doors (see sections of other wings below) possess unusual strength and rigidity. Doors in other materials are strongly reinforced. International Crystal construction insures non-racking wings.

SOME DETAILS AND DIMENSIONS

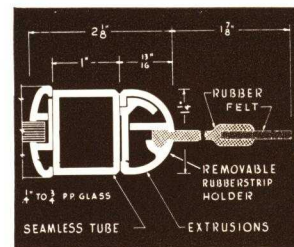


MODEL NO. 107-C. Note unusual simplicity of design.

HORIZONTAL WING SECTIONS.....



Section of outer stile of Hollow Metal Model No. 107-C.



Section of outer stile of Hollow Metal Model No. 208-C.

CRYSTAL CONSTRUCTION IN ALL MATERIALS

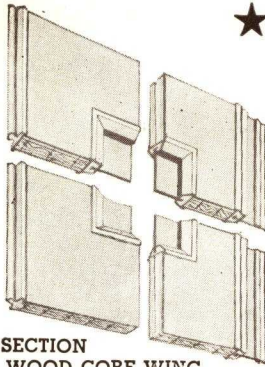
International Crystal construction methods have been developed to embrace the materials given in the table below. Minimum dimensions of inner and outer stiles (not including the weather strip which is $1\frac{7}{8}$ in.) are given below.

	Outer stile, minimum	Center stile, minimum
Wood Doors	1 $\frac{3}{4}$ in. wide	4 in. wide
Formica Doors	3 $\frac{1}{2}$ in. wide	3 $\frac{1}{2}$ in. wide
Metal on Wood	3 $\frac{1}{2}$ in. wide	3 $\frac{1}{2}$ in. wide
Hollow Metal	1 $\frac{1}{2}$ in. wide	2 $\frac{1}{2}$ in. wide



INTERNATIONAL

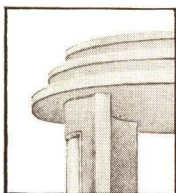
STANDARD



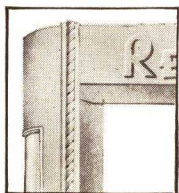
SECTION
WOOD CORE WING



DESIGN SUGGESTIONS



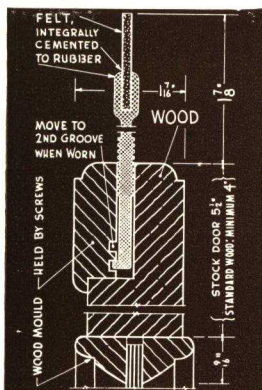
No. 500 WS



No. 300 A1-8

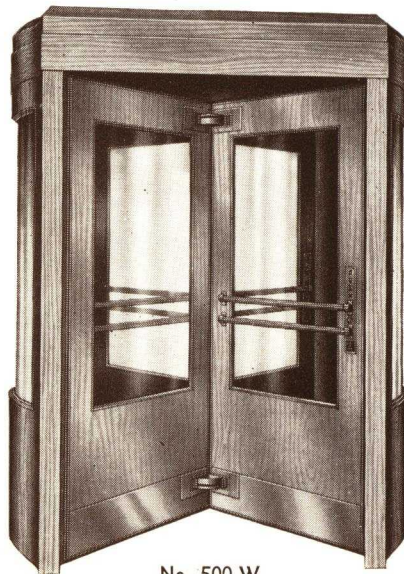


STANDARD WEATHERSTRIP CLAMP AND GLASS MOLDS FOR ALL WOOD DOORS



SERIES W

Wood Doors on a Wood Core



No. 500 W

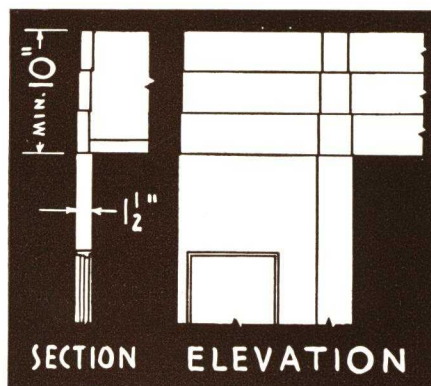
International wood doors are 5-ply laminated, waterproof and are scientifically designed with ventilated cores to prevent warping. Available in veneered wood with finish required.

Base design includes hardware, wings, enclosure walls (unglazed, or glazed in quarter, or half sections), push plates, kick plates, extruded moldings to extruded center shaft. Weatherstrips and clamp as shown at lower left this page or metal bindings optional at additional cost. Cornice may be similar to one above or made to special detail.

Full circular cornice, special designs, swing doors, etc., may be added as required.

International Doors are made in any size—to fit building conditions. Recommended sizes are shown on page 10.

CORNICE SUGGESTION NO. 802-W



A popular design which is economical—may be executed in Formica or metal.

SERIES F

Formica Doors on a Wood Core



No. 200 F

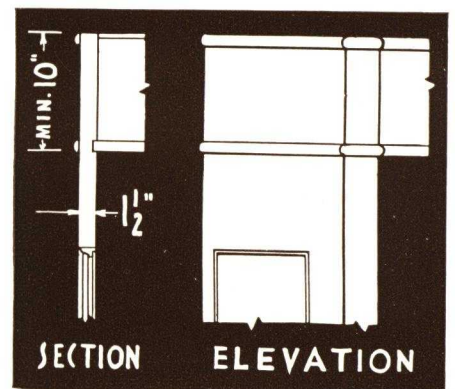
A pioneer in the use of Plastics for revolving doors, International has developed a special manufacturing technique in which the Formica covering is integrally bound to a laminated wood core with a waterproof adhesive.

To the Architect, this process opens a new field of design. It means that he can make his revolving doors (and accessories) in any of the wide range of plastic colors.

Formica can be inlaid with other colors or various metals. Its finish is hard, permanent and requires little care.

Conditions for design or size are same as for Series W.

CORNICE SUGGESTION NO. 808-F

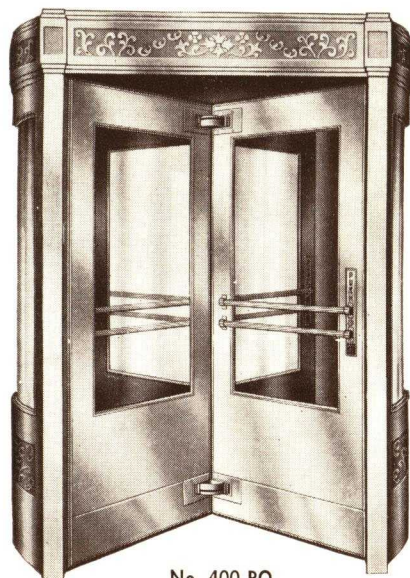


Half circular metal bands may be otherwise spaced; may be flat or square.

MODEL REVOLVING DOORS ★

SERIES PO

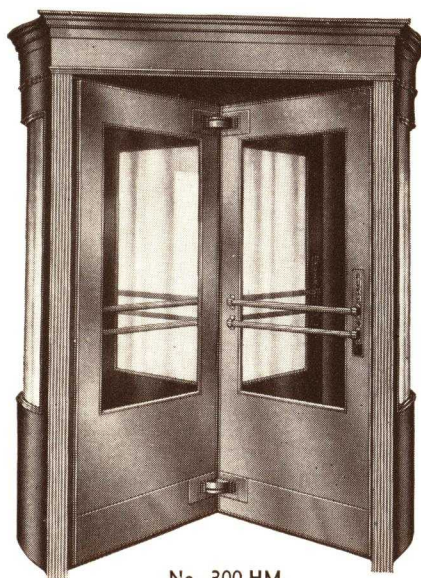
Metal Doors with Wood Core



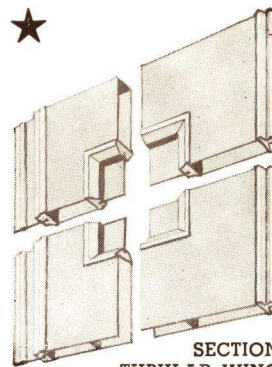
No. 400 PO

SERIES HM

Hollow-Metal with Tubular Wings



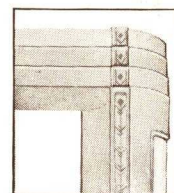
No. 300 HM



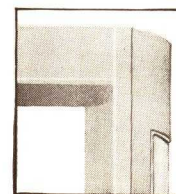
SECTION
TUBULAR WING



DESIGN SUGGESTIONS



No. 200 F2-4



No. 500 W1



STANDARD WEATHERSTRIP CLAMP AND GLASS MOLDS FOR ALL METAL, HOLLOW METAL AND FORMICA DOORS

Prepared surfaces, waterproof adhesive, plus pressure, makes the metal surface of International Series PO doors an integral and permanent surface of the wood.

An interesting effect made possible by this process is a combination of wood, metal, or Formica surfaces in the same door. An entrance in bronze may have the exterior revolving door surfaces bronze, and the inside veneered in wood.

Any metals may be used: Aluminum (natural or aluminized), bronze, nickel silver, stainless steel, Monel and many others have been successfully applied.

Glass moldings, hardware, binding, etc., are standard.

Design and size are same as for Series W.

International Revolving Doors of all-metal construction are slightly higher in price than the series PO doors. They are permanent, rigid and available in any metal.

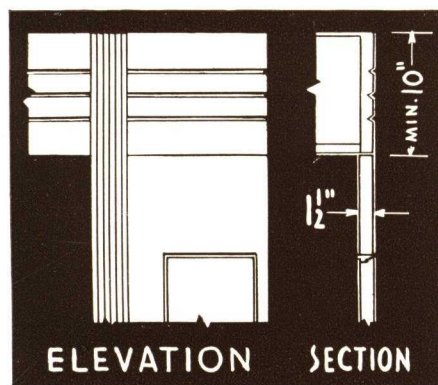
The wings are of seamless tubes welded and reinforced at all corners. With the exception of aluminized aluminum, which shows a fine hair line at the top, there are absolutely no joints visible in International hollow metal wings.

The enclosure is fastened to a braced, electrically-welded steel frame by concealed rivets or welds.

International's high standards of workmanship allow the architect to design unusual and special effects in metal.

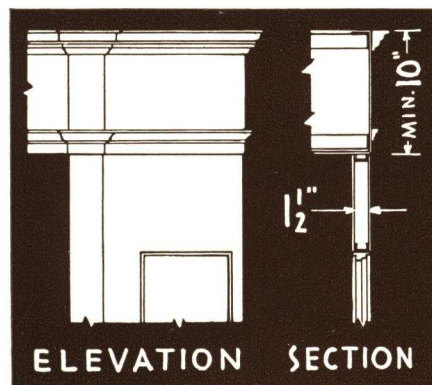
Conditions of design and size as for Series W.

CORNICE SUGGESTION NO. 913-PO



ELEVATION SECTION

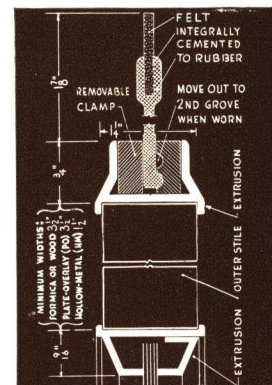
CORNICE SUGGESTION NO. 915-HM



ELEVATION SECTION

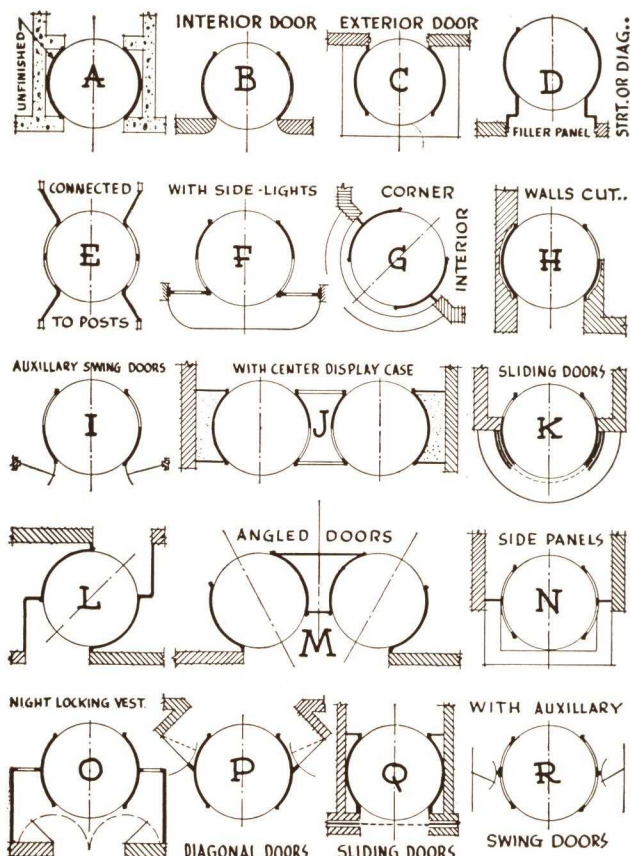
Showing "V" cuts: an International process applicable to all metal doors in any combination.

Formal designs in bronze, or other metal may be executed with standard or special extrusions.



TYPICAL FLOOR PLANS

Below are shown some special and typical conditions that may occur. These are not standard plans, but are included simply as suggestive, and for convenience in correspondence.

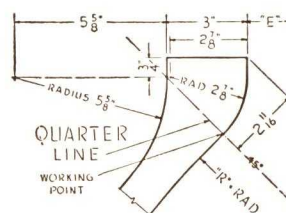
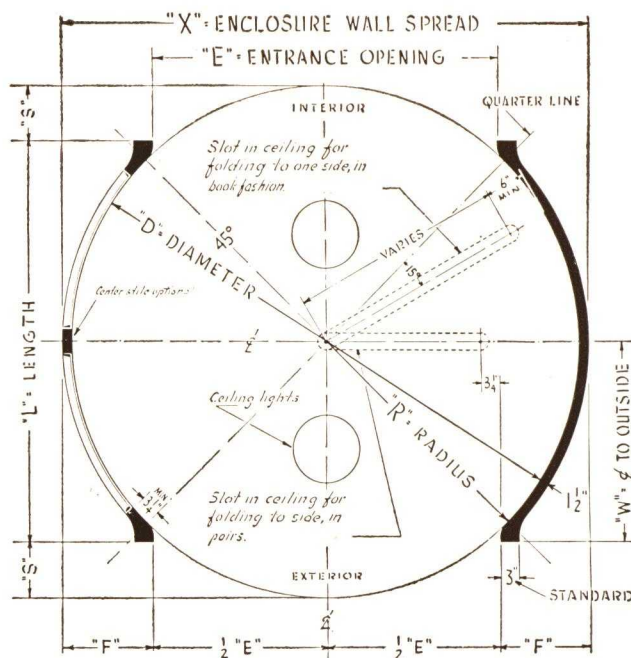
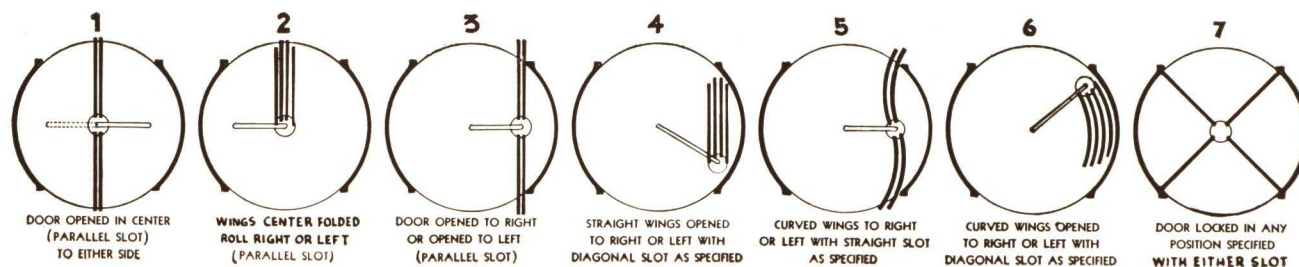


Standard door height from 6 ft. 8 in. to 8 ft. 0 in. with a recommended height of 7 ft. 0 in.

Detailed information on three wing, curved wings, motor control, burglar locks, will be sent on request.

Porcelain Enamel doors, Structural Glass Enclosures, mirrored ceilings, marble walls, Flexed enclosures and other special materials should be incorporated in the design in cooperation with International's design department.

VARIOUS FOLDING POSITIONS OF INTERNATIONAL STANDARD WINGS

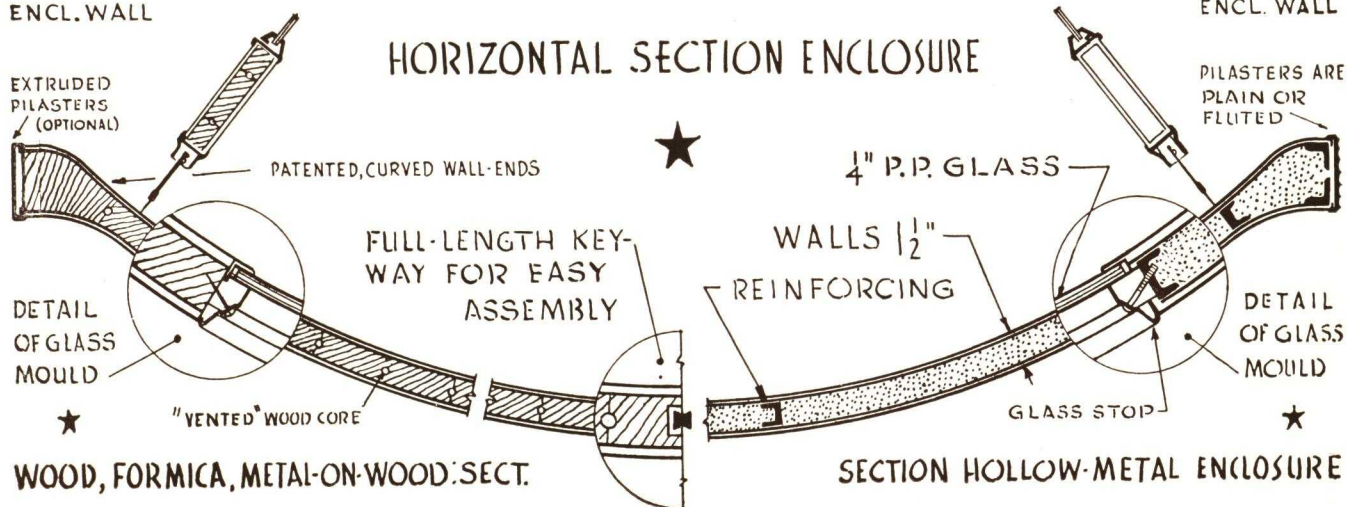
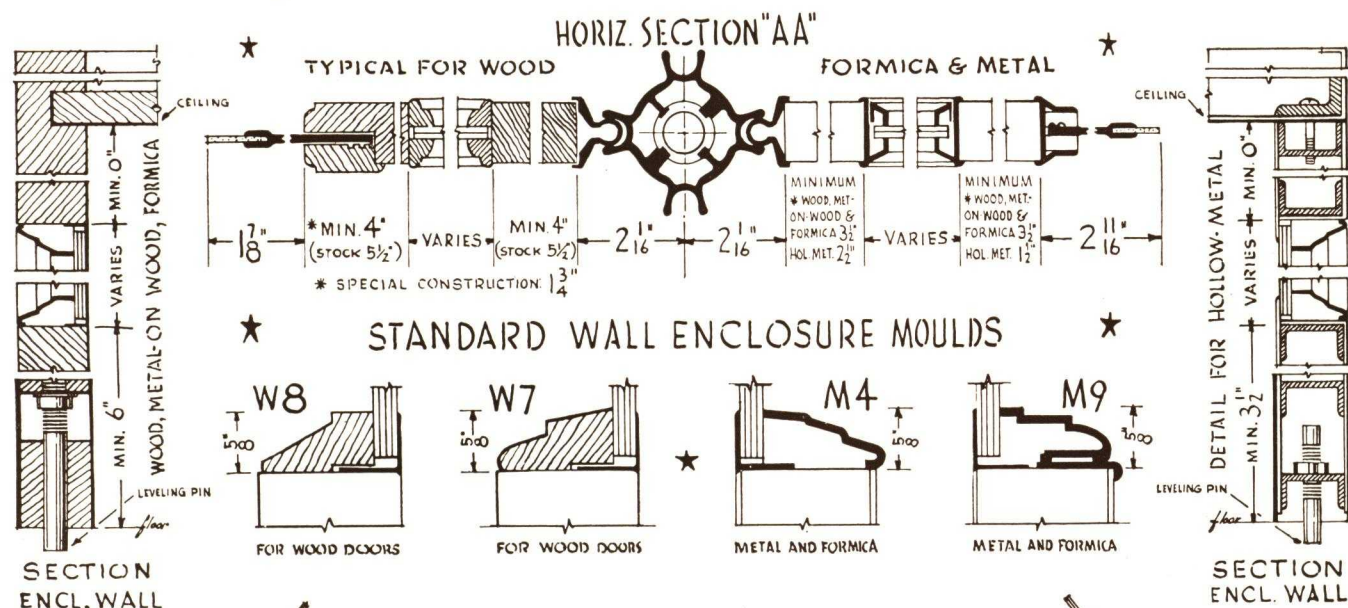
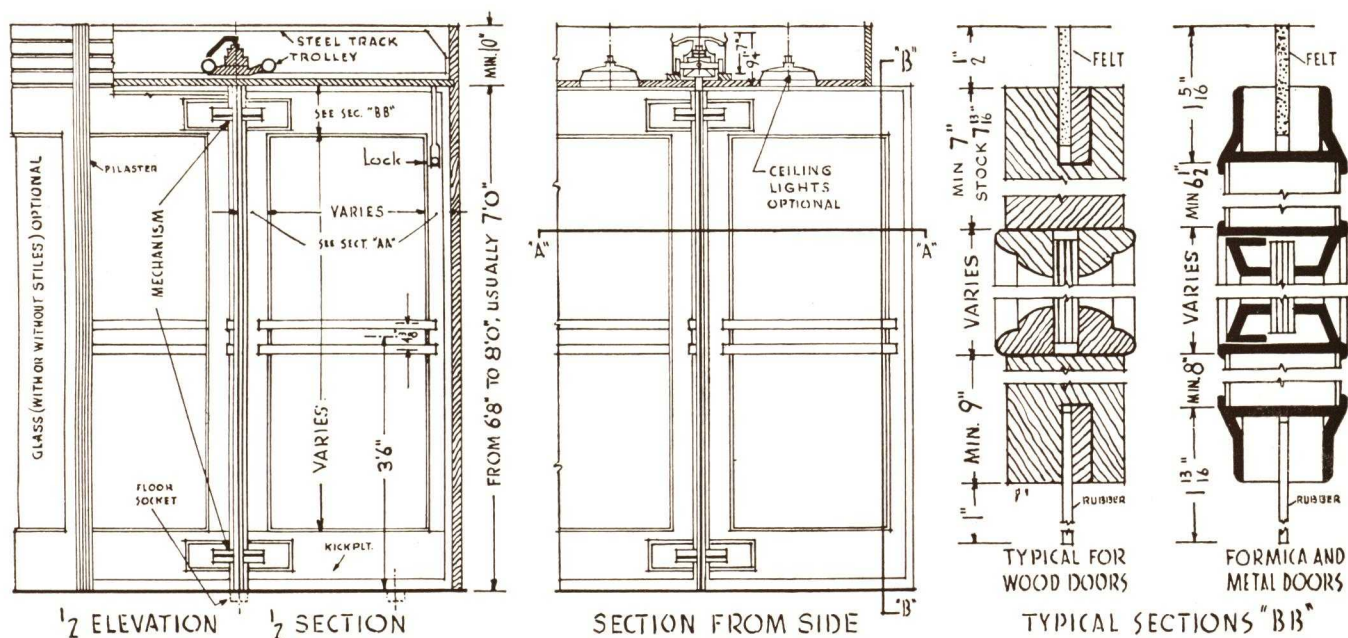


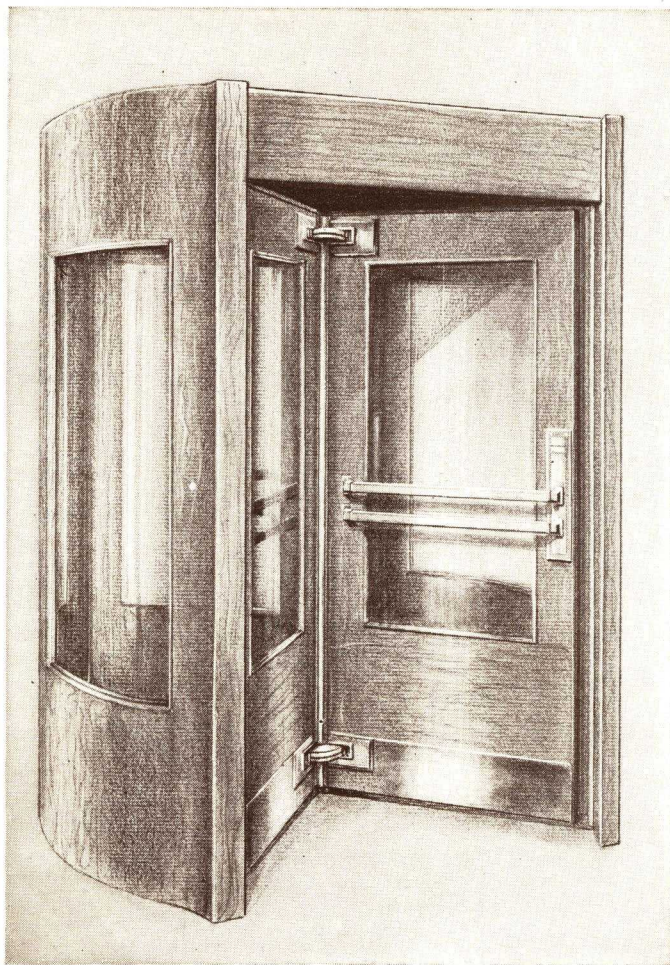
DETAIL OF CORNER POST

FLOOR PLAN AND TABLE OF DIMENSIONS FOR ALL STANDARD & STOCK MODELS

"D"	"R"	"E"	"X"	"L"	"F"	"S"	"W"
5'6"	2'9"	3'8 $\frac{1}{4}$ "	5'9"	4'5"	1'0 $\frac{3}{8}$ "	6 $\frac{1}{2}$ "	2'2 $\frac{1}{2}$ "
6'0"	3'0"	4'0 $\frac{3}{4}$ "	6'3"	4'9 $\frac{1}{8}$ "	1'1 $\frac{1}{8}$ "	7 $\frac{7}{16}$ "	2'4 $\frac{9}{16}$ "
6'2"	3'1"	4'2 $\frac{1}{4}$ "	6'5"	4'10 $\frac{3}{8}$ "	1'1 $\frac{3}{8}$ "	7 $\frac{13}{16}$ "	2'5 $\frac{3}{16}$ "
6'4"	3'2"	4'3 $\frac{7}{8}$ "	6'7"	4'11 $\frac{1}{2}$ "	1'1 $\frac{9}{16}$ "	8 $\frac{1}{4}$ "	2'5 $\frac{3}{4}$ "
6'6"	3'3"	4'4 $\frac{7}{8}$ "	6'9"	5'1 $\frac{3}{8}$ "	1'2 $\frac{11}{16}$ "	8 $\frac{5}{16}$ "	2'6 $\frac{11}{16}$ "
6'8"	3'4"	4'6 $\frac{1}{4}$ "	6'11"	5'2 $\frac{5}{8}$ "	1'2 $\frac{3}{8}$ "	8 $\frac{9}{16}$ "	2'7 $\frac{5}{16}$ "
6'10"	3'5"	4'8"	7'1"	5'4 $\frac{1}{8}$ "	1'2 $\frac{1}{2}$ "	8 $\frac{15}{16}$ "	2'8 $\frac{1}{16}$ "
7'0"	3'6"	4'8 $\frac{7}{8}$ "	7'3"	5'5 $\frac{3}{4}$ "	1'3 $\frac{11}{16}$ "	9 $\frac{1}{8}$ "	2'8 $\frac{7}{8}$ "
7'2"	3'7"	4'10 $\frac{3}{4}$ "	7'5"	5'6 $\frac{3}{4}$ "	1'3 $\frac{1}{8}$ "	9 $\frac{3}{8}$ "	2'9 $\frac{3}{8}$ "
7'4"	3'8"	5'0 $\frac{1}{2}$ "	7'7"	5'8"	1'3 $\frac{1}{4}$ "	10"	2'10"
7'6"	3'9"	5'2 $\frac{1}{8}$ "	7'9"	5'9 $\frac{1}{4}$ "	1'3 $\frac{7}{16}$ "	10 $\frac{3}{8}$ "	2'10 $\frac{5}{8}$ "
8'0"	4'0"	5'5 $\frac{1}{2}$ "	8'3"	6'1 $\frac{3}{4}$ "	1'4 $\frac{3}{4}$ "	11 $\frac{1}{8}$ "	3'0 $\frac{7}{8}$ "

A SHEET OF TYPICAL DETAILS ★ ★ ★ ★ ★ ★ ★ ★ ★ ★





"900" SERIES STOCK DOORS

A line of wood doors incorporating all of International's superior engineering features. Made of quality materials and manufactured with precision, these doors are lower in cost because of volume production.

Design—Although made in only one *basic* design, appearance may be altered by addition of molds, cornices, lights or other features that do not change the basic structure.

Material—*Wings and Enclosures* are of birch veneer on a vented wood core—gloss finished. (Four-coat hand rubbed varnish, enamel or lacquer finishes at slightly higher prices.)

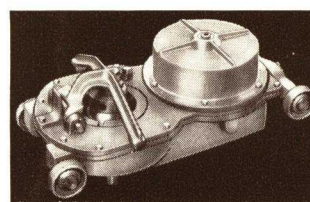
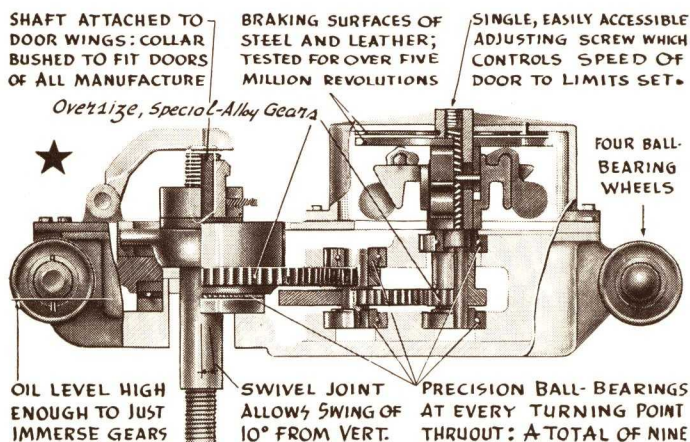
Glazing—Enclosure walls may be unglazed or glazed in half or quarter sections. Glass is $\frac{3}{4}$ -in. drawn plate. (Polished plate slightly higher.)

Weather Stripping—Felt and rubber "double wear," adjustable. (See lower left hand corner page 8.)

Hardware—Standard International panic proof mechanism, kick plates, push plates, two standard push bars each wing and standard track and trolley. Hardware bronze, satin finished. (Chromium plate optional at additional cost.)

Sizes—Furnished in 5 ft. 6 in., 6 ft. 0 in., 6 ft. 6 in. and 7 ft. 0 in. diameters. Height 6 ft. 10 in. to 7 ft. 0 in. For other dimensions see pages 10 and 11.

INTERNATIONAL SPEED CONTROL AND GOVERNOR



Each International Speed Control is tested before leaving the factory, insuring correct adjustment. Once set, calibrations are inscribed on a special adjustment screw, so that it can be accurately adjusted to desired speed.

The International Speed Control is a positive "limit" brake of the centrifugal type. It controls speed at any predetermined limit. At normal speeds it is completely out of engagement.

Advantages—An International Speed Control prevents spinning and bumping, handling more traffic more efficiently. It reduces wear on all parts—especially rubber strips and assures safety and convenience to revolving door users.

A speed control is recommended by insurance companies who have experienced entrance accidents.

Space Required—Clearance required is the same as that required for standard track and trolley, which is shown at bottom of pages 11 and 13.

Maintenance—The International Speed Control requires no oiling. Adjustment is made by one easily accessible adjustment screw. Exclusive mechanical features such as ball bearings, special alloy gears running in oil, etc., result in a speed control that will run for years with little or no attention.

International Speed Control is protected by U. S. patents and applications: Patents No. 1,946,160; 2,029,318; 2,047,468. Other patents pending.

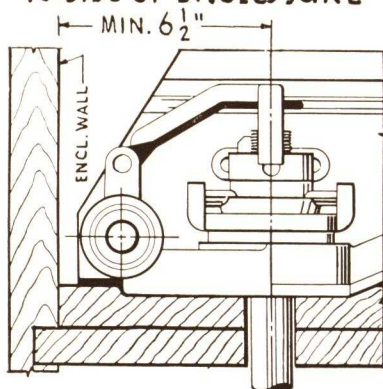
LEGEND OF OPERATION—Revolving door shaft (with a cup-and-finger pivot to allow door to swing 10° from vertical) is connected to rotating assembly (top right of diagram) by a ball bearing gear system having a total ratio of 16 to 1.

Speed control is made up of four brass weights which hang upon and bear against a rotating rack. Rotation of door past set speed makes these weights press upward against rotating brass disc, which touches leather brake washer, causing braking reaction magnified 16 times through gearing system.

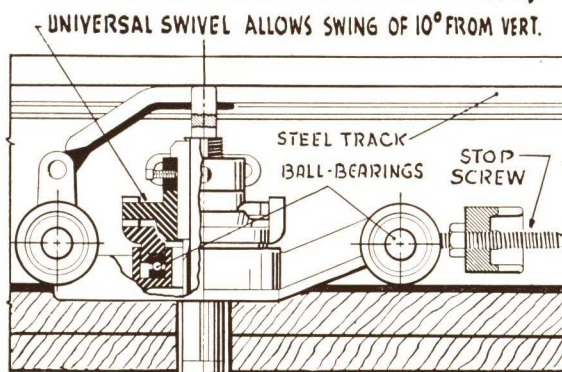
Two springs in opposition against a pin set in rotating disc determine its vertical position. An accessible set screw at top acts on the springs, providing precise adjustable speed control.

★ ★ DETAILS OF PANIC-PROOF MECHANISM ★ ★

SIDE VIEW, TROLLEY ROLLED TO SIDE OF ENCLOSURE

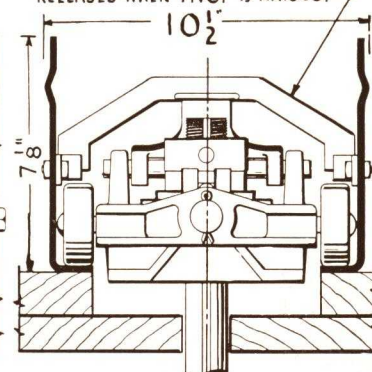


SIDE VIEW AND SECT. OF TROLLEY (INTERNATIONAL GOVERNOR FITS SAME SPACE)



END VIEW OF TROLLEY

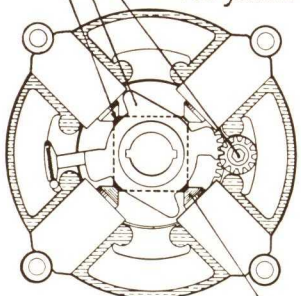
LATCH HOLDS TROLLEY FIRMLY IN PLACE; RELEASES WHEN PIVOT IS RAISED.



SECTION 'A-A'

• REVOLVING POSITION •
SHOWING THE PRINCIPLE OF SIMULTANEOUS RELEASE INDIVIDUAL RESET

MAIN CAM, consisting of a bronze block and a toothed, circular disc is connected to THE PIN CAM, by means of the..... PINION CLUTCH GEAR, a double gear.....

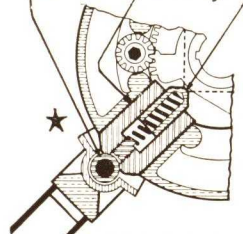


When any one wing is collapsed, its plunger will move Pin Cam, and thus release all four plungers.....

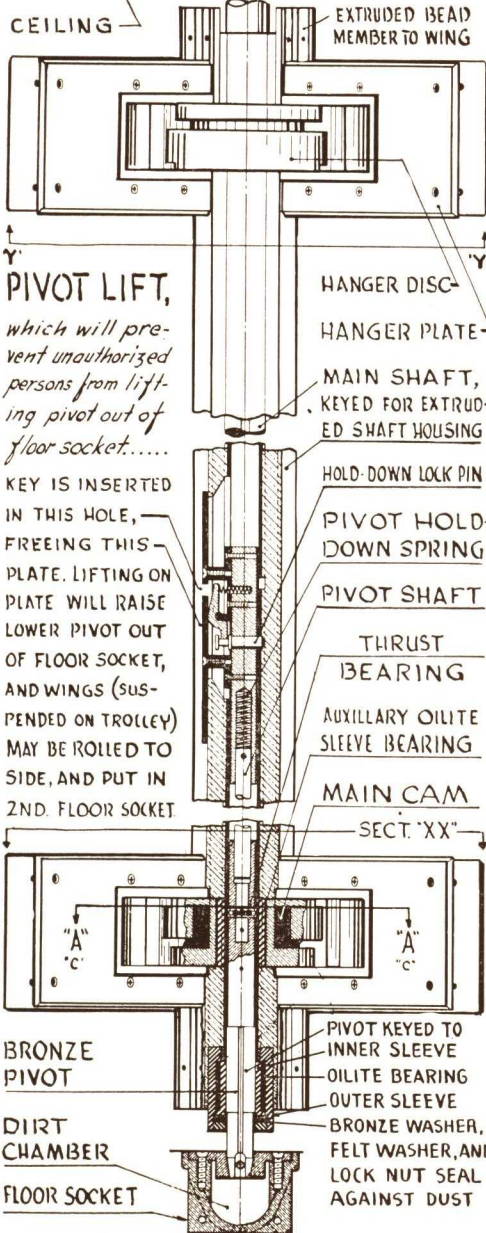
Releasing these plungers allows block to free roller, and all four wings are then free to collapse in any way.

SECT. 'A-A'

CUT TO SHOW PLUNGER ASSEMBLY

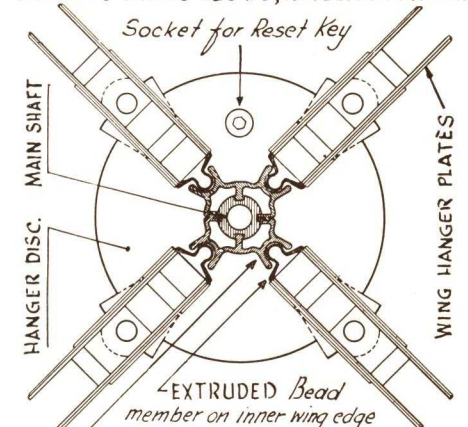


- IN RESETTING WINGS, INSERTION OF RESET KEY DISCONNECTS PIN CAM AND MAIN CAM SO THAT MOVEMENT OF THE PLUNGERS DOES NOT AFFECT MAIN CAM.



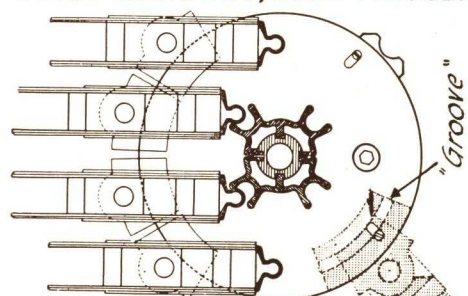
LONGITUDINAL SECTION

PLAN "X-X" AND "Y-Y" SHOWING WINGS LOCKED, REVOLVING POSITION



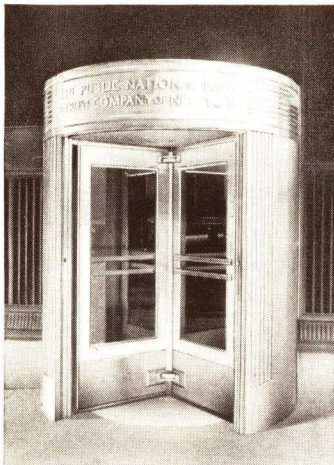
and - EXTRUDED SHAFT HOUSING when engaged for normal revolving position provide complete air-sealing, add strength and rigidity, and disengage easily to a folded position. In all positions they present a smooth finished appearance.

WINGS COLLAPSED, 'BOOK' FOLDED.

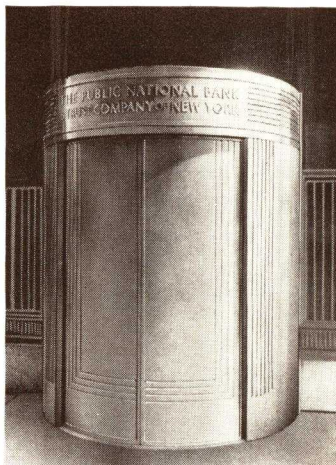


SECTION 'CC', at lower side of lower disc, and upper side upper disc. Note circular groove (in disc) to hold wings in proper limits in revolving or collapsed position.

International Revolving Door products are manufactured under one or more of the following U. S. Patents and applications pending: 1946160, 2029318, 2030547, 2047468, 2050589, 2055828, 2081774, 2084781, 2105972, 2108720, 2111182, 2111773, 2114405, 2125498, 2121512, 2128531.



Sliding Doors—Open



Sliding Doors—Closed

Public National Bank and Trust Co., New York City
York and Sawyer, Architects

These bronze sliding doors—rolling on a curved track and roller perfected by International—furnish this bank with protection along with smart appearance.

AUXILIARY SWING DOORS

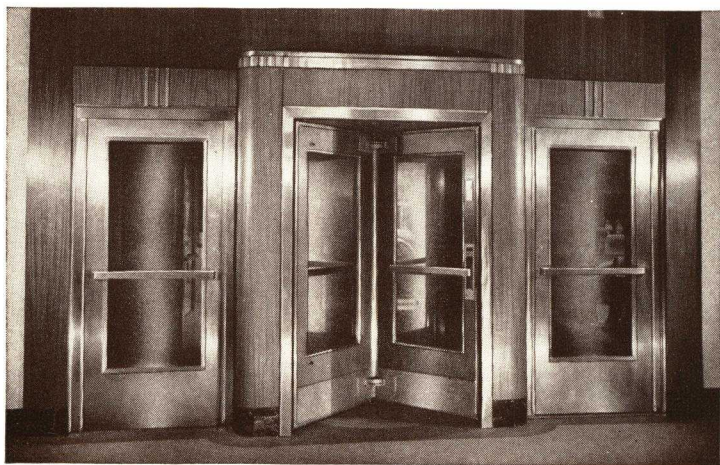
MATCHED DESIGN—When auxiliary doors are ordered in conjunction with revolving doors, matched design is assured. Pilasters, glass panels, width of stiles and extrusions are uniform. Such details as push bars, locks, and cornice ornamentation are *alike*, producing a wholly symmetrical entrance.

MATCHED MATERIALS — International auxiliary doors are made in all the materials used in revolving door construction—cabinet woods, Formica, bronze, aluminum, stainless steel, etc. Color is perfectly matched.

MATCHED CONSTRUCTION — International auxiliary doors are manufactured with the same care and precision that have made International Revolving Doors outstanding in the field.

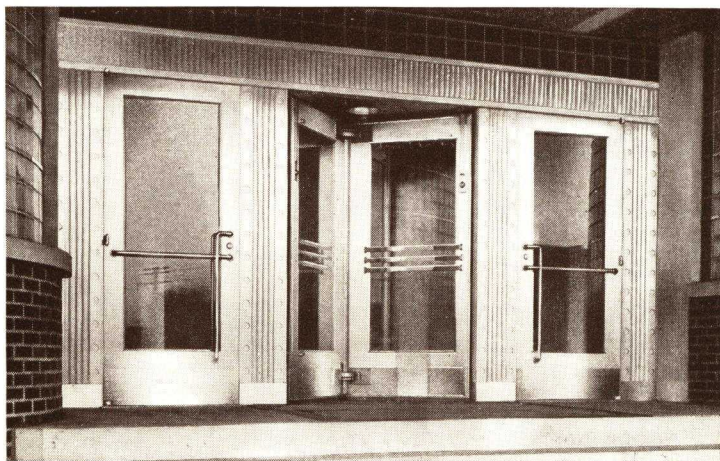
SLIDING DOORS

Curved, sliding doors—fitting into hollow enclosure walls—can be had with International Revolving Doors. International has perfected a special roller and curved track for these doors to assure ease of operation and long life. Designed to harmonize—open or closed—they do not detract from the appearance of the revolving door entrance.



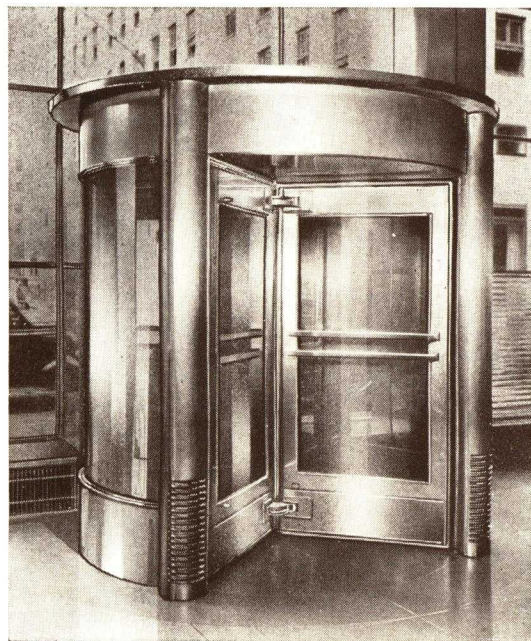
Rike-Kumler Dept. Store, Dayton, Ohio
Schenck & Williams, Architects

An example of the symmetry that is obtained by a properly designed entrance. A combination of nickel silver and mahogany.



Standard Register Co., Dayton, Ohio
Austin Co., Cleveland, Ohio, Designers

Another example of harmony and symmetry obtained with International's complete entrance construction.



Irving Trust Co., New York City
Voorhees, Gmelin and Walker, Architects

This hollow bronze door—with tubular, slotted pilasters and a fan in the cornice—forms an integral and efficient part of the building's air conditioning system.

SOME TYPICAL INSTALLATIONS BY INTERNATIONAL ★

<i>Albany, N. Y.</i> State Office Bldg.	<i>Evanston, Ill.</i> Washington National Bank Bldg.	<i>Irving Trust Company</i> Jack Dempsey's Punch Bowl
<i>Augusta, Ga.</i> Georgia Railroad Bank	<i>Evansville, Ind.</i> Vanderburgh County Court House	King's Catering, Inc.
<i>Baltimore, Md.</i> Baltimore Federal Savings and Loan Asse.	De Jong's	President Self Service Restaurant
Hochschild-Kohn and Company Department Store	Lamplight Inn	Public National Bank and Trust Company
<i>Beloit, Wis.</i> McNeany's Department Store	McCurdy Hotel	Ritz-Carlton Hotel
<i>Boston, Mass.</i> Clark's Tavern	People's Savings Bank	Schrafft's
Manger Hotel	Vendome Hotel	Stewart's Restaurant
<i>Brooklyn, N. Y.</i> Brooklyn Central Library	<i>Flint, Mich.</i> A. C. Spark Plug Co.	Thompson's Restaurant
Lincoln Savings Bank	Grand Rapids, Mich.	Vanderbilt Cafeteria
Thompson's Restaurant	Ashton Bldg.	Westbury Hotel
<i>Canton, Ohio</i> Citizens Building and Loan Company	<i>Harrisburg, Penn.</i> Finance Bldg.	Wise Shoe Store
<i>Chicago, Ill.</i> Cutler's Shoe Store, Palmer House	<i>Jackson, Miss.</i> Heidelberg Hotel	<i>Oak Park, Ill.</i> The Fair Store
Rohde's Restaurant	<i>Jersey City, N. J.</i> Medical Center Bldg.	<i>Oklahoma City, Okla.</i> First National Bank
St. Clair Hotel	<i>Knoxville, Tenn.</i> Miller Department Store	<i>Omaha, Neb.</i> Fontenelle Hotel
The Rookery Bldg.	S. & W. Cafeteria	<i>Paducah, Ky.</i> Irving Cobb Hotel
Union Pacific Ticket Office	<i>Louisville, Ky.</i> Thompson's Restaurant	<i>Philadelphia, Penn.</i> Apartment House, 2031 Locust St.
Wieboldt's Store	Washington Bldg.	Bourse Bldg.
Williams Bldg.	<i>Memphis, Tenn.</i> First National Bank	Thompson's Restaurant
<i>Cincinnati, Ohio</i> Keyhole Bar, Gibson Hotel	<i>Milwaukee, Wis.</i> Plankinton Hotel	<i>Racine, Wis.</i> S. C. Johnson and Son
Southern Ohio Bank Bldg.	Terminal Hotel	<i>Richmond, Ind.</i> Municipal Electric Light and Power Bldg.
Traction Bldg.	<i>Nashville, Tenn.</i> Third National Bank Bldg.	<i>St. Louis, Mo.</i> Katz Drug Store
<i>Clarendon, Va.</i> Clarendon Trust Company	<i>Newark, N. J.</i> Thompson's Restaurant	<i>St. Louis Dairy Co.</i>
<i>Cleveland, Ohio</i> Burrows Brothers Store	<i>New Haven, Conn.</i> Southern New England Telephone Co.	<i>San Francisco, Calif.</i> Central Tower Bldg.
Second Federal Savings and Loan	<i>New Rochelle, N. Y.</i> Schrafft's	Grisson's Chicken House
Society for Savings	<i>New York City, N. Y.</i> Central Nurses Residence, Welfare Island	<i>Sharon, Penn.</i> Sharon Department Store
<i>Columbus, Ohio</i> Thompson's Restaurant	Child's Restaurant	<i>Shelbyville, Ind.</i> Shelby County Court House
<i>Dayton, Ohio</i> Rike-Kumler Store	East River Savings Bank	<i>Springfield, Ill.</i> Springfield Dial and Office Bldg.
Standard Register Company	Enduro Sandwich Shop	<i>Washington, D. C.</i> Harrington Hotel
Winter's National Bank Bldg.	Franklin Simon's	Southern Bldg.
<i>Detroit, Mich.</i> Carboloy Bldg.	Gripsholm Restaurant	Willard Hotel
Fine Arts Bldg.	Horn and Hardart's	<i>Wilmington, Del.</i> Ernest Di Sabatino and Sons Office Bldg.
<i>Elkhart, Ind.</i> Mile's Laboratories	Information Bldg., Ellis Island	Security Trust Company

SPECIFICATIONS

GENERAL—Revolving door contractor shall furnish and install as indicated on plans and specifications International Revolving Doors. Contractor shall include enclosure walls, ceiling, cornice, panic proof mechanism, trolley and all necessary hardware and glass.

MECHANISM—Mechanism shall be Simultaneous Releasing Panic Proof. Application of excess pressure to any one wing shall cause the remaining wings to be released from tension and free to swing outward. Mechanism shall be equipped with adjustment so that one man can reset wings individually.

Main Shaft to be of one-piece steel seamless tubing with $\frac{5}{8}$ -in. thick wall and covered with an extruded housing closely engaging a beaded member on inner wing edge. Housing to extend full height and give complete air-seal when in revolving position.

Pivot Lift—To prevent unauthorized persons from lifting pivot out of floor—shall be key operated.

Trolley to be certified malleable iron construction, mounted on four ball bearing wheels and furnished with main precision ball bearing and a universal swivel. To be mounted on special formed steel track.

All mechanism shall be concealed and have no projecting parts. The lower pivot shall be of aluminum-bronze alloy and provided with bearings of rust-proof steel and Oilite bronze.

WINGS AND ENCLOSURE WALLS

Wood Veneer on Wood Core—Wings and enclosures to be five ply—(specify wood)—on a ventilated wood core.

Metal Overlay on Wood Core—Wings and enclosures to be gauge (specify metal) cemented to five ply ventilated wood core with waterproof adhesive under pressure. Finish of metal to be (Minimum thickness of metal recommended: aluminum, 16 B&S Ga.; nickel silver, 16 B&S Ga.; stainless steel, 22 U.S.S. Ga.; bronze, 16 B&S Ga.)

Formica on a Wood Core—Wings and enclosures to be of (Specify color) (dull or polished finish) Sheets

to be applied with waterproof adhesive to five ply ventilated wood core.

Hollow Metal Doors—Wings and enclosures to be of seamless tubular welded metal. Corners of wings to be reinforced with solid metal. Enclosure walls to be of gauge metal fastened to steel channel structural supports with welds or concealed rivets.

Welds to be ground and filed so no joint is visible (except on alumilited doors where a hairline will show at top of wings).

HARDWARE—Weather strip to be integrally cemented, one piece felt and rubber, secured by a special clamp which will permit moving the strip out to a second groove when it becomes worn. Wood wings shall be held by double grooved wood clamps secured to door with visible screws. Formica and all types of metal doors shall have an extruded metal member to hold weather strip.

Push Bars shall be of extruded section in one piece and secured with solid bracket. Push plates of metal to match door and be etched or plain.

Master-keyed, regular, burglar locking or electrical locking systems as required.

GLASS—Glass—good quality American polished plate glass of $\frac{1}{4}$ -in. thickness. ($\frac{3}{8}$ -in. or $\frac{1}{2}$ -in. optional for "Crystal" construction.)

LIGHTS—Snapped-in flush ceiling lights, including reflectors and removable covers with concealed screws. Does not include electric fixtures. (Included under "electric contract.")

SPEED CONTROL—Speed of revolving door shall be controlled by a centrifugal brake assembled in standard trolley. Brake shall have special alloy over-sized steel gears operating in oil; friction surface protected from oil splash; and precision ball bearings. Brake to remain out of engagement at normal speeds. Mechanism to have a single, easily accessible adjustment screw, for purpose of adjusting braking action.

INTERNATIONAL REVOLVING DOOR COMPANY

1321 EDGAR STREET

★ ★ ★ ★ ★

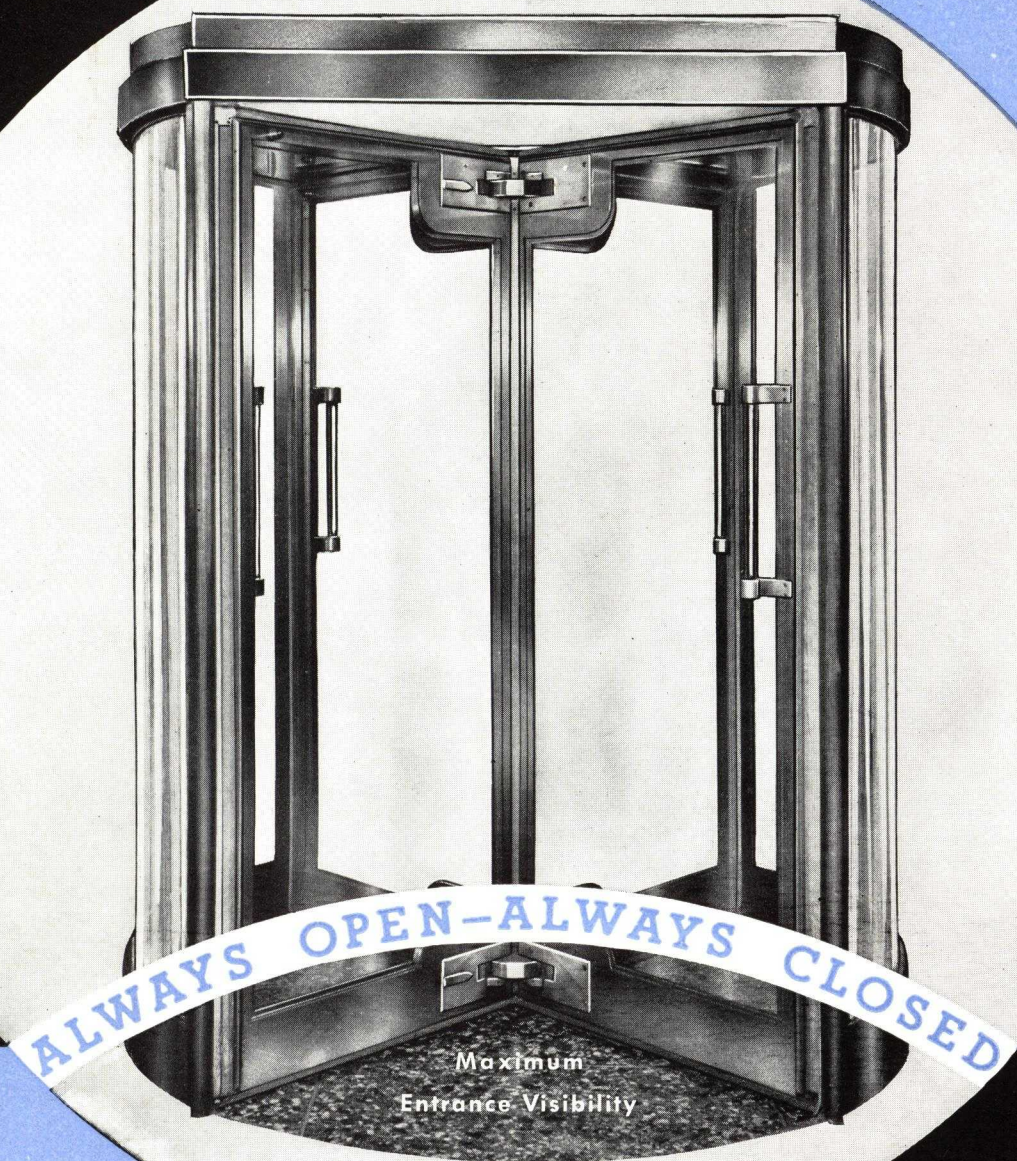
EVANSVILLE, INDIANA

INTERNATIONAL'S LOCAL REPRESENTATIVES

ALBANY, GA. Hunter-Knight Co., 121 N. Slappey Drive
ALBANY, N. Y. Harding Building Specialties Co., 271 Washington, Ave.
ALBUQUERQUE, N. MEX. The Colorado Builders' Supply Co., 1534 Blake St., Denver
ATLANTA, GA. Luke Seawell, 152 Nassau St.
AUSTIN, TEX. Central Texas Supply Co., Inc., P. O. Box 722
BALTIMORE, MD. Edw. J. Seager, 308 Baltimore Life Bldg.
BIRMINGHAM, ALA. Thomas Supply Co., Brown-Marx Bldg.
BOISE, IDAHO. J. G. Doerr, 501 S. 8th St.
BOSTON, MASS. Rubin-Burke Co., 216 Tremont St.
BUFFALO, N. Y. The Troup Engineering Co., 1807 Elmwood Ave.
BUTTE, MONT. The Builders Supply Co., Helena, Mont.
CASPER, WYO. Harry Champion, 523 Park Ave.
CEDAR RAPIDS, IOWA. Building Specialty Co.
CHARLESTON, W. VA. General Roofing and Air Conditioning Corp.
CHATTANOOGA, TENN. Nixon-Hasselle Co., 1300 Carter St.
CHEYENNE, WYO. The Colorado Builders' Supply Co., 1534 Blake St., Denver, Colo.
CHICAGO, ILL. John H. Brodt, 228 N. La Salle St.
CINCINNATI, OHIO. Calvin C. Huenefeld, 626 Broadway
CLEVELAND, OHIO. Wm. C. Pfleider, Inc., 406-7 Swetland Bldg.
COLUMBIA, S. C. Plowden and Roberts, 1024 Main St.
COLUMBUS, OHIO. Campbell J. "Honus" Graf, 358 N. High St.
DALLAS, TEX. R. M. Sedwick Co., 412 Construction Bldg.
DAVENPORT, IOWA. Benedict Material Co., 604 Union Bank Bldg.
DAYTON, OHIO. G. H. Condit, 712-713 Gas & Elec. Bldg.
DENVER, COLO. The Colorado Builders' Supply Co., 1534 Blake St.
DES MOINES, IOWA. Ralph O. Berard, 4117 University Ave.
DETROIT, MICH. Theo. H. Ollesheimer, 2539 Woodward Ave.
DULUTH, MINN. Duluth Builders Supply Co., 304 Builders Exchange Bldg.
EL PASO, TEX. C. C. Gaines Co., 1002 Mills Bldg.
ERIE, PA. Geo. H. Kraft & Son, 602 Shenley Drive
FORT WAYNE, IND. Jones and Moss, 215 Standard Bldg.
FORT WORTH, TEX. R. M. Sedwick Co., 412 Construction Bldg., Dallas, Tex.
GRAND RAPIDS, MICH. Haven-Busch Co., 501 Front Ave., N. W.
HARRISBURG, PA. Metal Building Products Co., 1515 N. Cameron St.
HARTFORD, CONN. Bidwell Hardware Co., 1293 Main St.
HELENA, MONT. The Builders Supply Co., Helena
HOUSTON, TEX. Robert Voigtlander, 1612 Miller St.
HUNTINGTON, W. VA. James J. Weiler & Sons, Inc., 202 Elm St.
INDIANAPOLIS, IND. Hoover Brothers, 630 Architects & Builders Bldg.
JACKSON, MISS. Clark Building Material Co., No. 3 John Hart Bldg.
JACKSONVILLE, FLA. George P. Coyle, 418 Park St.
KANSAS CITY, MO. B-D-R Engineering Corporation, Midland Bldg.
KNOXVILLE, TENN. Chavannes Lumber Co., 400 W. Oldham Ave.
LEXINGTON, KY. Faulkner Builders & Supply Co., 585 E. Third St.
LOS ANGELES, CALIF. Frank Peck Specialty Co., 420 S. San Pedro St.
LOUISVILLE, KY. The Equipment & Supply Co., 420 Baxter Ave.
MEMPHIS, TENN. Geo. O. Friedel, Builders Exchange
MIAMI, FLA. Manufacturer's Agent Co., 1785 S. W. 13th St.
MINNEAPOLIS, MINN. Hauenstein & Deggendorf, 800 Builders Bldg.
MILWAUKEE, WIS. Jackson & Fahey Co., Inc., 1311 Majestic Bldg.
MOBILE, ALA. Zelnicker Company, Inc., 234 First National Bank Bldg.
NASHVILLE, TENN. Builders Specialties Co., Third National Bank Bldg.
NEW HAVEN, CONN. A. R. Kirschner, 30 Whitney Ave.
NEW ORLEANS, LA. Ole K. Olsen, Inc., 823 Perdido St.
NEW YORK CITY, N. Y. Wm. K. Waterman, 100 E. 42nd St.
NORFOLK, VA. W. O. Sherman and Co., 136 Wilson Ave.
OKLAHOMA CITY, OKLA. Harry C. Geatches, 811 N. W. 24th St.
OMAHA, NEBR. Kraus & Trustin, 636 Paxton Block
PEORIA, ILL. Builder's Specialty Co., 325 S. Washington St.
PHILADELPHIA, PA. Robert R. MacKay, 2206 Chestnut St.
PHOENIX, ARIZ. Baker-Thomas Lime & Cement Co., 300 S. 12th St.
PITTSBURGH, PA. Joseph H. Throm, 1639 Oliver Bldg.
PORTLAND, ORE. Mercer Steel Co., Inc., 838 N. W. 13th Ave.
PORTSMOUTH, OHIO. Horr Brothers, 1302 Tenth St.
RICHMOND, VA. M. R. Mills, Jr., 210 E. Franklin St.
ROANOKE, VA. G. Eric Sachers, P. O. Box 1885
ST. LOUIS, MO. W. E. Way, Building Specialties, 825 Chemical Bldg.
ST. PAUL, MINN. Hauenstein & Deggendorf, 800 Builders Bldg., Minneapolis, Minn.
SALT LAKE CITY, UTAH. Crager Wire & Iron Works, 34 E. 9th St. S.
SAN ANTONIO, TEX. John W. Phillips Co., 207 Builders Exchange
SAN FRANCISCO, CALIF. Rolph, Mills and Co., Rialto Bldg.
SCRANTON, PA. La Bar and Evans, 711 Linden St.
SEATTLE, WASH. D. E. Fryer and Co., 1613 Seventh Ave.
SYRACUSE, N. Y. Waterman Building Specialties, 1407 Erie Blvd. E.
TOLEDO, OHIO. Spencer Comstock, 817 Security Bank Bldg.
TULSA, OKLA. Ray S. Trimble, Philcade Bldg.
WASHINGTON, D. C. H. G. Garlock, 412 Southern Bldg.
WICHITA, KANS. Grabendike Engineering Sales Co., P. O. Box 333
WINSTON-SALEM, N. C. The Steel Service Co., P. O. Box 454
HAVANA, CUBA. Jose Garcia Benitez, Apartado P. O. Box 2358

INTERNATIONAL REVOLVING DOOR CO.

★ *Evansville, Indiana U. S. A.* ★



**VAN KANNEL
REVOLVING
DOORS**



The Van Kannel Revolving Door Co.

PRODUCTS, FACILITIES & SERVICE

Van Kannel Revolving Doors have always been built to the highest standards of workmanship and material. This is demonstrated by the hundreds of Van Kannel Revolving Doors which have given continuous day-in and day-out service for 20, 30 and 40 years and are still operating satisfactorily. This quality construction has resulted in an enviable record of durability and service, and has proven that a well-built revolving door is the most inexpensive entrance for a modern building. Large operators of real estate have found revolving doors more economical

to maintain and operate than swing doors and door checks.

Architects, contractors and owners have found that the revolving door is a specialty that requires exceptional experience and training for its successful manufacture, installation and service. Van Kannel has developed a capable service organization in more than 100 cities throughout the country. This organization has been an important factor in the excellent record for durability and reliability of Van Kannel revolving doors and the many economies made by them.

Van Kannel Products

Revolving Doors

A revolving door consists of three or more wings mounted on a central shaft, rotating as a unit inside of circular enclosure. The door is so designed that the entrance is always sealed against drafts or air flow. Persons entering or leaving the building pass through the compartment formed by any two of the wings, operating the door by pushing or leaning against the wing directly ahead. As the wings are always in contact with both sides of the circular enclosure, the use of the entrance does not break the seal of the opening against drafts or air flow.

Continuous improvements have made the modern Van Kannel revolving door the most convenient type of entrance and the most suitable for heavy traffic. Being in perfect balance against wind and suction pressure, Van Kannel revolving doors always operate with effortless freedom at normal speeds.

Collapsible and Panic Proof

Modern revolving door mechanism is so designed that excessive pressure on any wing causes it to be released and to fold about the center shaft before damage or injury can occur.

In emergencies or panics, pressure on the wings *instantly* releases them from their radial position and collapses them like the pages of a book, folding them outward in line of egress. This leaves a free unobstructed passageway on both sides of the center shaft.

The center shaft is carried on an overhead roller bearing trolley and track. When desired, the wings may be folded in pairs and rolled to one side of the opening, leaving a clear, unobstructed passageway.

Door Traffic Controller

This is a control which prevents speeds in excess of a normal walking rate. It increases the normal capacity of the door and avoids the inconvenience and discomfort which results from excessive speed.

Revolving Pantry Pass Windows

This compact unit, including two decks of a variable diameter to meet specific requirements, revolving within a circular enclosure, is used for the passage of food between kitchen and pantry, and for the exclusion of cooking odors.

Van Kannel Facilities

FIRST MAKER AND ORIGINAL PATENTEE OF REVOLVING DOORS

Van Kannel is the pioneer manufacturer and original patentee of revolving doors. Always leading in the development of revolving doors, the company has patented all recent improvements. It offers a complete service in the design, manufacture, installation and maintenance of revolving doors of the most modern and improved type.

Engineering Service For Architects

Van Kannel engineers and representatives are widely experienced in analyzing entrance conditions to determine the economic value of a revolving door for any entrance. Such an analysis will show the

savings and economies to be effected by a revolving door suitable for the entrance. This service is available to architects and owners.

Erection and Maintenance Service

Van Kannel revolving doors are installed and serviced by trained, responsible men. This is as essential for satisfactory operation as high quality construction. A successful revolving door depends on excellent workmanship and thorough care in installation—*both* must be of the best for a smooth operation and reliable service. In Van Kannel revolving doors both are assured—by adequate manufacturing facilities—by a thoroughly experienced service organization.

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VAN KANNEL
REVOLVING DOOR
Co.

101 PARK AVENUE

NEW YORK, N. Y.

THE 4 MOST IMPORTANT REASONS WHY YOU SHOULD SPECIFY *Revolving Doors*

1. Only Revolving Doors Can Cope with Modern Traffic Volume and Draft Intensity

The necessity for revolving doors at the entrance to modern buildings, banks, restaurants or stores is caused by modern intensity of draft and traffic. The lack of protection and limited capacity of hinged or swing doors or swing door vestibules makes them inadequate to meet the needs of modern conditions.

A modern revolving door always rotates without effort and at a convenient rate of speed.

Being in perfect balance, it is not affected by wind or suction pressures.

Its rotation divides traffic naturally to the right and left, obviating confusion.

Its speed control (the Traffic Controller) regulates the speed to the volume of traffic—never more than a normal walking rate—providing capacities far in excess of hinged door entrances.

This controlled operation makes it especially suitable for entrances to stores or buildings from which people carry packages, since the operation simply requires that the user walk through and lean or push against a wing.

The revolving door protects valuable sales areas or lobbies near the entrance from the costly handicap of drafts and chill in winter and of heat and humidity in summer.

It prevents losses by shutting out the dust and dirt of present-day streets.

It reduces the cost of heating in winter and the cost of air conditioning in summer.

2. Reduces Heating Costs—By Lowering Infiltration Losses

The second difficulty, and the more important, is caused by the intense entrance drafts and excessive infiltration resulting from the wind and suction pressures referred to above. Under normal winter temperature (approximately 35° F.) the combined effect of wind pressure and suction pressure produces entrance draft velocities that vary between 10 and 30 miles per hour, depending upon the height of the building, the chimney action or the exhaust suction. In severely cold weather, these velocities become excessive . . . the chimney action of tall buildings frequently producing draft velocities of 60 miles per hour.

Returning to a consideration of normal conditions, we find that the operation of a single swing door causes a draft opening per person which is equivalent to a full door opening for a period of two seconds. The draft volume for each person passing through a single swing door entrance varies from 600 to 1800 cu. ft. With a swing door vestibule, which actual tests show to have an equivalent full draft opening of 1.5 seconds for each person, the draft volume varies from 450 to 1350 cu. ft. per person passing through.

Revolving doors, by actual tests in the field and laboratory, show an average displacement of 26 cu. ft. per person passing through. This volume is not affected by variations in draft pressure or wind pressure. It depends only on the size of the revolving door and the number of people using it. When more people use it, it becomes more efficient, for the cubic feet per person is lower as the operation speeds up.

3. Eliminates Difficult Door Operation in All Weathers

A revolving door, *which is always in perfect balance*, eliminates difficult door operation. Its operation is uniformly easy and regular under *all* conditions of wind pressure, suction pressure and temperature. It assures satisfactory, convenient, effortless operation month-in and month-out.

4. Reduces Air Conditioning Costs

In the case of a store or building which is air-conditioned for summer cooling, the value of a revolving door is doubled. It protects against dust-laden, super-heated humid air being swept in from sun-baked sidewalks and pavements and is as important, for economical operation, as a means of preventing loss of cooled conditioned air in summer, as it is in the prevention of air infiltration in winter.

The principal need for a revolving door in connection with air-conditioning (summer cooling) is the elimination of entrance infiltration. In hot weather, infiltration is due primarily to entrance drafts caused by wind velocity. In modern cities, the eddy currents and pressure areas caused by the obstruction of large buildings, induce entrance drafts even where there is no direct exposure to prevailing winds. The operation of the air-conditioning unit itself frequently creates a difference in pressure that causes entrance infiltration or exfiltration that represents a waste of cooled, conditioned air.

This entrance infiltration, which occurs during the opening and closing of doors as people pass in and out, causes an average displacement of 150 cu. ft. of air per person passing through a single swing door entrance, and 125 cu. ft. for each person passing through a swing door vestibule entrance, in stores or buildings having more than one entrance. As compared to this, the average displacement of a revolving door . . . depending on the size of the door and the number of people using it . . . is 26 cu. ft. for each person passing through the entrance. The reduction of 100 to 125 cu. ft. of infiltration per entrance passage where revolving doors are used represents the exclusion of a vast amount of hot, humid dust-laden air that seriously affects the efficiency of the air-conditioning installation.

The following table shows the economies resulting from the use of a revolving door. The more traffic there is, the greater is the need of protection.

REDUCTION IN COOLING LOAD GAINED BY USE OF REVOLVING DOORS IN STORES OR BUILDINGS WITH ENTRANCES IN TWO OR MORE OUTSIDE WALLS

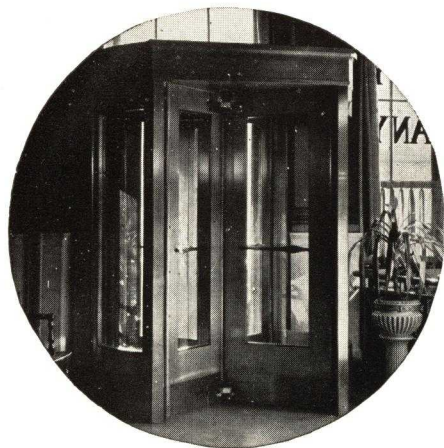
Number of persons entering and leaving per hour	100	400	800	Wide open double door
Saving in infiltration, cu. ft. per hour	20,000	80,000	200,000	500,000
Saving in cooling load, tons capacity	1	4	9	23

COMPARATIVE INFILTRATION
REVOLVING DOORS VS. SWING DOORS

Height of building	Average draft velocity under normal winter conditions, miles per hour	Infiltration (cubic feet per hour) with 1000 entrance passages per hour—500 "in," 500 "out"		
		SWING DOOR 2 seconds effective draft opening per person	SWING DOOR VESTIBULE 1.5 seconds effective draft opening per person	REVOLVING DOOR
10 Floors or usual restaurant exhaust ventilation	14	820,000	615,000	26,000
20 Floors	16	940,000	700,000	26,000
30 Floors	18	1,030,000	790,000	26,000
40 Floors	20.5	1,200,000	900,000	26,000

ADVANTAGES OF *Revolving* DOORS

In BANKS, HOTELS, RESTAURANTS, OFFICE BUILDINGS, STORES, SHOPS



Bronx County Trust Co.

Insures Orderly Traffic in Banks

Revolving doors provide protection to officers, customers and employees against the chilling discomfort of wasteful, dangerous entrance drafts. Better health, greater efficiency, more business.

The most convenient and accessible entrance. Revolving doors operate without effort under all conditions of wind pressure and cold weather. They always assure greater capacity by the orderly division of traffic.

A saving in fuel varying from \$60.00 to \$600.00 per year.

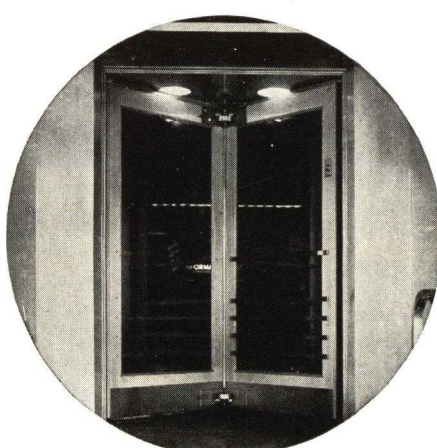
A material saving in the cost of installing and operating an air-conditioning plant.

The elimination of dust and dirt from the street.

Lost cost of maintenance for entrance doors.

A substantial saving in building cost by reduced radiation requirements, the elimination of swing doors and ineffective vestibules.

With modern safety mechanism and speed control, the prevention of entrance accidents and elimination of confusion.



Hotel Astor

For Draftless Hotel Lobbies

They result in assurance of a comfortable, draftless lobby . . . providing complete comfort for guests under all weather conditions.

The most convenient and practical hotel entrance. Porters loaded with luggage merely push their way through . . . no holding the door open to chill the interior . . . no interference with other traffic.

Protection of health and increased efficiency of employees stationed in the lobby, through the elimination of drafts and chill.

Reduction in the cost of heating plant and an annual saving in cost of fuel.

Saving in initial cost of air-conditioning system and in annual cost of operation.

Protection to furnishings and decorations, preventing depreciation by dust and dirt carried in by entrance drafts.

A balanced door which operates without effort under all weather conditions. There is no expense for adjusting and maintaining swing doors and door checks.

Traffic control that provides maximum capacity with an orderly division of "in" and "out" traffic.

Freedom from entrance accidents and inconvenience.



Astor Bar

Makes Clean, Pleasant Restaurants

Assures increased sales in the valuable area near the entrance by protection against the handicaps of drafts and chill in the winter and of heat, dust and dirt from the street in summer.

Improved health and efficiency of cashiers, waiters and other employees by the elimination of severe entrance chill.

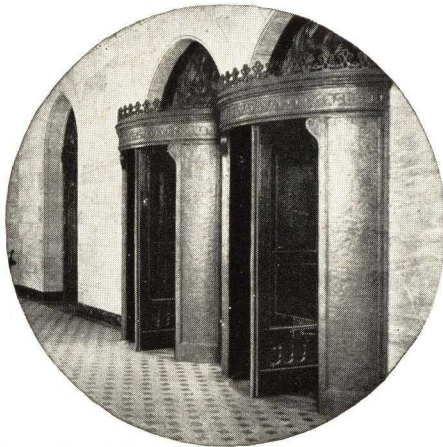
A saving in fuel and in the cost of radiation for winter heating.

A material saving in the cost of installation and operation of an air-conditioning plant.

Elimination of dust and dirt from street drafts . . . improving sanitation and reducing the cost of cleaning, dusting and re-decorating.

Lower maintenance cost than other types of doors.

Greater convenience and capacity for entrance traffic. Revolving Doors are not affected by wind pressure or suction pressure but *always* operate without effort at a controlled rate of speed.



Denver Telephone Bldg.

Lower Heating Costs in Office Buildings

They bring protection against entrance drafts caused by severe chimney action in tall buildings, resulting in:

Increased comfort for tenants, visitors and employees.

Saving in fuel.

Improved health and efficiency of employees.

Greater value to cigar stands and other concessions.

The most convenient and accessible entrance. Revolving doors operate without effort under all conditions of wind pressure and cold weather. Furthermore, greater capacity is provided by modern controlled speed and the orderly division of traffic.

Reduction in cleaning and decorating by the elimination of dust, dirt and filth from street drafts.

Lower cost of maintaining entrance doors than is possible with swing doors and door checks.

A lower first cost of the building, resulting from savings in radiation and elimination of ineffective swing door vestibules.



Bloomingdale's Dept. Store

Increases Entrance Counter Sales in Stores

Vital protection is given to small sales areas against the serious handicap of chilling blasts from the entrance doors in winter, resulting in:

Increased sales . . . the result of comfortable conditions for both customer and employee.

Saving in fuel.

Improved health and efficiency of employees.

Marked reduction in depreciation of displayed merchandise because of the elimination of dust and dirt from the street.

In summer, protection against hot air from sun-baked pavement and sidewalks bring:

Reduced cost of air-conditioning plant and its operation.

Further saving in depreciation by shutting out dust-bearing drafts.

Greater capacity and convenience of entrance due to the effortless operation and the division of incoming and outgoing traffic at a controlled rate of speed.

Protection to paint and decorations by the elimination of dust and dirt.

Elimination of the cost of excess radiation and wasteful vestibule.



I. Miller Store

Eliminates Street Dust in Shops

Revolving doors make for increased sales in ground floor areas near the entrance. Drafts and chill from entrance doors are eliminated in winter, and heat, dust and dirt from entrance doors are excluded in summer.

Improved health and efficiency of employees on the street floor by the elimination of entrance drafts and chill.

Reduced depreciation of merchandise on display near the entrance as the result of the elimination of dust, and dirt from the street.

A saving in fuel and in the amount of radiation needed in winter for heating.

A substantial saving in the cost of installing and operating an air-conditioning plant.

Less cleaning and dusting of stock, merchandise, walls, fixtures and furniture.

An entrance door which is always easy, convenient to operate and with a minimum of upkeep and expense.

Greater capacity and better traffic control due to speed regulation and natural division of traffic to right and left.

MEETS *Your* REQUIREMENTS ON *Every* COUNT

The Basic Principle of Van Kannel Revolving Doors

A revolving door consists of three or more wings mounted on a center shaft rotating as a unit inside a circular enclosure. The door is so designed that the entrance is *always sealed* against drafts or air flow. Persons entering or leaving the building pass through the compartment formed by any two of the wings, operating the door by pushing or leaning against the wing directly ahead. As the wings are always in contact with both sides of the circular enclosure, use of the entrance does not break the seal of the opening against draft or air flow.

Continuous improvements have made the modern Van Kannel Revolving Door the most convenient type of entrance and the most suitable for heavy traffic. Being in perfect balance against wind and suction pressures, Van Kannel Revolving Doors always operate with effortless freedom at normal speeds.

Every Size to Meet Your Needs

Four wing revolving doors are ordinarily made 6'10" or 7'0" high, and vary from 5'6" to 7'6" in diameter. There is rarely any need for the use of a door over 7'0" in height, and it is recommended that for ease of operation and the utmost in convenience, doors do not exceed this height. The most popular diameter is 6'6", but where space is limited, a 5'6" diameter door will give entire satisfaction. At entrances where a considerable number of people are carrying luggage or bundles, a 7'0" diameter door is recommended.

Flexed Walls Available for Maximum Clear Width

In instances where additional width is a factor of importance, such as for the purpose of admitting automobiles to the lobby of a hotel for display purposes, Van Kannel doors can be furnished with enclosure walls that are hinged to a narrow center panel, permitting them to swing back, and providing the full width of the enclosure.

Capacity Tests Do Not Tax Van Kannel Doors

At a normal walking rate, a revolving door rotates 15 revolutions per minute. Each revolution provides unobstructed passageway for four persons both "in" and "out." With the modern Traffic Controller, which prevents speeds in excess of those needed to handle the traffic, full load capacity is readily obtained since, at a comfortable speed, each compartment can be occupied. Thus the normal full hourly load capacity of a revolving door is 3,600 persons "in" and 3,600 persons "out."

This has been exceeded in a number of instances as in the test at Marshall Field & Co., Chicago, and at several entrances to the offices of large public utilities where the speed of rotation has been set at 18 revolutions per minute.

It will be evident, from the data given below, that the traffic in the busy entrances to the largest and most active office buildings, banks and restaurants, does not tax the normal capacity of a Van Kannel Revolving Door.

Name and Location	Duration of Test	Total Number of Persons	Rate per hour in One Direction Based on maximum number of persons passing in one direction for 15-minute period
Marshall Field & Co., Chicago, Ill.	10 minutes (5:00 to 5:10 P.M.)	1,075 Out 57 In	6,300 Out 332 In
R. H. Macy, New York, N. Y.	1 hour	2,303 In 1,988 Out	2,708 In 2,320 Out
Gimbel Bros., New York, N. Y.	1 hour	1,327 In 77 Out	1,604 In 95 Out
Y. M. C. A., New York, N. Y.	1 hour	398 In 355 Out	480 In 440 Out
Hotel Commodore, New York, N. Y.	1 hour	240 In 295 Out	376 In 420 Out
Hotel Astor, New York, N. Y.	30 minutes	478 In 427 Out	960 In 854 Out
Childs Restaurant, New York, N. Y.	1 hour	1,134 In 487 Out	1,228 In 680 Out
Bank of United States, New York, N. Y.	15 minutes	109 In 110 Out	436 In 440 Out
World Building, New York, N. Y.	1 hour	496 In 629 Out	564 In 740 Out
Commercial Cable Building, New York, N. Y.	1 hour	1,018 In 1,034 Out	1,104 In 1,164 Out
Bank of Commerce Building, New York, N. Y.	1 hour	961 In 679 Out	1,192 In 800 Out
Equitable Building, New York, N. Y.	10 hours	9,046 In 8,508 Out	1,142 In 1,815 Out
Barclay-Vesey Building, New York Telephone Co.	1 hour	31 In 674 Out	40 In 1,660 Out
Hudson Terminal Building, New York, N. Y.	1 hour	2,192 In 1,669 Out	3,208 In 2,520 Out

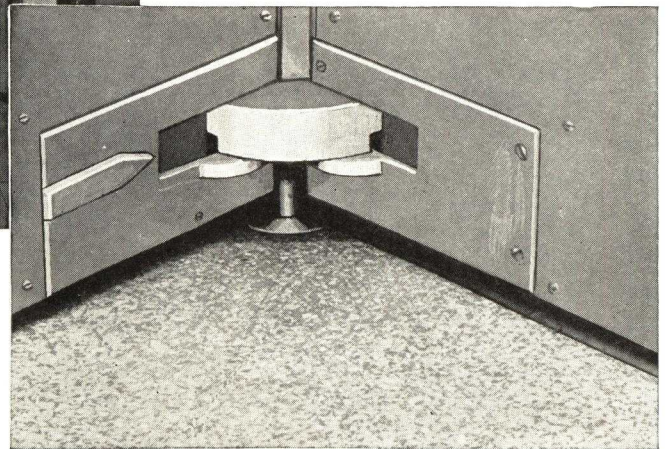
THE *Van Kannel* TYPE "AA"
Is an Automatic, Collapsible,

HERE IS A MODERN
REVOLVING DOOR OF
BEAUTIFUL DESIGN AND
SENSITIVE ADJUSTMENT,
DEVELOPED AND MADE
WHOLLY BY VAN KANNEL
COMPANY



NOTE (at Right) Enlarged View of Self Bracing Hardware located at Top and Bottom of Wings.

All movable parts of mechanism subject to wear are assembled in hangers. Access to these parts can be had without dismantling center shaft or any of the other wings.



The Van Kannel Type "AA" Has Fewer Wearing Parts

Type "AA" Van Kannel Revolving Doors have fewer parts and are the most durable doors we have ever manufactured, notwithstanding that there are many Van Kannel Doors, with previous styles of hardware, in use for more than a third of a century.

The simplicity of design and operation makes the Type "AA" door easy to collapse or fold and just as easy to reset into operating position. When re-setting, the spring socket quickly and automatically lines up the wings. The absence of braces,

cables or chains between the wings facilitates handling, provides more room between the wings, and makes possible a neat, modernistic design.

When equipped with the Traffic Controller, which assures operation at a comfortable, convenient rate of movement without excessive speeds or spinning, this modern revolving door provides any entrance with . . . *great capacity . . . freedom of movement . . . absolute safety.*

Panic Proof Revolving Door Without Cables or Braces

ILLUSTRATIONS BELOW SHOW FOLDING ABILITIES OF TYPE "AA"

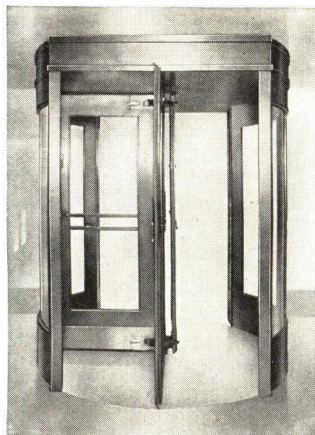


Fig. 1

In Half Collapsed Position

Only three seconds are required to place one wing of a Type "AA" door in half collapsed position shown and to reset it into operating position for regular use. With one wing in this position long objects or other equipment are readily passed through.

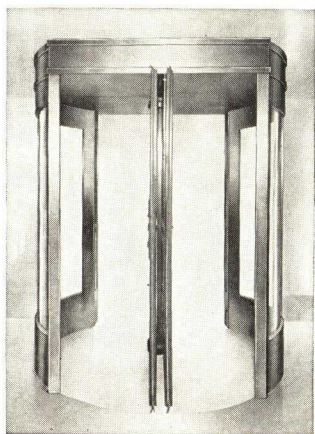


Fig. 2

In Folded Center Position

Type "AA" doors can be folded without effort by manually releasing the tension on wings. The secondary engagement in the discs holds the wings in folded position until released. To restore wings to operating position they need only be moved back into place and tension re-applied. The wings of this modern door can be folded to the position shown in thirty seconds and re-set, ready for use, in even shorter time.

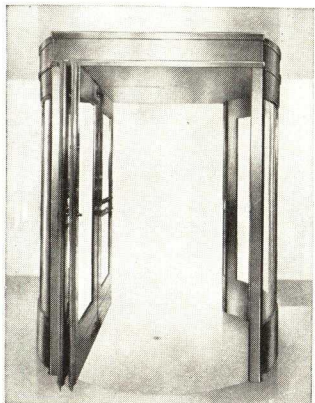


Fig. 3

With Wings Folded and Rolled to One Side

In this position, Type "AA" doors provide a clear opening through the entrance for ventilation, movement of furniture, equipment, etc. When wings are folded, they are held firmly in place by the secondary engagement assuring easy, balanced handling. Wings can be folded and moved to one side of the enclosure in thirty seconds and, as quickly, can be re-set in the center ready for regular use.

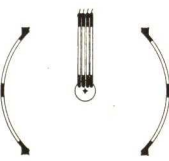
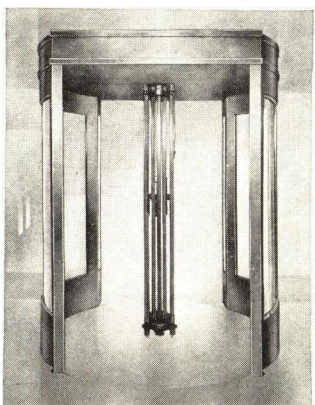


Fig. 4

Panic Proof Position with Four Wings Collapsed

In case of a panic, a crowd rushing and pressing against wings of the Type "AA" door would cause them to collapse, automatically and instantly to the position shown in Fig. 4. Thus a clear, unobstructed passage is quickly provided on both sides of the center post. From this collapsed position the door can be re-set for regular use within six seconds.

Design and Construction of Type "AA"

In appearance and design, Van Kannel Type "AA" Revolving Doors are entirely in keeping with the present-day vogue for simple, clean cut straight line effects . . . *no braces . . . no cables . . . no chains.*

This outstanding improvement in revolving door construction is made possible by the unique mechanism which

(1) holds the wings firmly in their radial operating position, and

(2) makes it possible for the wings to collapse automatically to a folded position when the pressure on them exceeds the predetermined resistance for which the mechanism has been adjusted.

Thus, Type "AA" doors are entirely panic proof and provide a new measure of safety in emergencies necessitating a clear, unobstructed passageway. The mechanism is ruggedly constructed throughout for long, dependable service.

In Type "AA" doors the wings are mounted on hangers supported by a pivoted connection to heavy discs both at the top and at the bottom. An adjustable spring and socket engagement between each door hanger and the disc provides an independent radial support for the wing. It also acts as a safety release in case of an emergency.

The Panic Proof Feature of Type "AA"

Type "AA" doors are panic proof because pressure of a crowd rushing against the wings will cause all four wings to collapse *outward* in line of egress, causing them to fold together like a book and permitting free passage on both sides of the center.

Setting the tension on each wing for the desired collapsing pressure is quickly and easily accomplished. No dis-assembly is required for this purpose. Once the resistance is set, it maintains a permanent, uniform tension. Releasing the tension manually for folding does not vary the adjustment and, when the doors are re-set in their operating position, the tension is automatically re-established exactly as it was before folding.

When the wings are folded in pairs, they are automatically held in folded position by a secondary engagement incorporated in the mechanism between the hanger and disc. No separate folding bars or keepers are required.

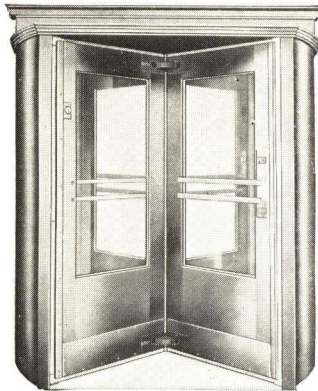
THE *Van Kannel* TYPE "AA"

STANDARD DESIGNS AVAILABLE

The four principal designs of Van Kannel doors are shown in the left-hand column of illustrations below. These, together with stock models shown, provide a sufficient variety of design to meet all general requirements.

U Design

Where U Design is designated, this denotes solid enclosure walls finished inside only, due to abutment against adjoining walls. No cornice or roof furnished.



POSITION ASSUMED BY WINGS



FIG. 1
REVOLVING POSITION

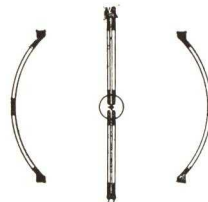
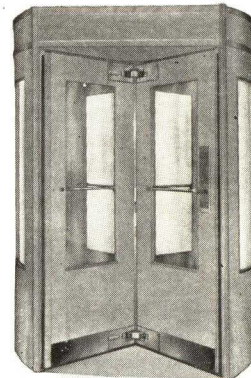


FIG. 2
CENTRAL OPEN POSITION



FIG. 3
FULL OPEN POSITION

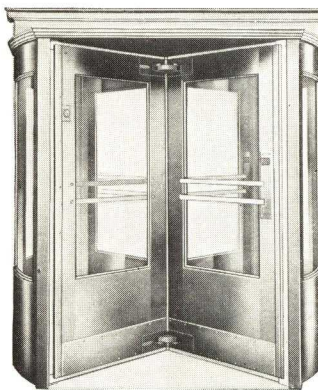


Economy Junior
5'6" x 6'10"

Note 10" cornice and glass panels in enclosure walls, furnished in Birch, Walnut or Mahogany finish.

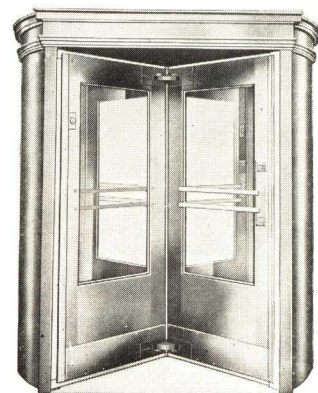
Type "AA" Design 1

Note 3" cornice and solid enclosure walls, furnished in any metal or wood.



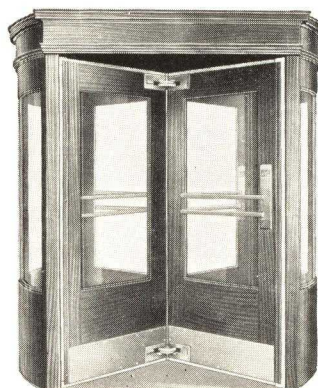
Type "AA" Design 1G

Note 3" cornice and glass panels in enclosure walls, furnished in any metal or wood.



Type "AA" Design 3

Note 10" cornice and solid enclosure walls, furnished in any metal or wood.



Type "AA" Design 3G

Note 10" cornice and glass panels in enclosure walls, furnished in any metal or wood.



FIG. 4
PANIC COLLAPSED POSITION

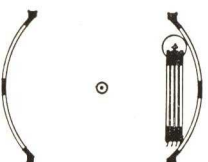


FIG. 5
FULL OPEN POSITION WITH
WINGS COLLAPSED

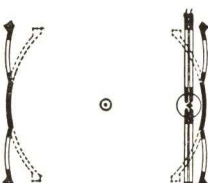
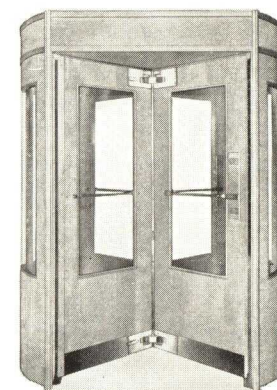
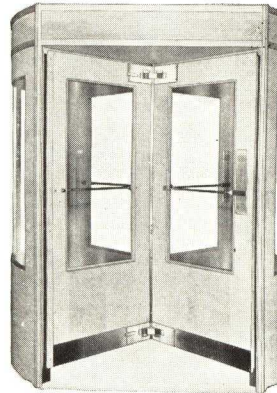


FIG. 6
FULL OPEN POSITION WITH
FLEXED WALLS



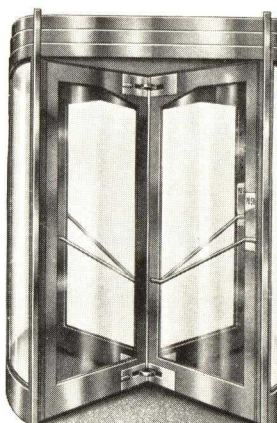
Economy Standard
6' x 6'10"

Same as Economy Junior above, but larger size. (Door here shown in natural wood.)



Economy Chief
6'6" x 6'10"
Economy Special
7' x 6'10"

Same as Economy Junior above, but larger size. (Door here shown is Economy Chief in natural wood.)



**Type AA Stock
High Visibility
Design**

16 Gauge Bronze on Wood or American Walnut. Note specially constructed narrow stiles and rails, providing for larger glass panels and maximum visibility.

This stock design can also be furnished in other metal or wood.

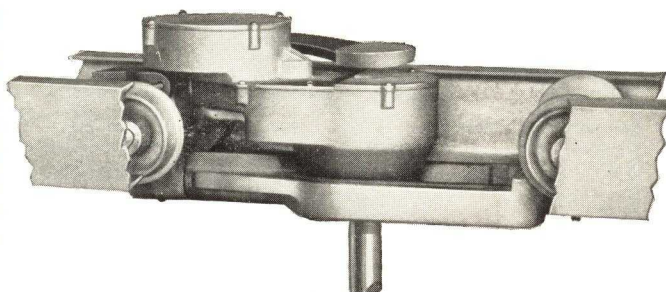
Van Kannel Door Traffic Controller for Regulating Speed According to Traffic

The Van Kannel Mechanical Traffic Controller can be applied to any Van Kannel Revolving Door . . . old or new. This device is incorporated in the overhead mechanism without structural changes. It is a simple and dependable centrifugal brake. An easy, permanent adjustment holds the brake out of engagement at normal speeds, but causes it to act as soon as the desired maximum speed is reached. This prevents any excessive speed or spinning. The revolving door always rotates at a comfortable, convenient speed which can be adjusted to handle crowds rapidly or slowly.

The Van Kannel Mechanical Traffic Controller, like the revolving doors themselves, is built for years of satisfactory and trouble-free service. Steel gears . . . shafts mounted in felt-sealed ball bearings . . . heavy duty brake lining . . . combine to insure years of dependable operation.

This device meets the requirements of the U. S. Government standard specifications.

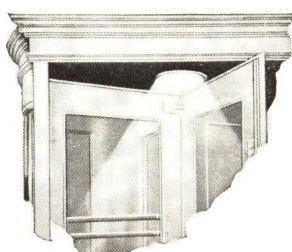
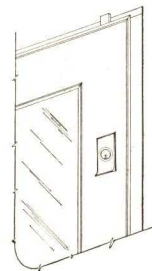
In instances where there is insufficient room to install Traffic Controller in connection with overhead trolley as here illustrated, special equipment can be furnished for making the installation in the floor directly underneath the center shaft.



Center Shaft

Cylinder Locks

Cylinder locks are available for all Van Kannel doors where specified. Two locks are required and are generally installed one each on opposite wings. In hollow metal construction, locking bar is concealed by mortised construction as shown.



Ceiling Light Reflectors

Ceiling Light Reflectors, with or without flush obscure glass cover, can be furnished and installed where needed with solid wall enclosure. These lights are normally 10 inches in diameter, and are usually located in the interior and exterior quarters, half way between the center and the edge of the ceiling.

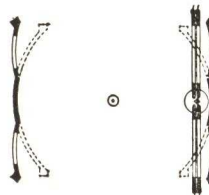
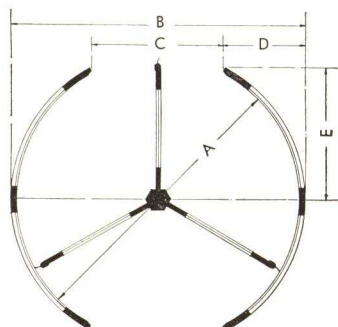


FIG. 6
FULL OPEN POSITION WITH
FLEXED WALLS

Flexed Walls

Flexed walls used for maximum entrance width to permit passage of automobiles for display purposes, as for example in hotel lobbies or exposition halls.

Three Wing Doors—for Low Cost Installations



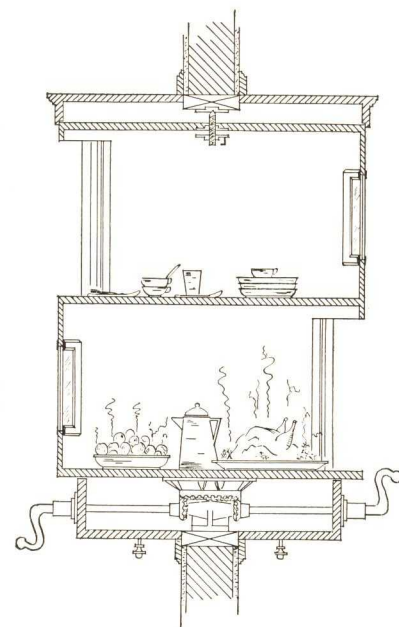
Three-wing doors provide an effective seal against drafts or odors, and a low cost revolving door where space is limited and traffic is not heavy. Capacity of the three-wing door is equivalent to a single swing door. They are suitable for entrances to toilet rooms and photographic or X-Ray rooms, etc. (Further details on request.)

DIMENSIONS OF THREE WING DOORS

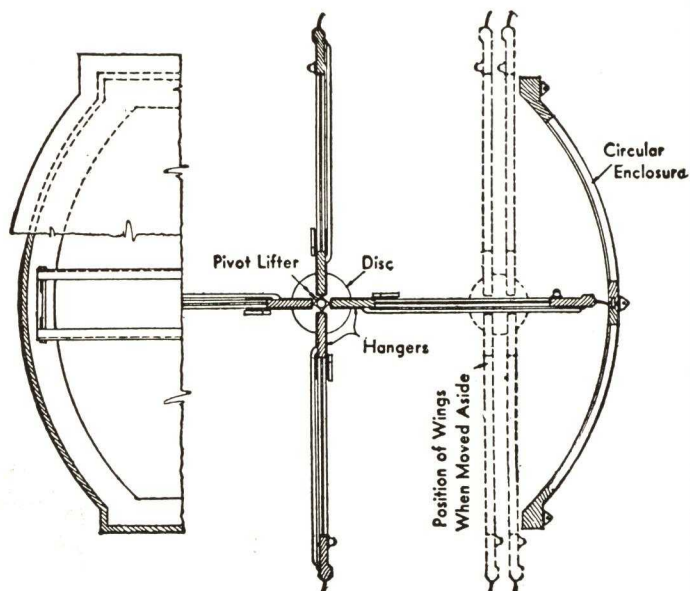
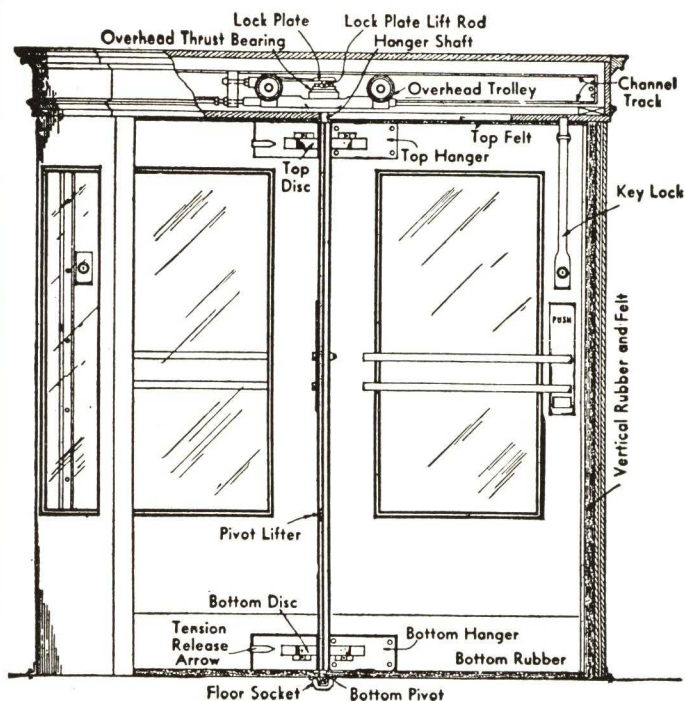
A	B	C	D	E
4'-0"	4'-10 3/4"	2'-13 1/4"	1'-4 1/2"	2'-2 1/4"
4'-10"	5'-0 3/4"	2'-2 3/4"	1'-5"	2'-3 1/8"
5'-0"	5'-2 3/4"	2'-3 3/4"	1'-5 1/2"	2'-4"
5'-2"	5'-4 3/4"	2'-4 3/4"	1'-6"	2'-4 7/8"

Revolving Pantry Pass Windows

This method of passing food between pantry and kitchen avoids the passage of cooking odors, and this unit therefore is of special interest to architects who are designing the better class of homes. The unit is also of interest to architects designing hotels and restaurants.

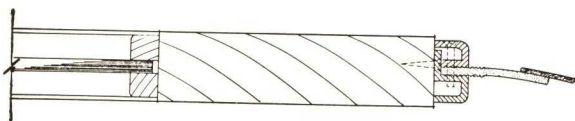


Cross Section of Pantry Window



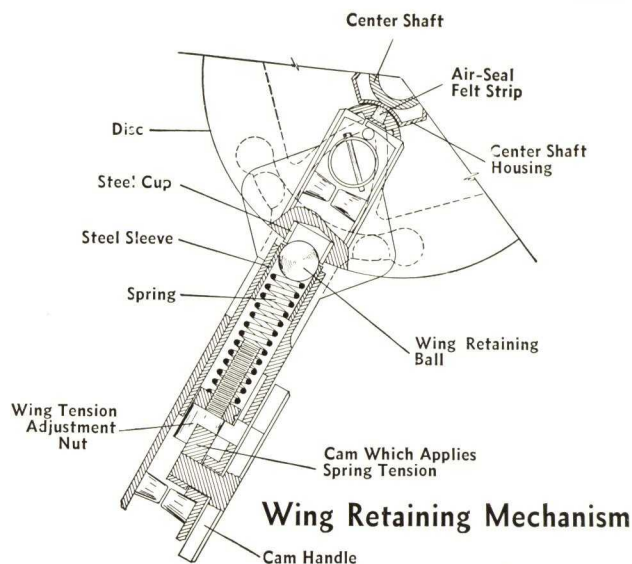
Plan Elevation of Door Assembly

Showing assembled position of track trolley, trolley locking device, center shaft, disc, hangers, floor socket, pivot, pivot lifter, lift rod, wings and enclosures.



Door End Sections Showing Weatherstrip

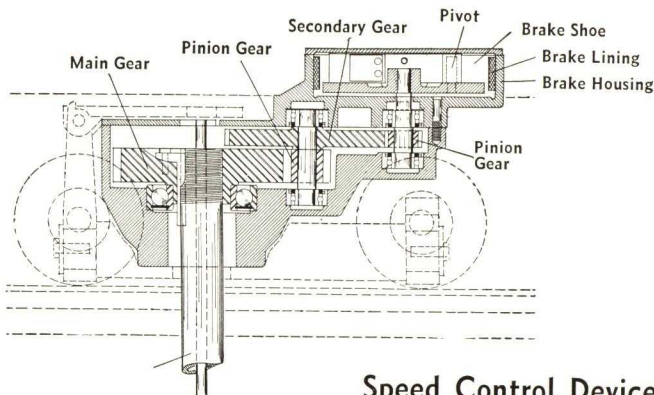
Shows cross-section of outer stile, and shows the methods of adjustment provided for vertical weather strips. Design here illustrated is special, and subject to small extra charge.



Wing Retaining Mechanism

- (1) Note construction of center shaft housing and back stile of wing with inserted felt strip, providing an absolute air seal.
- (2) Highly wear-resistant steel cup is imbedded in disc to receive wing retaining ball.
- (3) Wing retaining ball is mounted in hanger in steel sleeve. This construction, and use of ball, produces action which is not affected by dirt and corrosion, providing uniform action.
- (4) Note sturdy spring construction, which provides for variation of collapsing tension from 60 to 180 lb. applied against outer stile of wing.
- (5) Note wing tension adjustment nut, which is readily adjustable through opening in side of hanger, and can be adjusted without collapsing wing.
- (6) To manually release wing, cam which applies spring tension is reversed by simply throwing cam handle. Each wing is independently held in radial position by means of the mechanism above described, installed at both top and bottom of wing.

All parts subject to wear are readily replaceable without dismantling any other member of the door.



Speed Control Device

- (1) Note dimensions of gear train. This is a slow speed device and at center shaft speed of 15 R.P.M. brake shoes revolve at speed of 315 R.P.M. This mechanism is practically wear-proof and will more than equal the life of the door itself.
- (2) By reason of the design of brake shoes and relation of bearing point to pivotal point, self-loading brake is produced which positively prevents wings from being revolved at a speed in excess of the predetermined point at which the shoes are adjusted to take hold. In other words, this device does not act as a drag on the door. Its presence cannot even be noted by anyone going through the door until the speed of the wings has reached the point at which the device is set to apply braking action. At this point the action is positive and any amount of pressure applied, even by concerted action of four people, one in each compartment of the door, would not succeed in speeding up the wings.

DESCRIPTION OF CONSTRUCTION DETAILS

Wing Support—The four wings are supported at the center shaft on two discs to which hangers supporting the wings are pivoted, so as to allow a movement of 135° . The wings are held in their radial position by an engagement between the hangers and the discs. This engagement may be released to permit the wings to be folded in pairs. When folded, a secondary engagement holds the wings in a balanced position.

Central Shaft and Trolley—In modern revolving doors, the central shaft is supported overhead by a self-aligning ball bearing, mounted on a four-wheel trolley which runs on an overhead channel track. This trolley is held securely in central position by an automatic lock. The bottom of the shaft is held in the central position by a non-rotating pivot in the floor.

Release Lever—A release lever, located at a convenient height on the center shaft, may be raised to release both the bottom pivot and the overhead trolley. With the wings folded and the trolley and center shaft released, the wings may be rolled to the side of the enclosure, providing a clear opening, when needed, for the movement of furniture or equipment.

Panic Proof Feature—The engagement between the discs and hangers which holds the wings in radial position is a resilient support which is instantly released by any excess load or pressure against the wings. This makes the door automatically collapsible in case of a panic, for the pressure of a crowd would cause all the wings to fold outward like the leaves of a book, providing a clear passage on each side of the collapsed wings and center shaft.

Weatherstripping—The contact between the wings and the circular enclosure is maintained by wide rubber and felt weatherstrips which brush against the sidewalls, ceiling and floor, giving a tight seal against draft and air infiltration.

Speed Control—The speed of rotation is controlled by a traffic controller (centrifugal governor) which is located in the overhead trolley. Speed can be adjusted to suit the traffic and any excessive speed is prevented.

Design—Revolving doors are built of any wood or metal to harmonize with any architectural design.

Wood—Wood doors and enclosures are built-up of five-ply core and veneer construction in accordance with the highest standards of workmanship and material.

Metal—Any kind of architectural metal may be used in the construction of revolving doors—bronze, copper, brass, nickel, silver, monel metal, steel, stainless steel or aluminum.

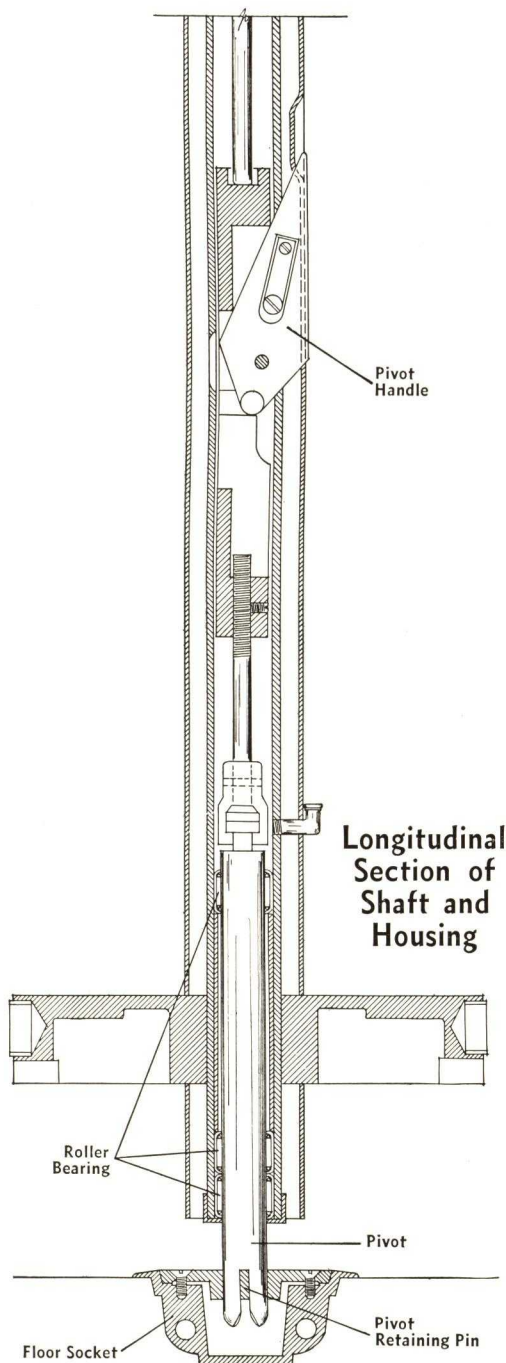
Other Materials—Other materials, such as Micarta or Formica may be used in place of wood or metal veneers.

The Superiorities of Plate Overlay Construction—It is recommended that metal doors be built by fitting the metal veneer (approximately 16-gauge) to a wood core and cementing it in place under pressure, the same as a wood veneer. This assures added strength and durability, with less weight than is possible with hollow metal construction.

Revolving doors can be (and many have been) built of hollow metal construction, but the combined weight of the four wings makes this construction less desirable than the metal overlay on wood core.

The circular walls support the ceiling, cornice and overhead mechanism. They may be finished on the inside only, for assembly within other construction, or they may be finished inside and outside with glazed panels and cornice as a complete separate unit.

Four wing revolving doors are commonly made 6'10" or 7'0" high and vary from 5'6" to 7'6" in diameter. It is recommended that the height be kept below 7'6". The most popular diameter is 6'6", but where space is limited a 5'6" diameter door is very satisfactory. At entrances to hotels or post offices, where hand luggage or bundles are carried, a 7'0" diameter door is recommended.



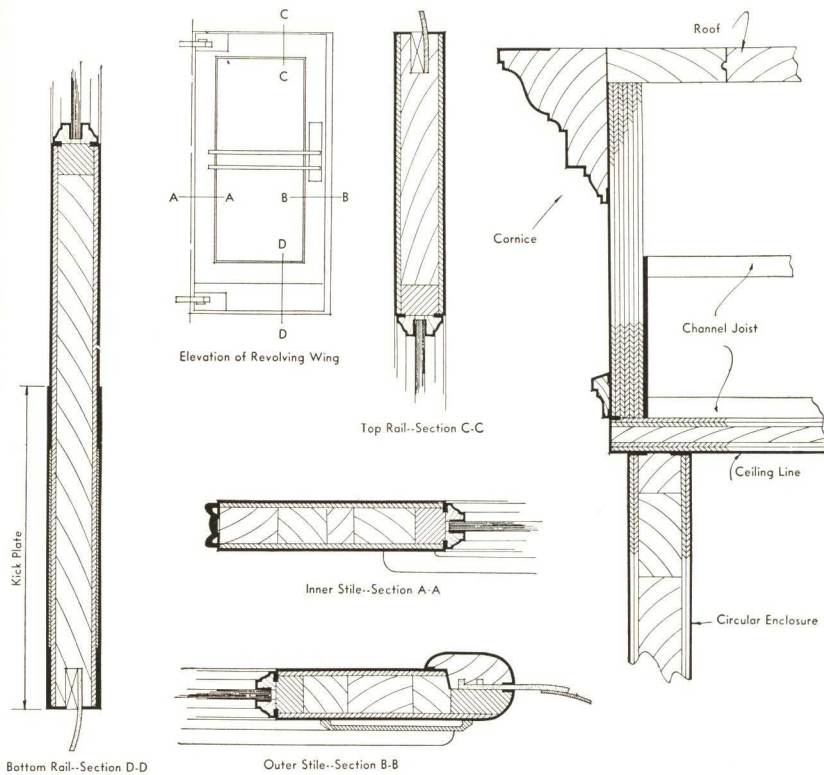
(1) Note positive action of pivot handle and leverage provided, which produces positive positioning of pivot in either raised or lowered position. Pivot can be raised or lowered with the utmost ease because of leverage provided.

(2) Note three roller bearings at bottom of center shaft, providing for frictionless, smooth operation. This construction prevents wear and therefore prevents door from developing vibration at this point. When wear occurs at this point, it results in side weather strips striking more forcibly against enclosure, producing jerky, noisy operation.

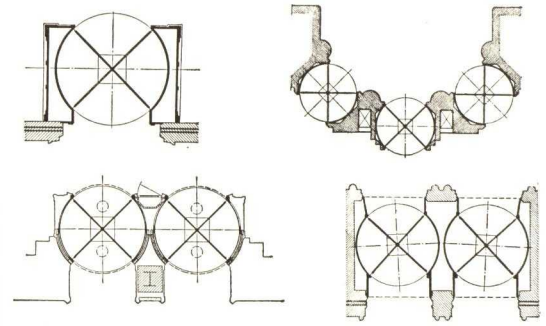
(3) Pivot is constructed of stainless steel, which, together with roller bearings, insures long life.

(4) Note pivot retaining pin and straight sided pivot end. The straight side, together with positive locking handle definitely prevents pivot from working up out of position.

Details of Metal Veneer Over Wood Core Construction

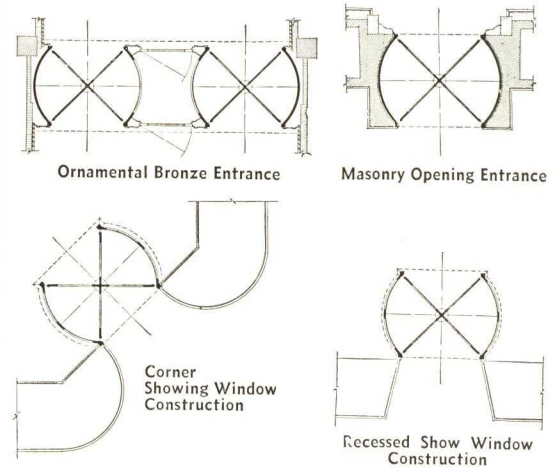


Special Connections for Design U

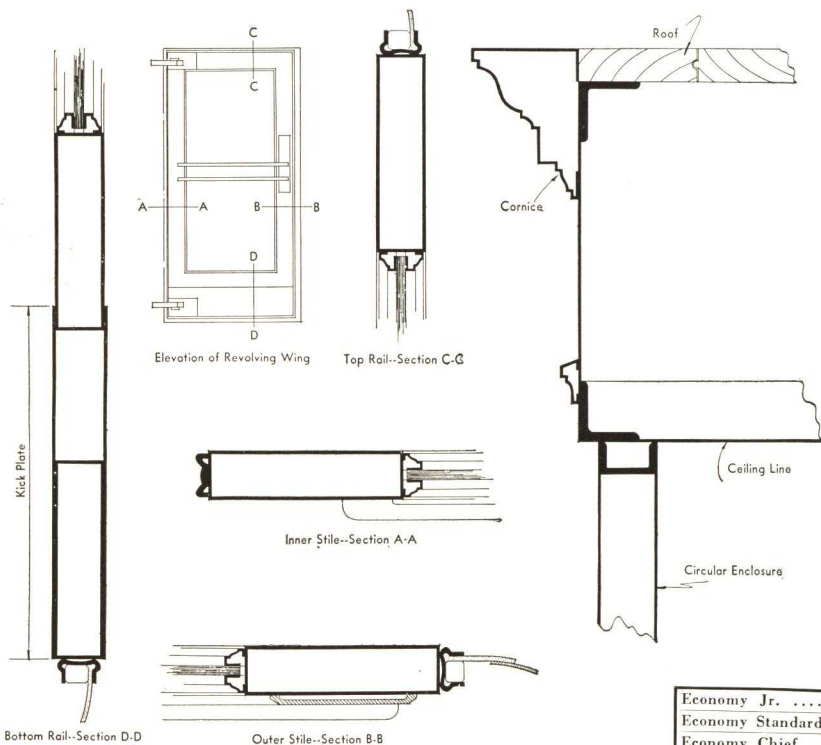


The accompanying four illustrations show walls and ceilings unfinished on the convex sides. No cornice or roof furnished. This construction is generally used when it is desired to enclose the revolving door in a housing to carry out any particular architectural motif.

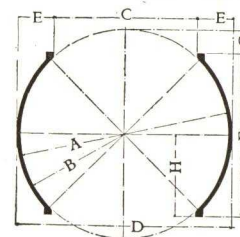
Diagrams of Special Connections



Details of Hollow Metal Construction



Door Opening Dimensions



Panic Proof Type Wings—Thickness, 1 1/4 in., wood; 1 to 1 1/4 in., metal.

Door Vestibules—5 ft. 6 in. to 7 ft. 6 in. diam., 4 wings.

Normal Diameter Vestibule—6 ft. 6 in.

DIMENSIONS—FT.-IN.

A	B	C	D	E	F	G	H
5'-6"	2'-9"	3'-8 3/4"	5'-8 3/4"	0'-11 3/8"	4'-4 1/2"	6 7/8"	2'-2 1/8"
5'-8"	2'-10"	3'-10 1/2"	5'-10 3/4"	1'-0 1/8"	4'-5 3/4"	7 1/2"	2'-2 3/8"
5'-10"	2'-11"	3'-11 1/2"	6'-0 3/4"	1'-0 5/8"	4'-7 1/4"	7 3/8"	2'-3 3/8"
6'-0"	3'-0"	4'-1"	6'-2 3/4"	1'-0 7/8"	4'-8 1/2"	7 3/4"	2'-4 1/4"
6'-2"	3'-1"	4'-2 1/2"	6'-4 3/4"	1'-1 1/8"	4'-10"	8"	2'-5"
6'-4"	3'-2"	4'-4"	6'-6 3/4"	1'-1 3/8"	4'-11 1/2"	8 1/2"	2'-5 3/4"
6'-6"	3'-3"	4'-5 1/2"	6'-8 3/4"	1'-1 5/8"	5'-0 3/4"	8 5/8"	2'-6 3/8"
6'-8"	3'-4"	4'-6 1/2"	6'-10 3/4"	1'-2 1/8"	5'-2 1/4"	8 7/8"	2'-7 1/8"
6'-10"	3'-5"	4'-8"	7'-0 3/4"	1'-2 3/8"	5'-3 1/2"	9 1/4"	2'-7 3/4"
7'-0"	3'-6"	4'-9 1/2"	7'-2 3/4"	1'-2 5/8"	5'-5"	9 1/2"	2'-8 1/2"
7'-2"	3'-7"	4'-10 3/4"	7'-4 3/4"	1'-3"	5'-6 1/2"	9 3/4"	2'-9 1/4"
7'-4"	3'-8"	5'-0"	7'-6 3/4"	1'-3 3/8"	5'-8"	10"	2'-10"
7'-6"	3'-9"	5'-1 1/2"	7'-8 3/4"	1'-3 5/8"	5'-9 1/4"	10 3/8"	2'-10 5/8"
5'-6"	2'-9"	3'-8"	5'-8 3/4"	0'-11 3/8"	4'-4 1/2"	7 7/8"	2'-11 3/8"
Economy Jr.	5'-6"	2'-9"	3'-8"	5'-8 3/4"	0'-11 3/8"	4'-4 1/2"	2'-11 3/8"
Economy Standard ...	6'-0"	3'-0"	4'-1"	6'-2 3/4"	1'-0 7/8"	4'-8 1/2"	2'-3 3/8"
Economy Chief	6'-6"	3'-3"	4'-5 1/2"	6'-8 3/4"	1'-1 5/8"	4'-11"	2'-5 1/4"
Economy Special	7'-0"	3'-6"	4'-9 1/2"	7'-2 3/4"	1'-2 5/8"	5'-3 1/2"	2'-7 3/4"

Suggested Applications to Various Types of Door Entrances

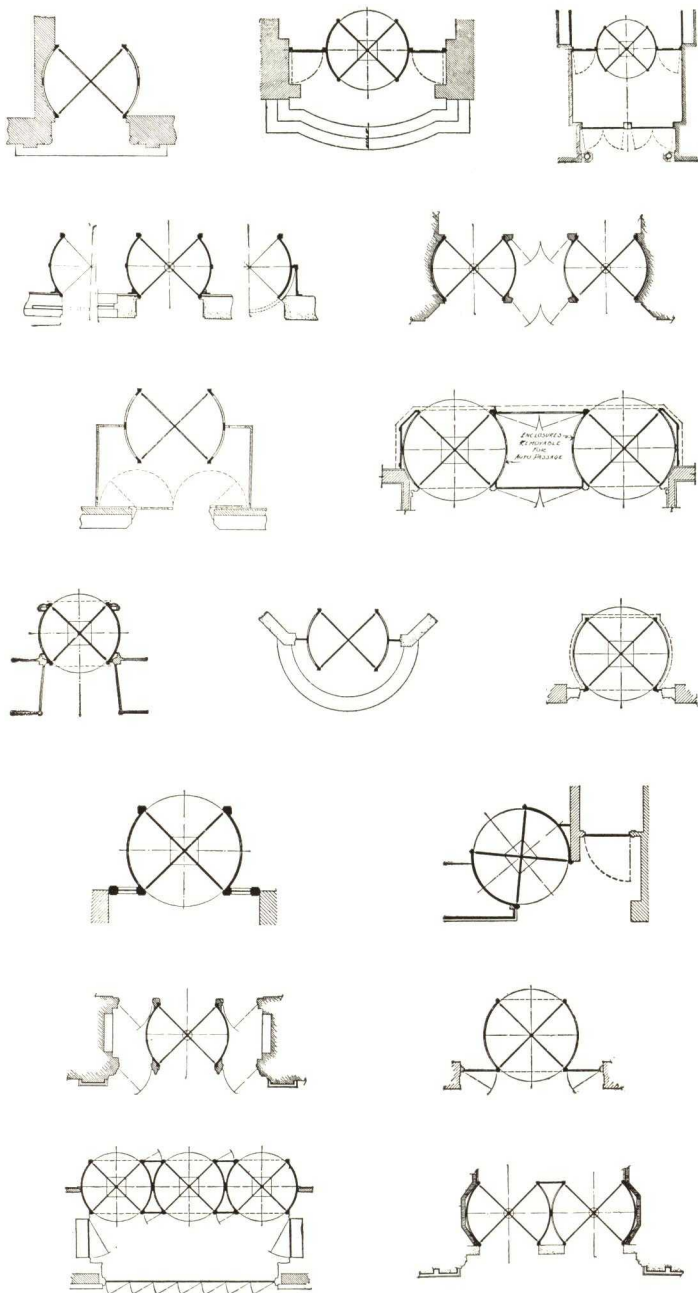
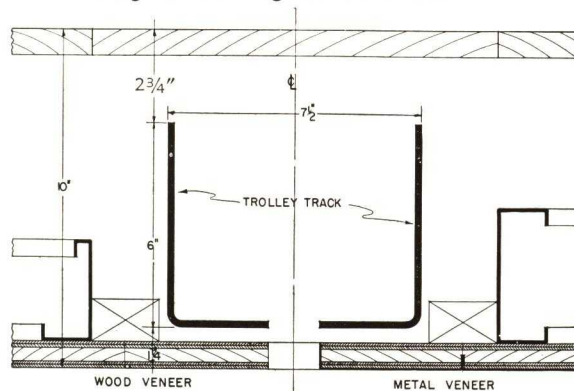
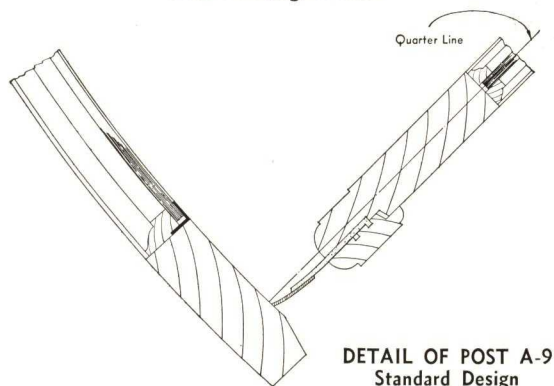


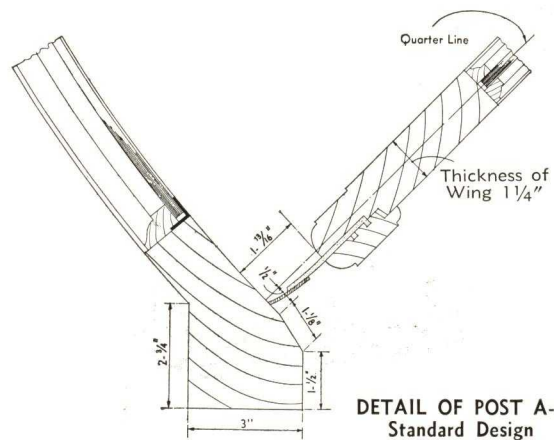
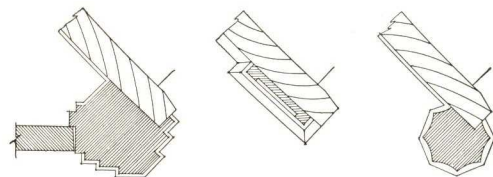
Diagram Showing Overhead Clearances



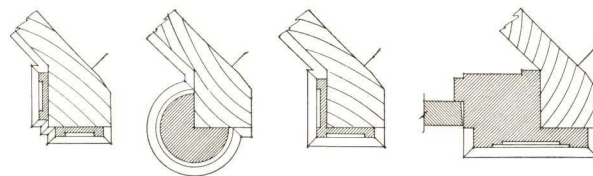
Post Arrangements



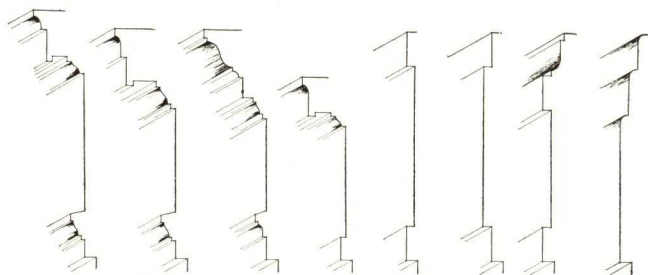
MODIFICATIONS OF POST A-9



MODIFICATIONS OF POST A-5



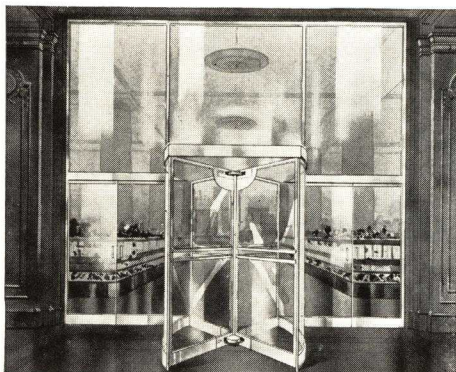
Available Cornice Designs



SILHOUETTES SHOWING CORNICE DESIGNS

SPECIFICATIONS

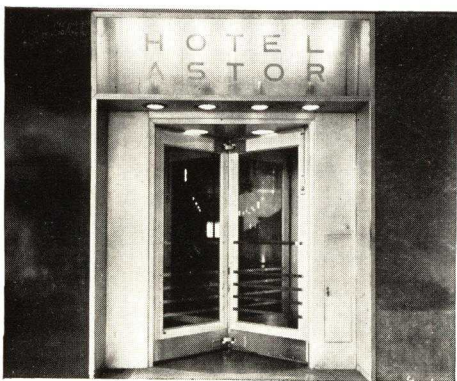
for Van Kannel Revolving Doors

Distinctive
DESIGN FEATURES OF
VAN KANNEL DOORS**Modern Entrances Demand High Visibility.**

The Van Kannel Company have recently specialized in the design of entrances providing for the maximum of visibility. Examples are shown below and our Engineering Department will gladly co-operate in designing special entrances to incorporate this new feature, in a manner that will harmonize with any special architectural treatment.



One of the latest installations of the Van Kannel Company and an excellent example of an entrance providing maximum visibility is afforded by the above installation in the Bank of Manhattan building at 40 Wall Street, New York City.



Four Better Entrances by Van Kannel similar to that above shown are now installed in the Hotel Astor, New York City. Here is another example of revolving door design providing for high visibility.

General Conditions

Revolving door contractor shall furnish and install where specified and shown on plans VAN KANNEL REVOLVING DOORS, TYPE AA and design (see page 8) built of (material) to be fully automatic collapsible, panic-proof type, equipped with traffic controller as hereinafter described. Revolving door contractors shall include circular enclosure, flat ceiling, cornice, revolving wings, hardware, glass and complete mechanism, including traffic controller.

Erection of Mechanism

The mechanism of the revolving door shall be so constructed that the four wings will fold from their revolving position to a wide open panic position instantly when a force somewhat greater than that necessary to revolve the wings is exerted on any two wings. The tension holding the wings in their radial position shall be adjustable to a collapsing pressure of from 60 to 180 pounds when applied at a point 42 in. from the floor on the outer stile of the wing. The mechanism shall also permit the wings to be folded manually in a central position in pairs; in a full open side position in pairs; in a central panic position with the four wings folded like a book. All movable mechanism subject to replacement to be contained in wing hanger, and replaceable without taking down center shaft or dismantling other wings of door.

The wings of the revolving door shall be hung independently of each other by hangers pivoted to the center discs at both the top and bottom of each wing. Each wing shall be held in normal rotating position by self-centering spring engagements contained in the discs and top and bottom hangers—no brace arms, chains or cables between the wings will be permitted. Provision shall be made for adjusting the collapsing tension quickly without disassembling any hardware or fixtures. A simple manual release of the tension holding the wings in radial position shall be provided to permit collapsing or folding of the wings without exerting the pressure needed for automatic collapsing.

A stop shall be provided in one hanger on each wing so that when the collapsing tension is released, the wings when folded in pairs will be held in folded position without the use of separate folding bars.

The center shaft carrying the wings shall be supported overhead in a universal ball bearing mounting carried on a four-wheel trolley which in turn is set on a self-supporting steel track, to permit the wings to be moved to the side of the enclosure when folded. This center shaft shall be held in position by a locking device in the overhead track and by a socket in the floor. The bottom pivot is not to rotate in the floor socket. The raising of the bottom pivot is to release the center shaft at both top and bottom, freeing it for movement to the side of the enclosure.

Door Hardware

The hardware shall include keylocks (state if master-keying required), kick plates, push bars and push plates made of (kind of metal).

Door Glass

All glass in the revolving wings and enclosures shall be $\frac{1}{4}$ in. American polished plate.

Ceiling Lights and Reflectors

Two flush ceiling lights shall be furnished including reflectors and removable glass covers, but not including any electric fixtures—fixtures and wiring to be included under electrical contract.

Installing Traffic Controller

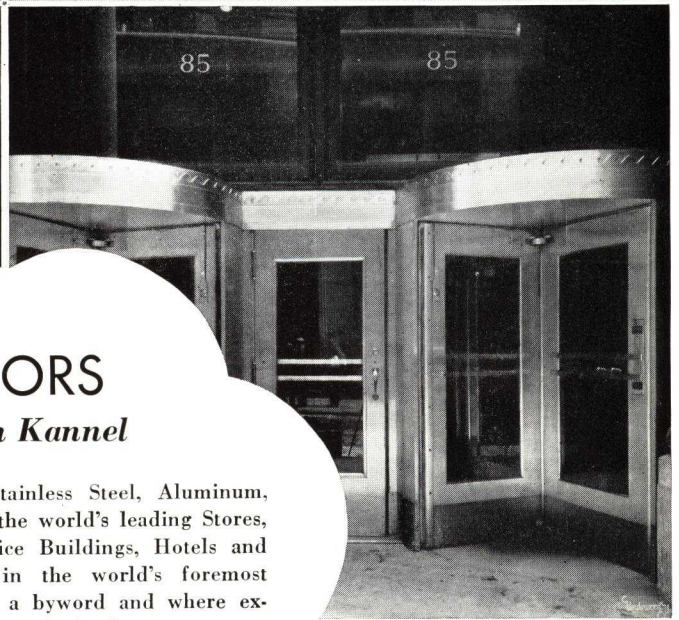
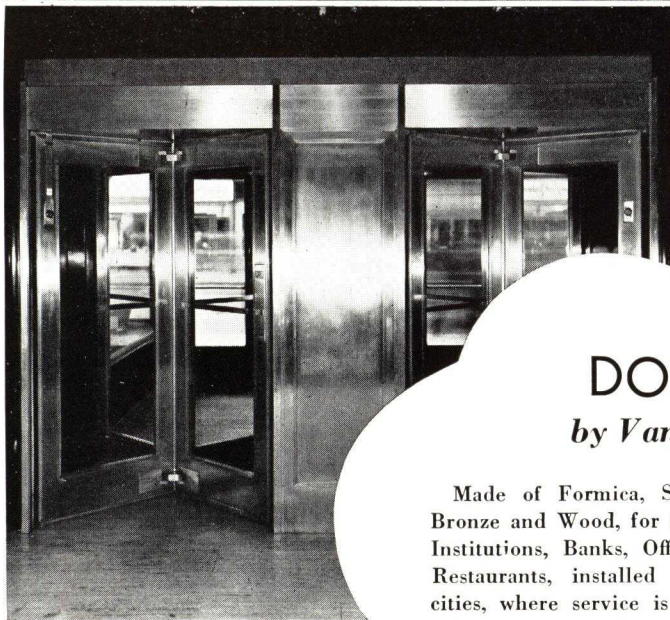
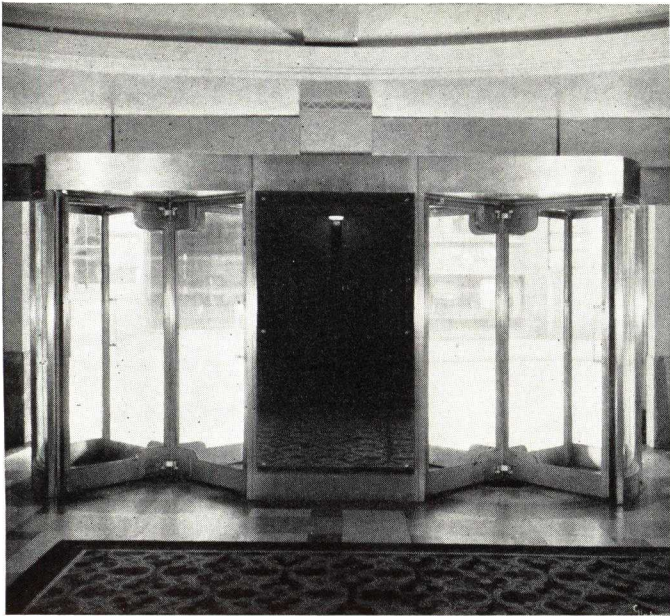
The speed of rotation of the revolving door shall be controlled by a mechanical traffic controller to be installed in the overhead mechanism. This device shall permit free rotation of the revolving wings up to any predetermined rate of speed, but shall prevent spinning or excessive speed at all times. An adjustment shall be provided to limit the maximum speed to meet the traffic needs of the entrance.

Finish of Wings, Enclosures

For Wood Doors—Wings and enclosures shall be finished in (kind of wood) veneer applied over laminated wood cores properly constructed for the purpose. Finish veneer shall not be less than $\frac{1}{8}$ in. thick. All finished surfaces of the wood shall be given a finish of stain, shellac and three coats of spar varnish. The final coat of varnish shall be rubbed to a dull finish and wiped clean.

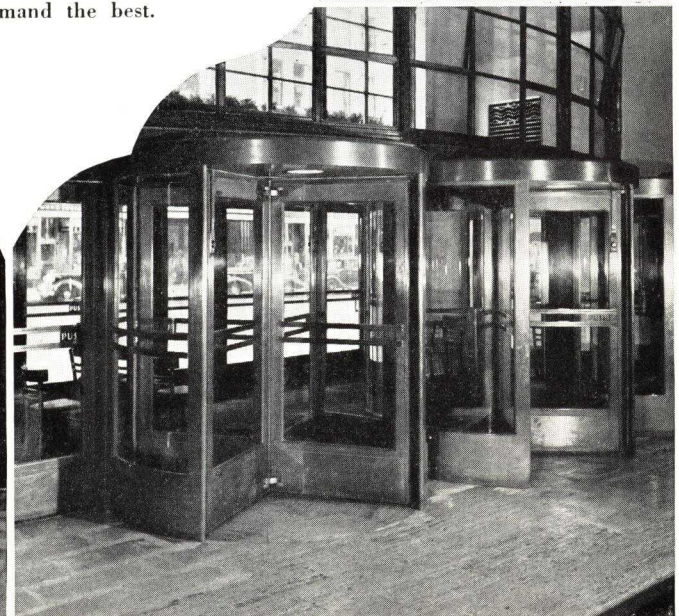
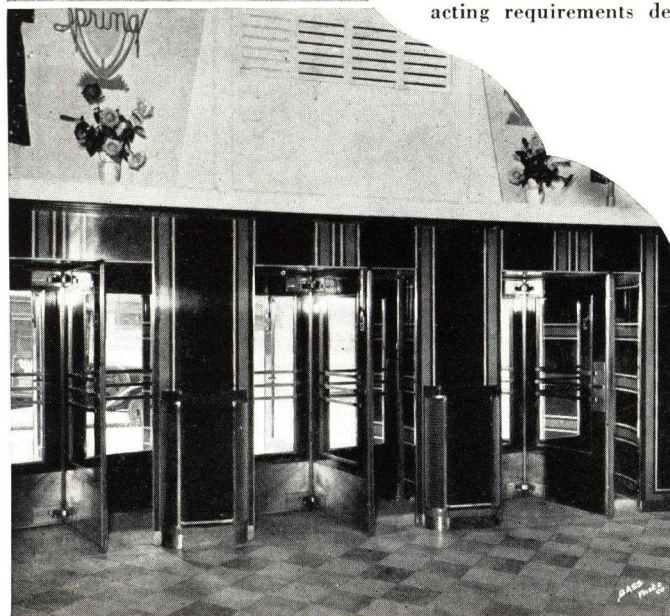
For Metal Doors—(Metal overlay on wood cores)—Wings and enclosures are to be finished in (gauge) kind of metal overlay on laminated wood cores—not kalamein. (Note: Recommend not less than 20 gauge bronze on wood core.) All joints in metal surfaces shall be battened, riveted and calked so as to be invisible on the finished surface. All mouldings, formed members and edges shall be sharp and clean. All finished surfaces shall be filed, emiered and pumiced to a smooth surface and properly treated to match finish desired.

For Hollow Metal Doors—Wings and enclosures shall be built of (gauge) (kind of metal) on steel frame. (Note: Recommend not less than 14 gauge bronze or 12 gauge aluminum.) Walls and ceilings shall be built up on a metal frame. Wings shall be built of rectangular seamless tubing with reinforcements at hangers. All mouldings, formed members and edges shall be sharp, square and clean. All finished surfaces shall be filed, emiered and pumiced to a smooth surface and properly treated to match finish desired.



DOORS by Van Kannel

Made of Formica, Stainless Steel, Aluminum, Bronze and Wood, for the world's leading Stores, Institutions, Banks, Office Buildings, Hotels and Restaurants, installed in the world's foremost cities, where service is a byword and where exacting requirements demand the best.



PROMINENT VAN KANNEL INSTALLATIONS

Name	Location	Name	Location
Baltimore Trust Bldg.	Baltimore	Joseph Horne Store	Pittsburgh, Pa.
Hochschild, Kohn & Co.	Baltimore	Mellon Securities Bldg.	Pittsburgh, Pa.
Maryland Trust Co.	Baltimore	Peoples Gas Bldg.	Pittsburgh, Pa.
Bank of Montreal	Canada	University of Pittsburgh	Pittsburgh, Pa.
Imperial Bank of Canada	Canada	(Cathedral of Learning)	
F. W. Woolworth Co.	Canada	Wm. Penn Hotel	Pittsburgh, Pa.
Bankers Bldg.	Chicago	Federal Bldg.	St. Louis, Mo.
Chicago Daily News	Chicago	Lennox Hotel	St. Louis, Mo.
Congress Hotel	Chicago	Mayfair Hotel	St. Louis, Mo.
Illinois Bell Telephone	Chicago	Syndicate Trust Bldg.	St. Louis, Mo.
Palmer House	Chicago	Medical Arts Bldg.	Minneapolis, Minn.
Peoples Gas Light & Coke	Chicago	Northern States Power	Minneapolis, Minn.
Stevens Hotel	Chicago	City Hall and Courthouse	St. Paul, Minn.
C & S Bell Telephone Co.	Cincinnati	Commercial Security Bank	Ogden, Utah
Carew Tower	Cincinnati	Beneficial Life Insurance	Salt Lake City
Chamber of Commerce	Cincinnati	Continental National Bank	Salt Lake City
Cincinnati Times Star	Cincinnati	Palace Hotel	San Francisco
City Hall	Cincinnati	San Francisco Furniture	
Dixie Terminal Bldg.	Cincinnati	Exchange	San Francisco
Federal Reserve Bank	Cincinnati	Keeler's Restaurant	Albany, N. Y.
First National Bank & Trust	Hamilton, Ohio	National Commercial Bank & Trust	Albany, N. Y.
May Co.	Cleveland	New York State Capital	Albany, N. Y.
National City Bank Bldg.	Cleveland	New York State Office Bldg.	Albany, N. Y.
Statler Hotel	Cleveland	City Hall	Saratoga Springs, N. Y.
Stouffer Rest.	Cleveland	Carl Co. Dept. Store	Schenectady, N. Y.
G. Fox Co. Dept. Store	Hartford, Conn.	Arctic Bldg.	Seattle, Wash.
Travelers Ins. Co.	Hartford, Conn.	Davenport Hotel	Spokane, Wash.
Lerner Stores	New Haven, Conn.	Federal Bldg.	Tacoma, Wash.
Brown Derby Restaurant	Beverly Hills	Security Mutual Fire Insurance	Binghamton, N. Y.
Hollywood-Plaza Hotel	Hollywood	Mark Twain Hotel	Elmira, N. Y.
Hollywood-Roosevelt	Hollywood	Child's Restaurant	Syracuse, N. Y.
Columbian Tower	Memphis	Keith Theatre Bldg.	Syracuse, N. Y.
Farnsworth Bldg.	Memphis	Onondaga City Savings Bank	Syracuse, N. Y.
National Bank of Commerce	Memphis	Schrafft's Restaurant	Syracuse, N. Y.
Bulletin Bldg.	Philadelphia	State Tower Bldg.	Syracuse, N. Y.
Benjamin Franklin Hotel	Philadelphia	Utica State Hospital	Syracuse, N. Y.
Baldwin Locomotive Works	Philadelphia	House of Representatives Office Bldg.	Washington, D. C.
Du Pont Office Bldg.	Philadelphia	Library of Congress	Washington, D. C.
Gimbel Bros.	Philadelphia	National Geographic Society	Washington, D. C.
Horn & Hardart	Philadelphia	Riggs National Bank	Main Bldg., Washington, D. C.
Philadelphia Savings Fund Bldg.	Philadelphia	Senate Office Bldg.	Washington, D. C.
Public Ledger Bldg.	Philadelphia	U. S. Capitol	Washington, D. C.
Wanamaker Store	Philadelphia	Washington Loan & Trust	Washington, D. C.
Westward Ho Hotel	Phoenix	Woodward & Lothrop	Washington, D. C.

VAN KANNEL REPRESENTATIVES

ALBANY, N. Y., 110 Wall St.—Schenectady—No. 4-8715	LOUISVILLE, KY., 1446 Levering Street—Magnolia 7480
ATLANTA, GA., Red Rock Building—Jackson 2284	MEMPHIS, TENN., 202 Falls Building—No. 8-3472
BALTIMORE, MD., 514 St. Paul Place—Vernon 6003	MIAMI, FLA., 144 N. E. 21st Street—No. 2-1794
BIRMINGHAM, ALA., 1914 First Avenue	MINNEAPOLIS, MINN., 736 Eustis Street, St. Paul—Nestor 5958
BOSTON, MASS., 1042 Little Building—Hancock 9360	MOBILE, ALA., 9 North Water Street
BUFFALO, N. Y., 519 Jackson Building—Lafayette 8337	NASHVILLE, TENN., 151½ Fourth Avenue, N.
BUTTE, MONT., 51 East Broadway—No. 3869	NEW ORLEANS, LA., 937 Gravier Street—Main 4488
CANTON, OHIO, 715 Short Avenue—No. 2-9755	NORFOLK, VA., 235 Monticello Arcade Bldg.—No. 25056
CEDAR RAPIDS, IOWA, 703 Security Building—No. 2-6617	OMAHA, NEB., Brandeis Theatre Building
CHARLESTON, W. VA., 1114 Lee St.—No. 34-304	PEORIA, ILL., 510 Lehmann Building
CHATTANOOGA, TENN., 821 E. 11th Street—No. 6-2763	PHILADELPHIA, PA., 1726 Samson St.—Rittenhouse 2872
CHICAGO, ILL., 1514 Tribune Tower—Superior 0330	PHOENIX, ARIZ., P. O. Box 145—No. 35008
CINCINNATI, OHIO, 209 E. 6th Street—Cherry 7600	PITTSBURGH, PA.—1822 Oliver Building—Atlantic 8790
CLEVELAND, OHIO, 1788 East 18th Street—Prospect 4230	PORTLAND, ME., 743 Congress Street
COLUMBIA, S. C., 601 Butler Avenue—No. 5441	PORTLAND, ORE., 2221 Albina Avenue—Walnut 7550
COLUMBUS, OHIO, 30 E. Broad Street—Eve 6539	RICHMOND, VA., 511 Atlantic Life Building—No. 3-5712
DALLAS, TEX., Burt Building—No. 2-3902	ROANOKE, VA., 11 Franklin Road, S. W.
DAVENPORT, IOWA, 715 East River Street	ROCHESTER, N. Y., 135 Spring Street—Main 6406
DAYTON, OHIO, 494 Ludlow Arcade—Fulton 4107	ST. LOUIS, MO., 927 Century Building—Chestnut 0866
DECATUR, ILL., 245 N. W. Lawn Avenue	ST. PAUL, MINN., 736 Eustis Street—Nestor 5958
DENVER, COLO., 812 Twelfth Street—Main 3637	SALT LAKE CITY, UTAH, 204 Dooly Building—Wasatch 1680
DES MOINES, IOWA, 1418 34th Street—No. 5-5047	SAN FRANCISCO, CAL., 55 New Montgomery Street—Douglas 7899
DETROIT, MICH., 250 W. Lafayette Boulevard—Cadillac 3536	SCHENECTADY, N. Y., 110 Wall Street—No. 4-8715
DUBUQUE, IOWA, 907 Federal Bank Building—No. 1200	SCRANTON, PA., 711 Linden Street—No. 3-1272
EL PASO, TEX., Neff Stiles Company—Main 7 and 8	SEATTLE, WASH., 216-17 Walker Building—Main 7950
ERIE, PA., 11 W. 11th Street	SHREVEPORT, LA., 503 Giddens Lane Building—No. 4057
FARGO, N. D., 217 Broadway—No. 4350	SIOUX CITY, IOWA, 1st Street and Nebraska Avenue—No. 8-4595
FORT WAYNE, IND., Taylor Street and Lake Erie Ry.—No. A-7492	SIOUX FALLS, S. D., 213 Paulton Building—No. 368-W
GRAND RAPIDS MICH., 757 Hawthorne Street	SPOKANE, WASH., 450 Peyton Building
HAMILTON, ONT., CANADA, 47 Hughson Street, N.	SYRACUSE, N. Y., 938 University Block—No. 2-9621
HARRISBURG, PA., 18th and Mulberry Streets—No. 3-5400	TAMPA, FLA., 805 Peninsular Telephone Bldg.—No. 2868
HARTFORD, CONN., 108 Whitman Avenue—No. 3-8319	TERRE HAUTE, IND., 709 Wabash Avenue—Crawford 5575
INDIANAPOLIS, IND., 115 E. Vermont Street—Riley 6456	TOKIO, JAPAN, Marunouchi
JACKSONVILLE, FLA., 2716 Main Street—No. 5-3047	WASHINGTON, D. C., 1427 Eye Street N. W.—Met. 6856
KANSAS CITY, MO., 602 New England Building	WICHITA, KANSAS, P. O. Box 1143
KNOXVILLE, TENN., 712 So. Gay Street—No. 2-5727	WILKES-BARRE, PA., Bennet Building
LOS ANGELES, CAL., 2071 Laura Avenue, Huntington Park—Je. 7148	WINNIPEG, CAN., 608 Gertrude Avenue—No. 44140

AGENTS FOR JAPAN AND KOREA: Uchida Trading Co., Ltd., 17 State Street, New York, N. Y.
 AGENTS FOR CHINA: Paul I. Fagan & Co., Plaza Hotel, San Francisco, Cal., and 29 Kiangse Road, P. O. Box 592, Shanghai, China

SECTION 14

CONTINUED 

AMERICAN PLYWOOD CORPORATION

NEW LONDON, WISCONSIN

THE NEW LONDONER HOLLOW-CORE DOOR

The NEWEST Flush Door Development

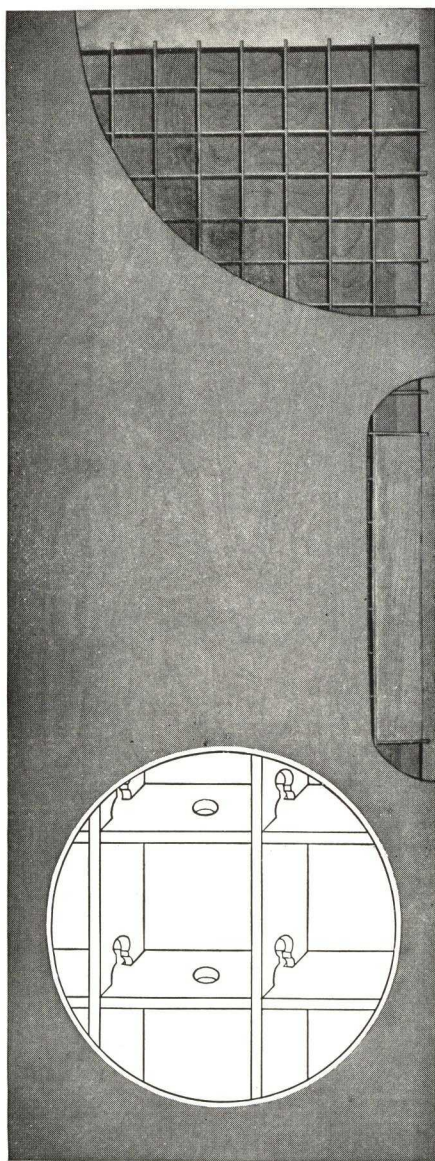
Beginning operations in 1919, the AMERICAN PLYWOOD CORPORATION has grown steadily, occupying three large, modern plants. The products manufactured here are used from coast to coast and are recognized for their fine quality.

Located at New London, Wisconsin, the company is near the hardwood belt from which come the world's best hardwoods.

The
NEW LONDONER
HOLLOW-CORE DOOR
PAT. APP. FOR

It is in these plants that New Londoner Hollow-core flush doors, American solid block flush doors, New Londoner cupboard doors, and Ply-rite hollow-core and regular panels are manufactured.

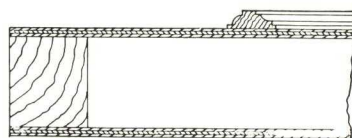
The New Londoner Hollow-Core Door is the result of over 20 years experience in the manufacture of doors. The AMERICAN PLYWOOD CORPORATION has built and sold more than a half-million of hollow-core doors.



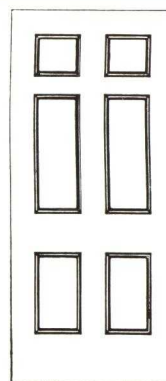
FRAME

The construction used in all New Londoner Hollow-core doors assures maximum strength without extra weight. The standard 2-6 x 6-8 door weighs approximately 30 lb. The frame has 2 3/4-in. rails and 1 1/4-in. stiles.

Because of their superior construction, New Londoner Hollow-Core Doors strongly resist sagging, shrinking or swelling. Moisture absorption is reduced to an absolute minimum.



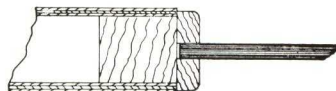
DETAIL OF PLANTED MOULDING



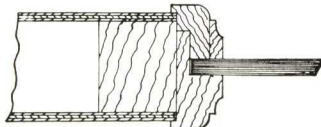
LOCK BLOCK

The lock block surface is 4 in. by 21 in. on each side so the door may be reversed. Extra blocking can be added on special order in other areas for double action hinges, door closures and other hardware. The flexible construction of the New Londoner is readily adaptable to any special requirements which may arise.

LIGHT DETAIL FOR INTERIOR DOORS



LIGHT DETAIL FOR EXTERIOR DOORS

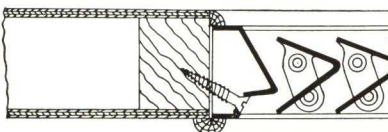


CORE CONSTRUCTION

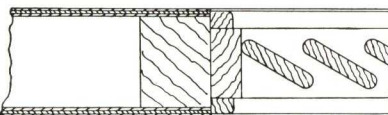
The 3 x 3-in. mesh core used in New Londoner Hollow-core doors allows for thorough curing in the factory. When the door is properly seasoned, it is tightly sealed, providing added protection against changing air conditions. Sealing also protects the interior of the door against dirt, dust and vermin.

All New Londoner doors are cut to exact size and edges sanded. Made in any wood with a wide selection of routings, inlays, and light and louver openings.

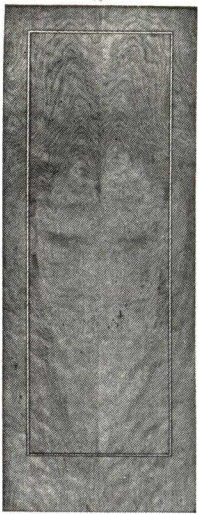
DETAIL OF STANDARD METAL LOUVRE



DETAIL OF STANDARD WOOD LOUVRE



CONSTRUCTION DETAILS NEW LONDONER HOLLOW-CORE DOOR

**Advantages of New Londoner Doors**

- (1) Available in 150 or more different kinds of wood.
- (2) American Plywood craftsmen are specialists in matching veneers of all kinds in plain or intricate designs.
- (3) Doors are prefitted to exact size with stiles smooth sanded.
- (4) Doors can be furnished with Hardwood edges to match face veneers.
- (5) After thorough seasoning each door is tightly sealed.
- (6) Each door is smoothly belt polished and individually paper wrapped and sealed insuring clean doors on the job ready for finishing.
- (7) Panels can be furnished for walls or wainscot to match doors on same job.

Guarantee

The AMERICAN PLYWOOD CORPORATION unconditionally guarantee every New Londoner door made according to their recommendation to be free from defects of workmanship and materials, and will replace in the white any New Londoner door which proves to be defective. We ask only the exercise of ordinary care in the storage, finishing and installation of our products.

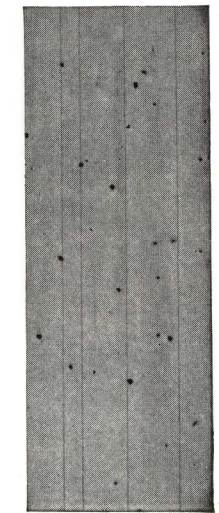
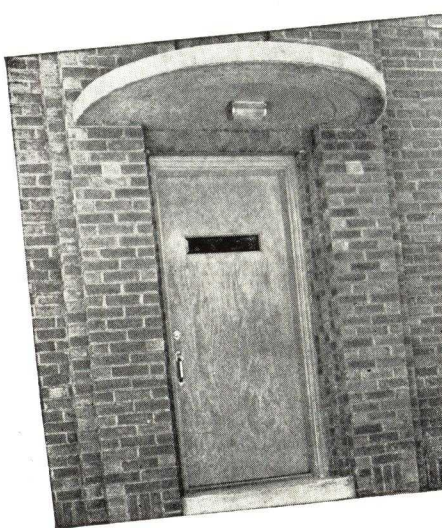
Availability

New Londoner Doors are carried in stock by distributors throughout the country in standard sizes, thicknesses and kinds of wood. We also maintain at New London, Wisconsin a complete stock of Unselected Birch Doors in $1\frac{3}{8}$ -in. and $1\frac{3}{4}$ -in. thickness in all standard sizes. Special orders require approximately three weeks to manufacture.

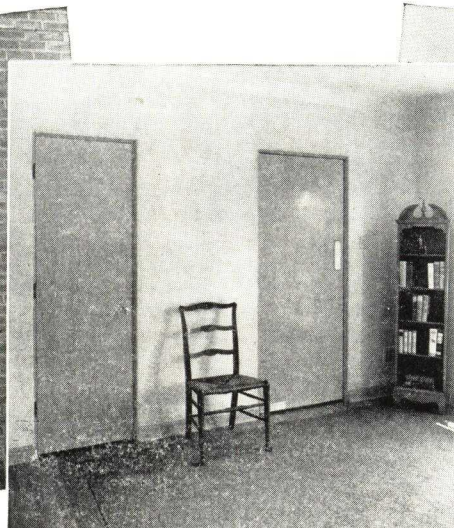
Specifications

Interior Door—All interior doors shall be New Londoner Hollow-Core—Flush Doors as manufactured by AMERICAN PLYWOOD CORPORATION, New London, Wis. Stiles not less than $1\frac{1}{4}$ in. in width top and bottom rail not less than $2\frac{3}{4}$ in. in width. Interlocking bars forming cells, placed so as to form a 3 x 3 in. mesh. Lock blocks to be placed on either side of door and to be 21 in. in length and with stiles to give a surface 4 in. wide for locks. Three plies of choice veneer to be applied to each side of core under pressure to combine all parts into one rigid unit.

Exterior Door—All exterior doors shall be New Londoner—Hollow-Core Flush Doors as manufactured by AMERICAN PLYWOOD CORPORATION, New London, Wis., same as above except 3-ply stiles, wider top and bottom rails and waterproof glue is to be used.

**TYPICAL NEW LONDONER INSTALLATIONS**

2945 Fitch Street
Chicago, Ill.

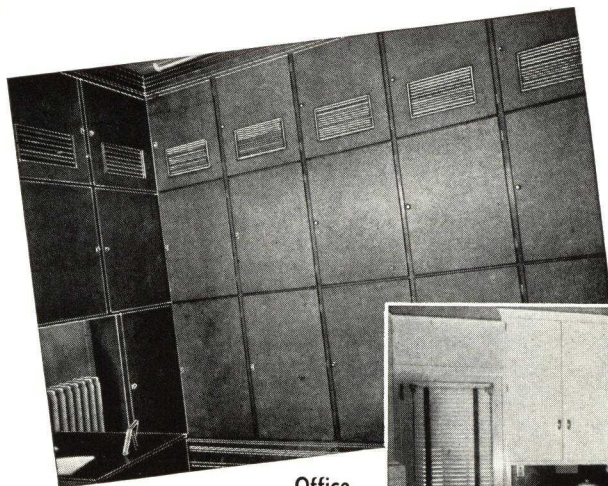


1320 Columbia Avenue
Chicago, Ill.



550 Wellington Avenue
Chicago, Ill.

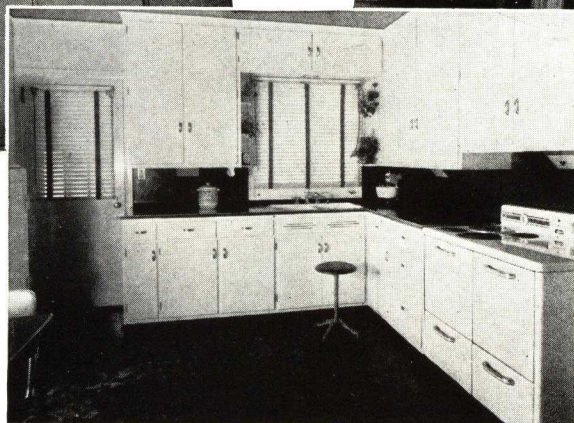
NEW LONDONER HOLLOW-CORE CUPBOARD AND CABINET DOORS



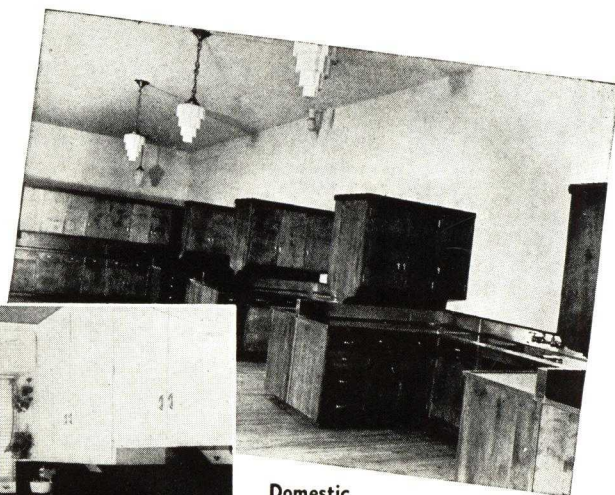
Office

New Londoner Hollow-Core Cupboard and Cabinet Doors are a counterpart of the larger hollow-core flush doors shown on preceding pages. They embody the same distinctive construction features which reduce sagging, warping and swelling to a minimum.

This factory-cured door is



Kitchen



Domestic Science Class Room

protected against dirt, dust and vermin and is so constructed to lessen moisture absorption.

Built to measure, assuring a perfectly balanced door, this is the ideal door for cupboard and cabinet work; made up in any wood desired.

AMERICAN SOLID CORE FLUSH DOORS

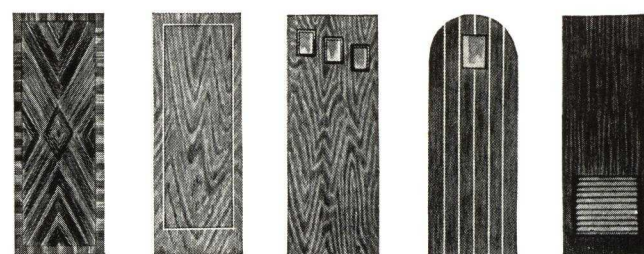
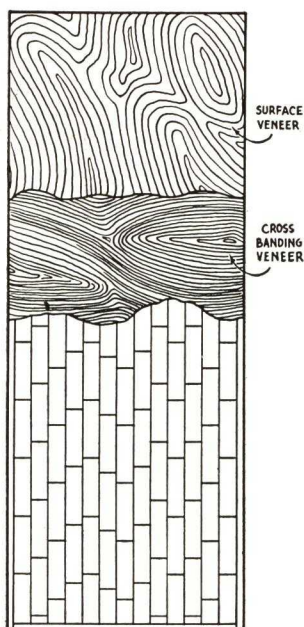
American Solid Core Flush Doors (slab doors) are built to the same high standard as the New Londoner and their quality has been definitely established through many years of use.

Selection is not limited to the few styles shown here; American Flush Doors can be had in any wood and in special construction with a variety of louvers, lights,

grilles, inlays, Dutch Doors, V-grooves, mirror doors and irregular tops.

They can be furnished primed for finishing on the job or can be delivered completely finished ready to install. All doors have a hardwood strip on all edges.

All American Flush Doors carry the Standard Manufacturer's Guarantee.



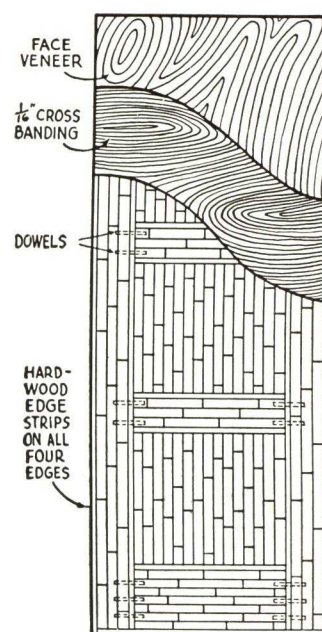
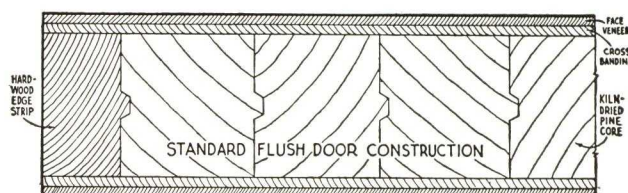
Left:

Note type of construction used. Every feature that insures the highest quality in a slab door is used. To add the greatest possible strength, the joints in the core strip are staggered

Right:

Illustrating type of framed core construction used when special specifications are to be met. This construction furnished at slightly higher cost than standard American Solid Core Flush Doors

Cross Section



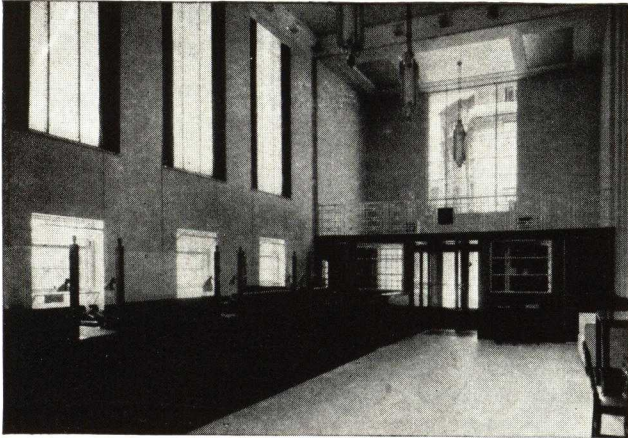
AMERICAN ARCHITECTURAL PLYWOOD

Ply-Rite—the plywood of recognized quality—has been used as an interior trim in many of

"PLY-RITE"

—the plywood of
recognized quality

America's finest buildings. Pictured below are a few recent installations.



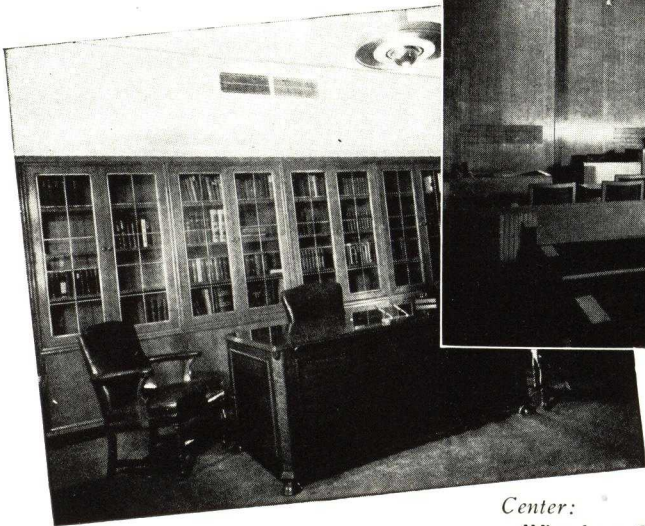
Banking Room, Central Bank,
Grand Rapids, Mich.



Madison's, Inc.,
Columbus, Ohio

Below:

Editor's Office, Flint Journal Bldg.,
Flint, Mich.



Below:

St. Charles Hotel Bar,
New Orleans, La.



Center:

Winnebago County Court House,
Oshkosh, Wis.

PLY-RITE HOLLOW CORE PANELS

For strong, light panels for partitions, show window trims and other uses requiring a rigid panel, AMERICAN PLYWOOD CORPORATION has developed Ply-Rite Hollow-Core Panels. The construction is



identical to that used in the New Londoner Hollow-Core Door and assures the same high quality product. For panels $\frac{3}{4}$ to 3 in., Ply-Rite Hollow-Core Panels are most satisfactory.

Civic Opera Building, Chicago, Ill.—Graham, Anderson, Probst & White
John Hopkins Hospital, Baltimore, Md.
Dupont Residence, Montchanin, Del.—E. W. Martin
WWJ Studios, Detroit, Mich.—Albert Kahn
School of Music Building, Indiana University, Bloomington, Ind.—Robert
Frost Daggett
U. S. Treasury Building, Washington, D. C.

ESTABLISHED 1886

W. D. CROOKS & SONSManufacturers of Hardwood Veneered Doors and Special Laminated Panels
WILLIAMSPORT, PA.**Products**

HARDWOOD VENEERED DOORS of every description to architects' specifications and details.
 FLUSH DOORS; STOCK DOORS of all designs.
 FOLDING PARTITION (ACCORDION) DOORS.
 CROOKS' LEAD CENTER X-RAY DOORS.
 SPECIAL LAMINATED PANELS.

**Guarantee**

W. D. CROOKS & SONS guaranteed to replace in the white any Crooks door which proves defective due to material or workmanship. We expect the usual care to protect doors from moisture absorption. Trade-mark stamped on each door.

GENERAL SPECIFICATIONS, VENEERED DOORS, PANELED DESIGNS

To apply on Heavy Duty Interior Doors—for all public buildings and residences where quality and not stock doors are required.

Kiln Drying—Core and Veneers dried to a moisture content not to exceed 5%.

Core—To be Chestnut or White Pine and to be built up of strips with square joints. Stile Core not over 1 3/8 in. by thickness of core. Rail and Mullion Core pieces full length of each member.

Face Veneers—Sawed veneers are always preferable in all woods to rotary cut.

1st Preference—Sawed to finish 3/8 in. when sanded on Stiles and Rails. 1/8 in. before sanding on panels, all joints matched Book-Leaf.

2nd Preference—Sawed 1/8 in. thick before sanding on Stiles, Rails and Panels. All Panel Joints matched Book-Leaf.

3rd Preference—Rotary Cut not less than 1/8 in. thick before

sanding on Stiles, Rails and Panels. Panel faces one piece—no joints.

Panels—Whether flat or raised to be laminated 3 or 5 ply. If flat, not less than 1/2 in. thick for 1 3/4 in. doors and 5/8 in. thick for 1 3/8 in. doors. All laminated panels shall go in plow. (Not put in on fillet).

Framing—Shall be blind mortise and tenon (not doweled). Tenons on rails to be not less than 2 1/2 in. long, and on mullions 1 1/2 in. long, mortised into rails.

Assembling—In assembling doors apply glue to full surface of both mortise and tenon. Door to be kept under pressure until glue is set.

The Finished Door—Must have tight joints. Mouldings must be sharp and clean cut. Faces to be free of all machine marks which will show through finish.

All wood doors to be manufactured by W. D. CROOKS & SONS, Williamsport, Pa., or equal to be approved in writing by architect.

CROOKS NON-WARPING FLUSH DOOR**Specifications**

Core—To be chestnut or white pine, to contain not more than 5% moisture. Stile core to be built up of strips not more than 1 3/8 in. by thickness of core, rails and panels to be built up of pieces not over 3 in. wide, glued with waterproof glue under heavy pressure.

Frame—Core of stiles, rails and panels to be framed to make five cross panel flush surface. All members well glued and door assembled under heavy pressure.

Core Door—Core door to be sanded smooth, ready for face veneer.

Face Veneer—Face veneer to be sawed (not rotary cut) standard 1/4 in. thick, not less than 3/8 in. when sanded, and to be matched book-leaf. All joints in face veneer to be parallel with edges of door and well glued. Edges same wood as face veneer and at least 3/4 in. thick.

Gluing—Face veneer to be glued to core with waterproof glue under heavy hydraulic pressure and held in retainers until glue is set.

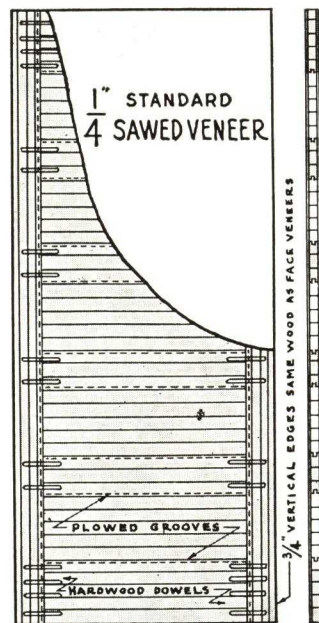
Redrying—Doors to be redried after veneering to remove all moisture contained in glue.

Sanding—Face of door to be sanded in such a manner that when varnish is applied, machine or sander marks will not show through finish.

Flush Doors to be Crooks Non-warping Construction as manufactured by W. D. CROOKS & SONS, of Williamsport, Pa.

Lead Center X-Ray Door

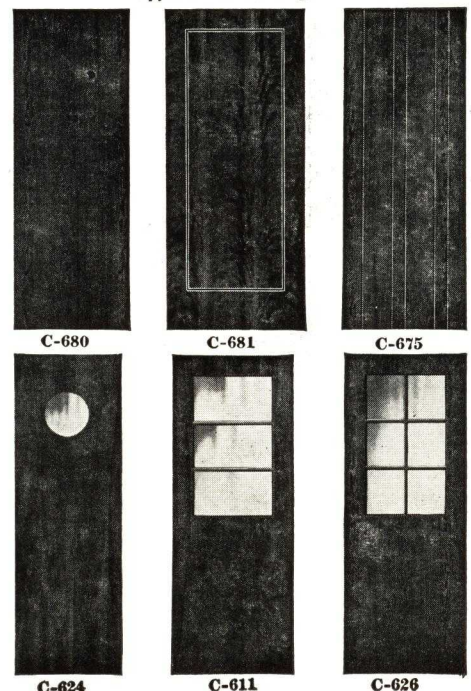
It is made similar to our Standard Non-warping Flush Door excepting two entirely separate cross banded core doors are made and a single sheet of lead covering the full inner surface is placed between these sections, securing them together with bolts, washers and nuts. Bolts are countersunk and covered with lead—all concealed by face veneer. The thickness of finished door should be not less than 2 in. Full specifications with detail mailed on request.

**FIVE CROSS PANEL FRAMED-UP CORE**

Standard sizes of flush doors should be at least 1 3/4 in. thick

Advantages

The basic principles covered by our flush specification have been used to manufacture thousands of flush doors yearly for more than 30 years. Inspecting numerous installations has proven the superiority of the three-ply construction with *solid framed core*, insuring strength and preventing warping; and the standard 1/4-in. *sawed face veneers*, eliminating checking, blistering and sunken faces.

Typical Flush Designs

SPECIAL DOORS TO ARCHITECT'S DESIGNS

Our only claim is that we make good doors. But this claim we feel privileged to amplify with the statement that we believe we are equipped—with tools, with materials, with skilled labor, and executive ability—to faithfully interpret the special veneered door designs of the most exacting architects in America.

All architects are welcome to our services, as consultants, when difficult questions of construction

arise, without fear of obligation; and on all other subjects relating to the manufacture of special hardwood veneered doors we gladly extend our facilities.

Sample (Special) Doors

The company welcomes the opportunity to submit full size sample doors at actual cost. This suggestion has found favor with architects on large buildings.

A FEW PROMINENT CROOKS DOOR INSTALLATIONS

Outstanding Buildings Equipped Back Through the Years

House and Senate Chambers of U. S. Capitol, Washington, D. C.
 Pennsylvania State Capitol, Harrisburg, Pa.
 Delaware State Capitol, Dover, Del.
 John D. Rockefeller Residence, Pocantico Hills, N. Y.
 Berkeley College, Yale University, New Haven, Conn.
 West Virginia State Capitol, Charleston, W. Va.
 Office Building (Durant) General Motors Corp., Detroit, Mich.
 Home Economics Building, Cornell University, Ithaca, N. Y.
 Mayflower Hotel, Washington, D. C.
 Eugene duPont Residence, Centerville, Del.
 Convention Hall, Atlantic City, N. J.
 Architects Building, Philadelphia, Pa.
 Phillips Academy Buildings, Andover, Mass.
 Union Medical College (Rockefeller Foundation), Peking, China
 Union League Club, Philadelphia, Pa.
 Dormitories, Quadrangle I and IX, Yale University
 Pennsylvania State College (10 Buildings), State College, Pa.
 Detroit-Leland Hotel, Detroit, Mich.
 Banco de Bogota, Colombia, South America
 Philadelphia General Hospital, Philadelphia, Pa.
 Princeton College Buildings, Princeton, N. J.
 Auditorium and Chapel, Mattewan State Hospital, Beacon, N. Y.
 Yale Graduate School, Yale University, New Haven, Conn.
 Girard College Buildings, Philadelphia, Pa.
 Union Industrial Building, Flint, Mich.
 First Presbyterian Church, Pittsburgh, Pa.
 Delaware State Hospital (7 Buildings), Farnhurst, Del.
 Utica State Hospital (7 Buildings), Utica, N. Y.
 Senior High School and 10 Grade Schools, Philadelphia, Pa.
 Duke University (10 Buildings), Durham, N. C.

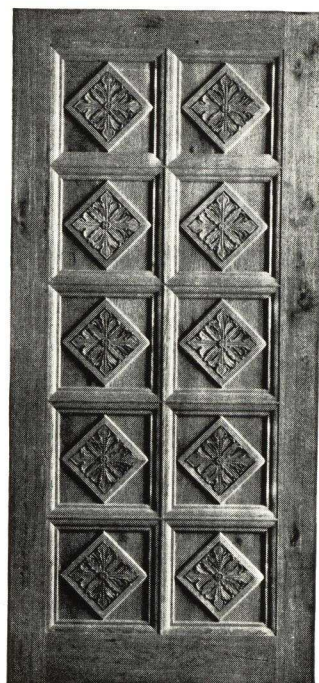
More Recent Installations

BUILDING	ARCHITECT
"Glencairn" Estate of Raymond Pitcairn, Bryn Athyn, Pa.	Waddy B. Wood
U. S. Department of Interior Building, Washington, D. C.	L. A. Simon (Supvg)
U. S. Government "Apex" Office Building, Washington, D. C.	Bennett, Parsons & Frost
U. S. Department of Justice Building, Washington, D. C.	L. A. Simon (Supvg)
Littauer Centre, Harvard University, Cambridge, Mass.	Zantzing, Borie & Medary
Group "D" Dormitories, Duke University, Durham, N. C.	Coolidge, Shepley, Bulfinch & Abbott
J. Lessing Rosenwald Residence, North Jenkintown, Pa.	Horace W. Trumbauer
Payne Whitney Gymnasium, Yale University, New Haven, Conn.	Ernest A. Grunsfeld, Jr.
State Prison Buildings, Bordentown, N. J.	John Russell Pope
Thomas S. Lamont Residence, Oyster Bay, N. Y.	Chas. N. Leathem (State)
Cabot Hall, Norwich University, Northfield, Vt.	Kimball & Husted
University Hospitals, Presbyterian Unit, Pittsburgh, Pa.	Jens Frederick Larson
Sterling Memorial Library, Yale University, New Haven, Conn.	E. P. Mellon and W. L. Smith
Frances Atherton Hall, Pennsylvania State College, State College, Pa.	James Gamble Rogers
Hospital Buildings (3) Newark State School, Newark, N. Y.	Charles Z. Klauder
Saratoga Spa Group (6 Buildings), Saratoga Springs, N. Y.	Wm. E. Haugaard (State)



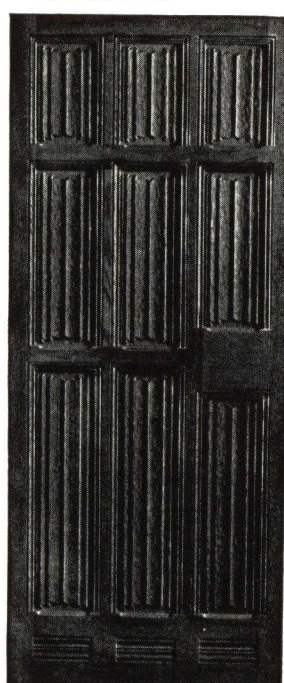
French Paneled Door Used in a Fine Residence, Greenwich, Conn.

FRANK J. FORSTER, Architect



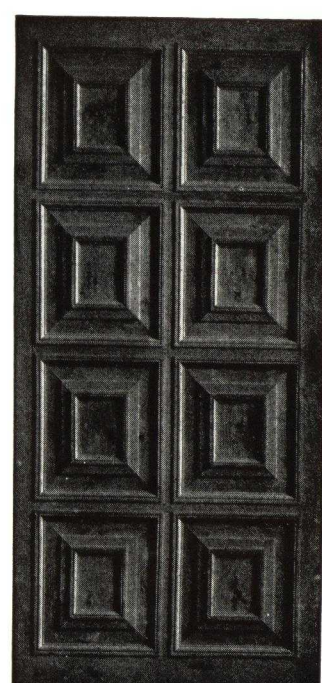
Administration Building, Board of Education, Philadelphia, Pa.

I. T. CATHRINE, Architect



Payne Whitney Gymnasium, Yale University, New Haven, Conn.

OFFICE OF JOHN RUSSELL POPE, Architect



Knotty Oak Door Used in an Office Reception Room

FRANK J. FORSTER, Architect

STOCK DOORS

Over 10,000 stock doors are carried ready for immediate shipment. All are hardwood veneered in birch, plain red oak and chestnut. There are Flush

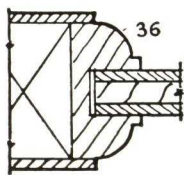
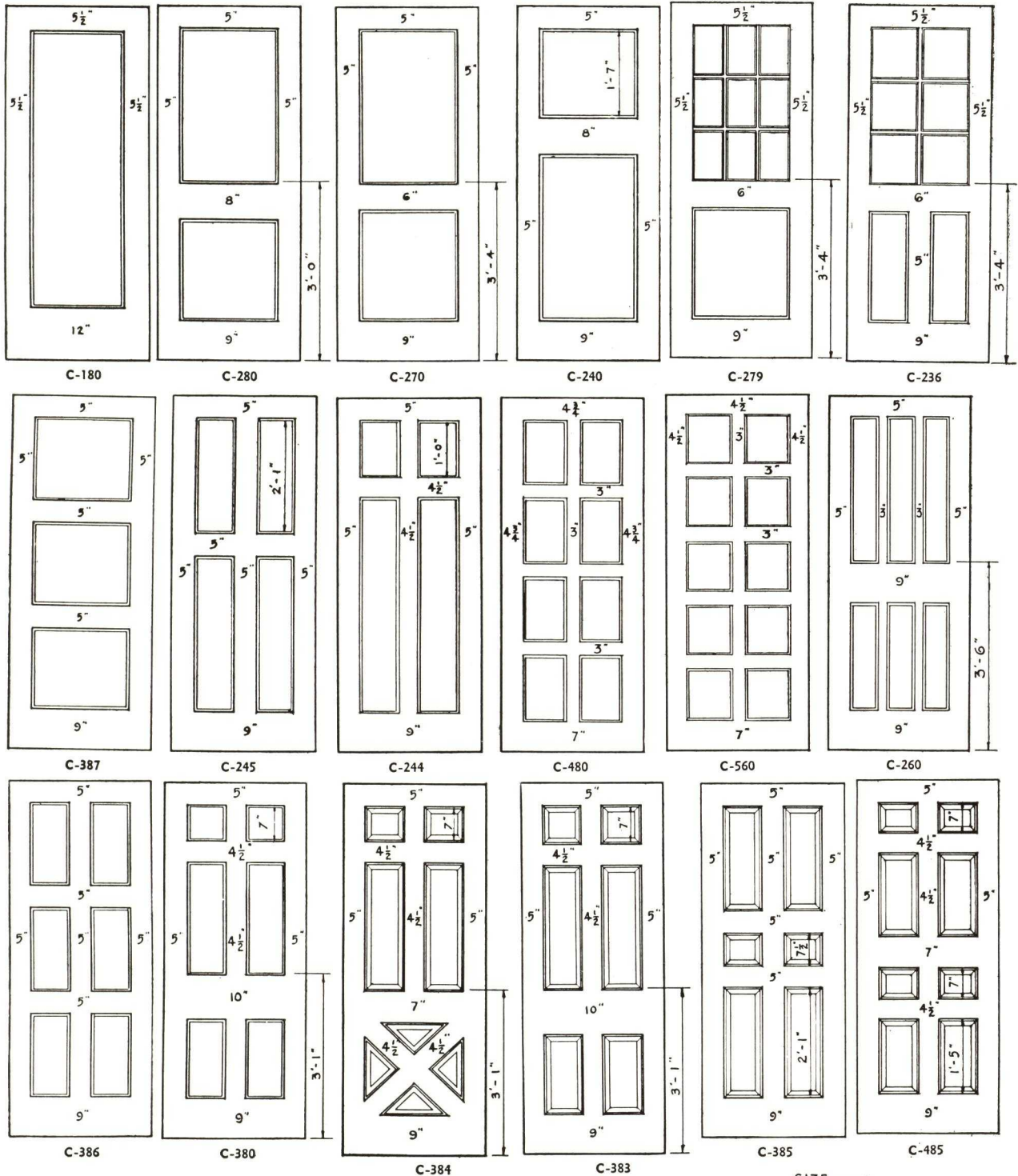
and Paneled types for interior and exterior use. Stock list illustrating the designs mailed on request.

CROOKS STANDARD INTERIOR PANELED DESIGNS

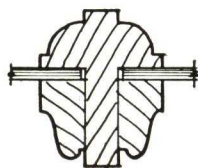
Selected for their simplicity and good design, the illustrations below are taken from our "Stock List and Supplement."



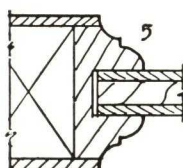
This pocket size veneered door book showing more types and miscellaneous details mailed on request.



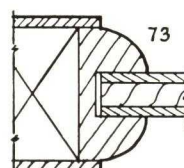
1/2" Ovolo



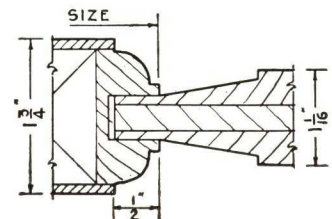
Divided Lights



1/2" Cove and Bead



1/2" Quarter Round



CURTIS COMPANIES SERVICE BUREAU

CLINTON, IOWA

For Plants and Sales Offices, see the first page of our catalog on Windows
For Silentite Windows, Trim and Kitchen Units, see File Index



RICH CHARACTER and sincere welcome radiates from this distinguished new entrance design by Dwight James Baum, F.A.I.A. The house equipped with this entrance is sure to grow old gracefully. Curtis design C-1716.

NOTE: Architect's details and catalog are available through your Curtis dealer. Write us for his name. Curtis details are used in many prominent architectural offices. You'll find them a time-saver in your drafting room.



A STRIKING EXAMPLE of the Curtis plan of standardized woodwork construction. A custom-built entrance in this exquisite design would add materially to its cost. This is Curtis design C-1720. Designed by Dwight James Baum, F.A.I.A.

1866
CURTIS
WOODWORK

Curtis Woodwork and Doors

Good taste, architectural authenticity, quality construction and nation-wide availability have been woodwork features which Curtis has been offering to architects for 73 years.

Virtually all Curtis Woodwork is architect designed. In recent years, such well-known architects as Russell Whitehead, Frederick Lee Ackerman, Dwight James Baum, F.A.I.A., and others have been engaged for the specific purpose of designing Curtis Woodwork. Our most recent catalog illustrates the wide variety of architectural styles for many items. You may, therefore, select Curtis Woodwork in *correct* patterns which have been standardized and thereby made more economical.

There is Curtis Woodwork for every architectural requirement. Simple and inexpensive designs and faithful reproduction of traditional styles enable you to use Curtis Woodwork on jobs of any price and of any size.

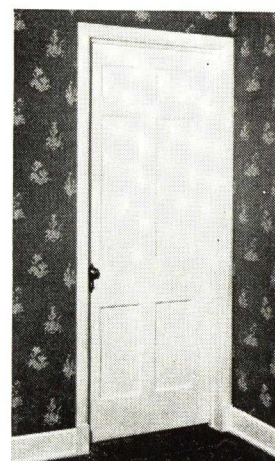
All Curtis Woodwork is trade-marked for your protection and is available nationally through thousands of leading retail lumber dealers, who, in turn, obtain their requirements from several large Curtis distributing points.

On this page and on the following page, we are illustrating a few of the most popular designs in various items of Curtis Woodwork. The complete line includes the following items: *exterior and interior doors, entrances, frames, mantels, stairways, china closets, cabinets, molding and trim, screens and storm windows, sectional kitchen cabinets, Silentite double-hung and casement windows, Miterite trim.*

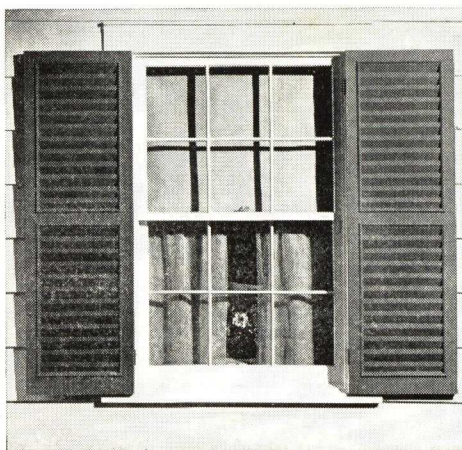
Additional information is available from your local Curtis dealer, or direct from the Curtis Company at Clinton, Iowa.



THE CHARMING SIMPLICITY of this distinctive colonial entrance is available for lower priced homes because its cost is low. Several other authentic entrance designs are available to help give correct design to inexpensive houses. This is Curtis design C-1728. Another Baum design.



INTERIOR DOORS—this is one of the most popular Curtis models—design C-3030. Note particularly the beautiful new Miterite trim which is made very low in cost by the Curtis plan of standardization on design, plus quantity production.



SHUTTERS—you may select Curtis shutters to fit correctly the architectural style of any home you plan. For other attractive shutter and blind designs, see the Curtis Catalog—a book which should be in every architect's file.



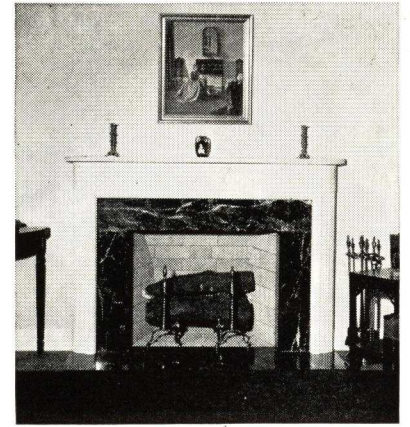
TELEPHONE CABINET—Curtis makes several interesting cabinets like this—all reasonably priced. See catalog for full selection. This is design C-6914.

COLONIAL MANTEL—the Curtis plan of standardization enables owners to select a truly beautiful, modern design for their home at a cost which they can afford to pay. This is a colonial type mantel which may be painted or stained. It is Curtis design C-6054, by Dwight James Baum, F.A.I.A. Made in pine.

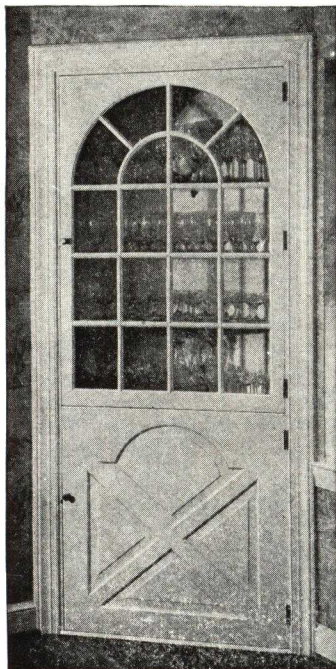


Design C-6057—Made in pine.

TWO CORRECT AND DISTINCTIVE MANTELS—additional examples of how Curtis gives owners more for their money. Here are two individual mantel designs which satisfy their particular type of architectural beauty as well as limited budgets. Be sure to inspect the complete Curtis line of mantels, where you will find a variety of designs to serve all your specification requirements.



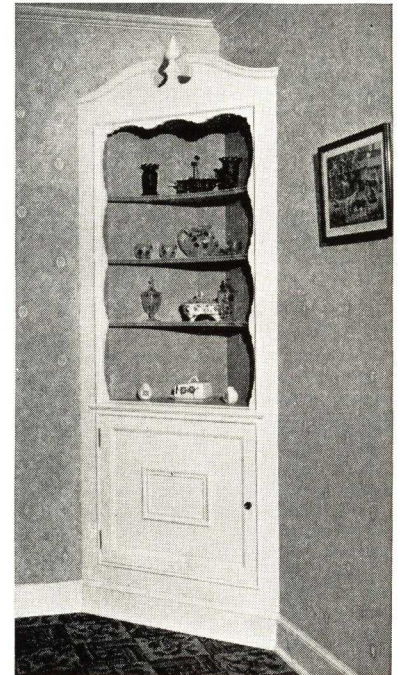
Design C-6072—Pine and walnut.



AMERICAN MUSEUM OF ART REPRODUCTION—the original of this china closet is in the American Museum of Art in New York City. It is an example of the care which Curtis has taken in developing beautiful and authentic woodwork. Design C-6503. Pine, birch, walnut.



STAIRWAY—when you select a Curtis stairway, you can be positive that after installation its appearance will be fully as attractive as if it had been designed especially for the house. Architects make no sacrifices of good taste when they specify Curtis Woodwork. This stairway was assembled from Curtis standard stair parts.



COLONIAL CHINA CLOSETS—a typical Curtis corner cabinet. A variety of corner units for all types of dining rooms are available. This is Curtis design 6521, and was designed by Dwight James Baum. Made in pine and walnut.

FARLEY & LOETSCHER MFG. CO.

ESTABLISHED 1875

Manufacturers of Quality Doors and Other Building Woodwork

DUBUQUE, IOWA

Products

DOORS of every description: HARDWOOD or SOFTWOOD, VENEERED or SOLID, FLUSH or PANEL, standard designs or built to architect's specifications and details.

Also Sash, Blinds, Screens, Frames, Interior Finish and Building Specialties.

For "Unipak" Wood Casements, "Unipak Unique" Double Hung Windows and F & L "DeLuxe" Kitchen Cabinets, see Manufacturer's Index.

Facilities

Our modern factory, over 21 acres of floor space, is completely equipped with the most modern machinery including many devices of our own invention. These insure uniform high quality at the lowest possible cost. Our workmen are thoroughly trained by long experience and capable supervision.

Main factory and warehouses are built of reinforced concrete and all buildings are completely equipped with automatic sprinklers so that the possibility of delay or damage from fire is practically eliminated.

Complete Millwork Service

In addition to our complete door department, we have departments for manufacturing sash, frames, mouldings, screens, blinds, interior trim, cabinet work and stair work in any wood. All departments are properly co-ordinated to give uniformity to the completed work. Thus we are prepared to assume undivided responsibility for entire millwork contracts and eliminate practically all trouble, confusion and delay occasioned by delivery from many different sources.

This arrangement saves valuable time on the job and results in a higher quality of work at a lower final cost. Detailed schedules for establishing measurements and erecting with a minimum of effort are always included with special work. We have furnished many large housing projects complete in this manner in recent years. (Names on request.)

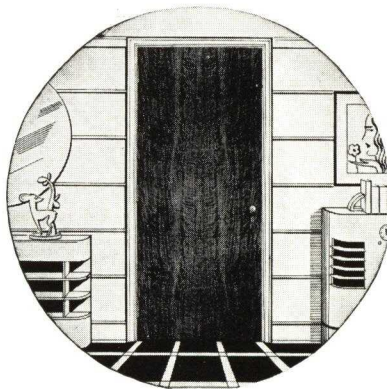
Veneered Door Construction

QUALITYBILT Veneered Doors of regular construction are made with cores built up of narrow kiln dried soft pine blocks, joints well staggered and cemented together with high-grade water-resistant glue. Cores and veneers are re-dried to proper moisture content before assembling and again re-dried after applying veneers. Resin bonding of veneers with our hot plate press can also be supplied.

Stile and rail joints are accurately assembled with $\frac{5}{8}$ -in. hardwood dowels. Mortise and tenon joint construction can be furnished when required. All doors are given our high-grade machine drum sanded finish unless otherwise specified. This provides a smooth finish which requires practically no retouching from the painter. Belt or hand sanding can be furnished at a slight extra charge.

Finishing

To retain and protect the original beauty of grain and fine workmanship in QUALITYBILT hardwood doors and other millwork we maintain an up-to-date Finishing Depart-



ment. Our expert finishers can stain, fill and shellac or completely finish any woodwork with paint, varnish or lacquer under the most favorable conditions. Panels are then stained before framing to avoid "white" streaks around the sticking. Our charges for finishing are very reasonable and there is the added saving of time on the job and greater satisfaction in the completed work.

Unfinished doors and other woodwork are often abused in transit or stored in damp places causing such damage and raising of grain that the most skillful painter cannot secure good results unless the material is re-dried and re-sanded. Also he may be compelled to work in surroundings which preclude any possibility of doing first-class work. Fine woodwork certainly deserves the same care in handling and finishing as fine furniture.

Thin Veneers

Many years of experience in the manufacture of fine hardwood doors has convinced us of the superiority of $\frac{1}{8}$ -in. face veneers, on flush doors. These permit a finer finish and eliminate warping, twisting and other troubles caused by the pulling and swelling of thick veneers.

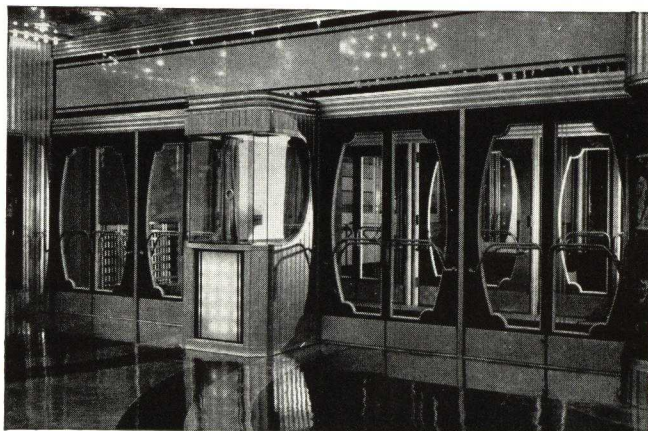
Thin veneer is not as susceptible to atmospheric changes and thus pulls less on the glue joint. Tests have shown that the pulling power of veneer when it swells is in ratio to the cube of its section. A $\frac{1}{8}$ -in. veneer has only $\frac{1}{8}$ th the pulling power of $\frac{1}{4}$ -in. veneer. Thick veneers often swell both in width and thickness which leaves an uneven surface after finishing, or the veneer creeps over the edges of the door, strikes the jamb and frequently tears loose. Proper gluing holds fast the underside of the veneer but is no protection for the surface. Veneer is primarily decorative and need only be thick enough to prevent glue stains.

Flush doors with incised ornamentations, of course, require thick veneers but these incisions practically cut through the veneer, thus greatly reducing its pulling power and tending to overcome its faults.

Thick veneers are more often specified through a misunderstanding of their merits rather than through the actual desire to have them. We have prepared a bulletin on thin veneers which we will be glad to send upon request. We can supply thick veneers where specified and manufacture such doors in the most approved construction but from long experience recommend that thin veneers be used whenever possible. Thin veneers generally give a nicer selection of grain and figure and eliminate numerous glue joints.

Guarantee

QUALITYBILT Doors are guaranteed to be well manufactured of first quality materials, free from defects which render them unfit for the use for which they are intended. Natural variations in color or texture of wood are not considered defects. We agree to repair or replace, "in-the-white," any doors found defective within the meaning of our guarantee. In order that veneered doors be properly protected, they must be stored in a dry place and top and bottom edges thoroughly painted after fitting.



EDWARD PAUL LEWIN, Architect

HEDRICH-BLESSING, Photo

Special Qualitybilt Entrance Doors in Times Theater Building,
Rockford, Ill.

QUALITYBILT DOORS

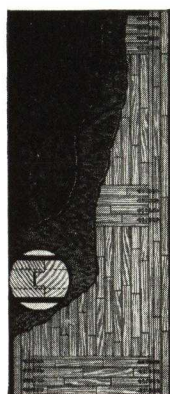
Standard Flush Doors—Solid Core



"Farlo" Core
Our Standard
Construction



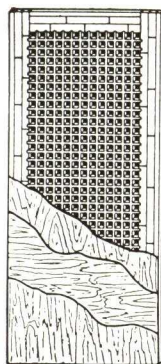
**Section of
"Farlo" Core**
Hardwood edge strips completely surround the softwood core, protecting it from moisture. Cross banding prevents lateral warping and overlaps the edge strips.



**"Metropolitan"
Core 2 Pan.
Framed Core**

These two types of core constructions are most commonly used and recommended for all purposes. We can also manufacture any other core construction desired. In the absence of specific instructions, we supply our "Farlo" core, as it has given such consistently good service over a long period of years that we have adopted it as our standard. It is recommended both for economy and durability. $\frac{1}{8}$ -in. face veneers and cross banding are also standard and supplied unless otherwise specified. Lights of any design in any position can be cut into these doors.

Flush Doors—Grid Core



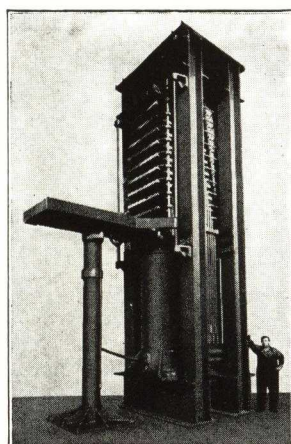
"Air-Slab"
(Trade Mark)

This core construction provides a light weight serviceable door of unusual strength and rigidity. It is a series of small ventilated air cells built up in grid form, of W. P. Pine interlocking strips to which the veneers are applied. This construction not only saves weight, making door easier to fit and handle but also produces a door capable of acclimatizing itself to varying conditions of temperature and humidity.

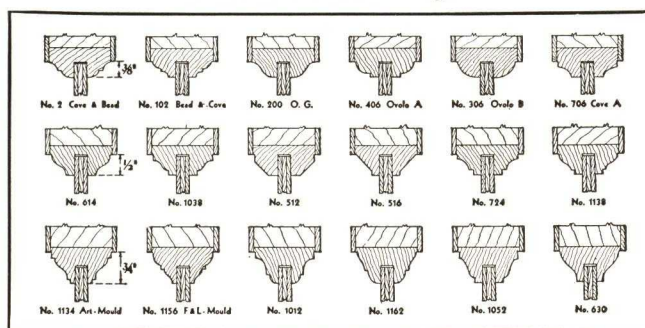
Faces of "Air-Slab" Flush Doors (except W. P. Pine) are thin veneers, 3-ply, bonded with high grade glue. W. P. Pine faces are thicker and of single thickness. Stiles and rails are $4\frac{1}{4}$ in. wide, built up of core blocks and with one piece edge strips. Doors are squared and trimmed to net size, sanded and individually sealed in dust-proof paper packages, ready for the painter. Furnished in all standard woods, $1\frac{3}{8}$ in. or $1\frac{1}{4}$ in. thick. Various designs of lights can be cut in as desired. This core also used for cupboard doors, partitions, etc.

Hot Plate Press

Our facilities for door and panel manufacture include every known process. This is our modern Hot Plate Press, a two-story installation, capable of exerting a pressure of over 2,000,000 lbs. It is used for bonding veneers under high pressure steam heat with resin glue, to form an *absolutely waterproof bond*. This process might be described as "vulcanizing" as the veneer plies are practically fused together. Used for bonding veneer of any wood not over $\frac{1}{8}$ in. thick. Maximum size of doors or panels is 36×84 in. This press is also used for moulding our "FARLITE," and "FARLITE-LOETEX"; hard, dense materials with genuine Bakelite surface, finished in many colors and designs and suitable for doors, table tops, wainscot, etc. Samples on request.



Standard Solid Stickings



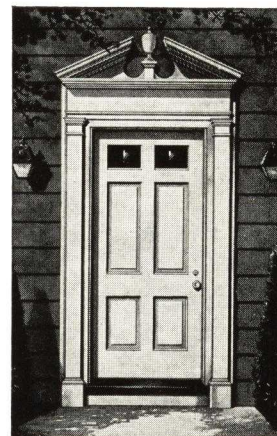
The above details show our standard solid stickings for panel and sash doors, Softwood or veneered with Hardwoods. The $\frac{3}{8}$ -in. is regularly supplied on stock doors. The $\frac{3}{4}$ -in. stickings are recommended in place of flush mouldings. They have all the beauty and distinction of flush moulding without the possibility of unsightly nail holes or open joints, as all sticking joints are coped. Cost is only slightly more than for standard $\frac{3}{8}$ -in. solid sticking.

Wide solid stickings also effect savings in finishing costs. The ordinary flush moulded door requires over 100 brads, which must be filled and puttied and often still show in the finished door. There is also the possibility of flush moulding becoming loose and pulling away from the stiles and rails. Many door troubles can be avoided by using these solid stickings. Full size details or samples on request.

Qualitybilt Colonial Entrances

This illustration shows one of ten popular Colonial Entrances, especially designed for the small house field. Standardization of parts and quantity production effect real economies without any sacrifice of beauty or quality. They are authentic in every detail and may be used in frame, brick veneer, or masonry walls. Other designs of doors may be substituted from our complete line of Colonial or Modern entrance doors.

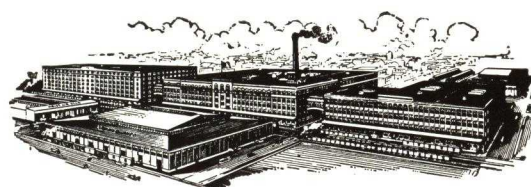
Entrance pictured is FL-63 with Door FL-133. Supplied with all parts rot and termite proofed. A folder showing complete line of ten distinctive Colonial Entrances will be sent on request.



Distribution

QUALITYBILT doors and building materials are distributed through jobbers, dealers, and building contractors throughout the country. Specify millwork to be "QUALITYBILT," as manufactured by the FARLEY & LOETSCHER MFG. CO., Dubuque, Iowa.

Estimates, construction details, or sample corner sections of doors will be furnished free on request.



Our modern plant where "Qualitybilt" doors and other products are made. One of the largest and most complete woodworking establishments in the world.

HARDWOOD PRODUCTS CORPORATION

NEENAH, WISCONSIN

PRINCIPAL SALES OFFICES

NEW YORK, N. Y.
1730-101 Park Ave.
Ashland 4-7594

CHICAGO, ILL.
1805-75 Wacker Dr.
Randolph 7230

SAN FRANCISCO, CALIF.
3045 19th St.
Valencia 2241

DALLAS, TEX.
Box 4247

WICHITA, KAN.
758 So. Broadview

For Soundproof Doors see File Index

Products

VENEERED DOORS (Panel) *SOUNDPROOF DOORS
FLUSH VENEERED DOORS SOLID SOFTWOOD DOORS
FIRE-RESISTANT WOOD DOORS PLYWOOD
X-RAY or LEAD-LINED DOORS MILLWORK

*We are exclusive manufacturers of Riverbank Sound Insulating Doors as designed along new and thoroughly scientific lines by the Riverbank Acoustical Laboratories, Geneva, Illinois. These are all wood surfaced inlaid flush doors veneered with any cabinet wood for stain or in plain birch for paint finish. For full details see File Index.

The Company

The company has been continuously in business for over 25 years, specializing in the manufacture of high quality hardwood-veneered and solid-softwood doors.

Responsibility

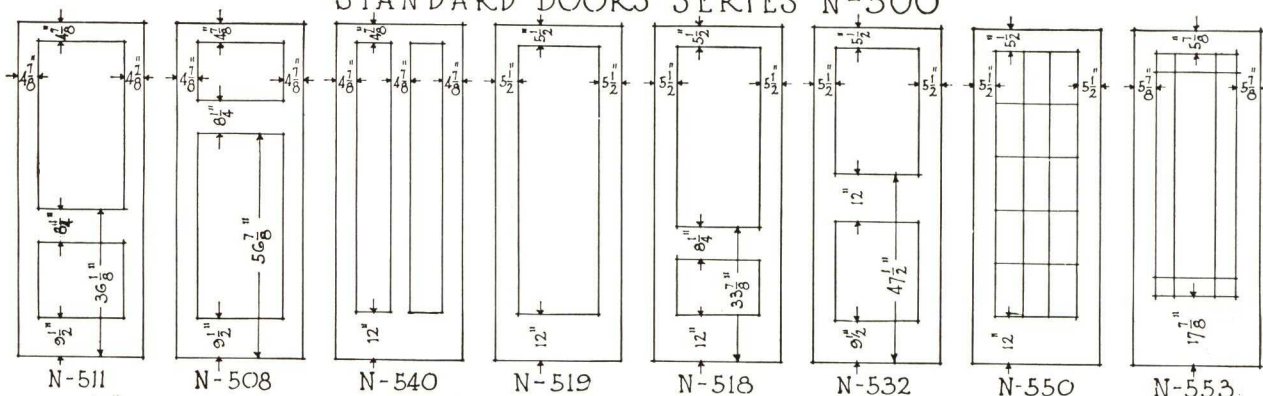
Our rating in R. G. Dun's and Bradstreet's is \$750,000—first grade of credit.

Guaranty

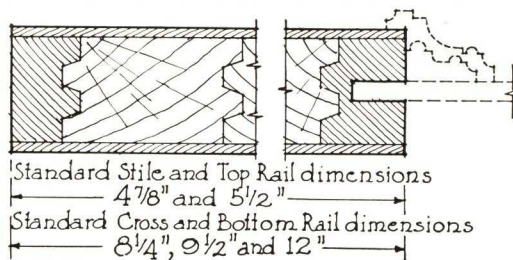
We Unqualifiedly Guarantee every HARDWOOD PRODUCTS CORPORATION door, made according to our recommendations, to be free from defects of workmanship and materials, and will replace any doors that prove to be defective within the meaning of our specifications and recommendations.

STANDARD DETAILS—HARDWOOD PRODUCTS CORPORATION'S DOORS

STANDARD DOORS SERIES N-500

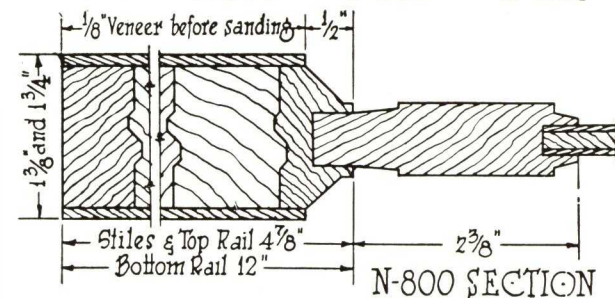
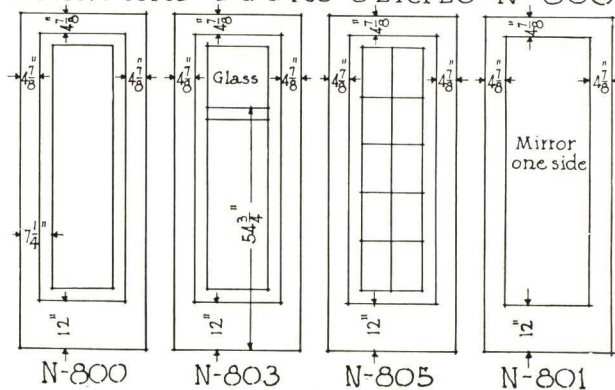


SEMI-SPECIAL DOORS



Standard panel designs as above
or Special designs as desired with Special
panel moldings Panel Splines may be
added if desired at slight added cost.
These doors are economical

STANDARD DOORS SERIES N-800



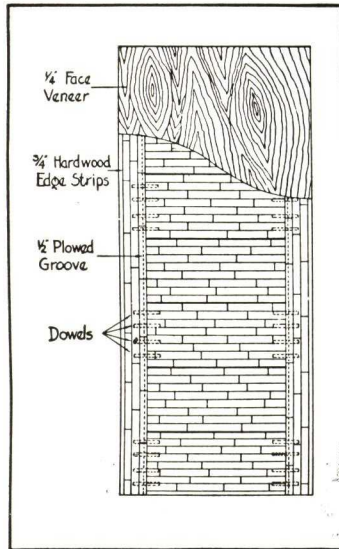
Designs above are a few of the most popular of series N-800

FLUSH OR SANITARY DOORS

Construction Standards and Special Features—Specification Data—After many years of experience in the manufacture of Flush Doors, we have come to the conclusion that different types of construction are adaptable to varying condi-

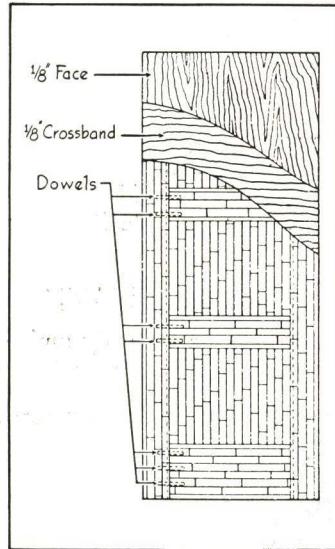
tions and usage.

We are therefore setting forth below three different specifications which we recommend for varying types of buildings.



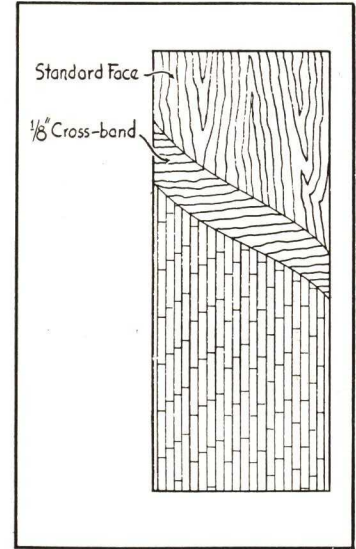
"STRAIGHT FLUSH" DOORS

Made with framed core, 1/4 in. sawn veneers and no crossband and with aircraft water-resistant glue. This is an ideal construction and especially adapted for installation in Schools, Dormitories, Asylums, Sanatoriums, Churches, etc.



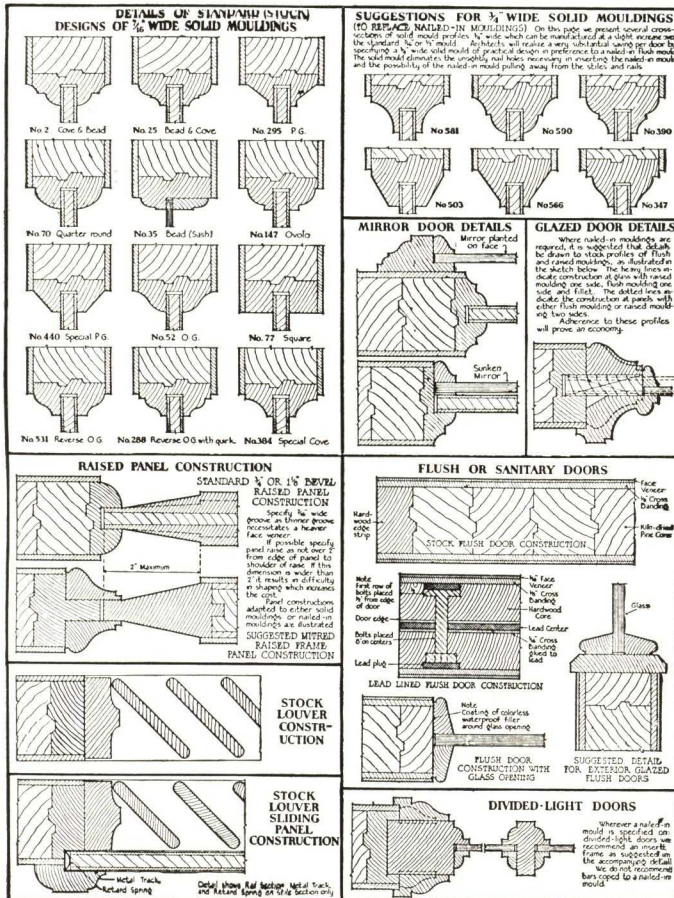
"STURDY FLUSH" DOORS

Made of framed three-panel core, 1/8 in. crossband and standard face veneers, with aircraft water-resistant glue. This construction is recommended for Hotels, high-class Apartments, and Residences, especially where cabinet woods are specified requiring very thin face veneers.



"STANDARD FLUSH" DOORS

Made of all vertical core, 1/8 in. crossband and standard face veneers. This construction is recommended for general Hospitals, Residences, and Modern Apartments.



Recent Hardwood Products Corporation Door Installations

- Ypsilanti State Hospital, Urania, Michigan
 Albert Kahn & Co., Architects, Detroit, Mich.
 Pineville Charity Hospital, Pineville, La.
 Edw. F. Neild, Architect, Shreveport, La.
 Torrance State Hospital, Torrance, Pa.
 Prack & Prack, Architects, Pittsburgh, Pa.
 Wyandotte High School, Kansas City, Mo.
 Hamilton, Fellows & Nedved, Architects, Chicago, Ill.
 Court House, Kalamazoo, Mich.
 C. J. Billingham, Architect, Kalamazoo
 Court House, Oshkosh, Wis.
 Granger & Bollenbacker, Chicago, Ill.
 Gage Park High School, 56th & Rockwell Sts., Chicago, Ill.
 Jno. Christensen, Architect, Brd. of Education, Chicago, Ill.
 Nurses Home & Out Patient & Ward Bldg., City & County Hospital, Houston, Tex.
 Alf. C. Finn & Jos. Finger, Architects, Houston, Texas
 Psychopathic Bldg., State Hospital, Galveston, Texas
 R. R. Rapp, Architect, Galveston, Texas
 Group of Buildings, State Colony for Epileptics, Selinsgrove, Pa.
 Simon & Simon, Architects, Philadelphia
 St. Vincent's Hospital, 69th & Greenway Ave., Philadelphia
 Henry D. Dagit & Son, Architects, Philadelphia
 Group of Buildings, State Hospital, Danville, Pa.
 Clarence E. Wunder, Architect, Philadelphia, Pa.
 Group of Buildings, State Hospital, Norristown, Pa.
 Howell Lewis Shay, Architect, Philadelphia, Pa.
 Senior High School, Scarsdale, N. Y.
 Rossiter & Muller, Architects, New York, N. Y.
 Cardinal Hayes Library, Manhattan College, Riverdale, N. Y.
 O'Connor & Delaney, Architects, New York, N. Y.
 Wheaton College, Women's Dormitory, Wheaton, Ill.
 Robert H. Salisbury, Architect, Wheaton, Ill.
 Peoria Post Office & Court House, Peoria, Ill.
 Procurement Division, Architects, Washington, D. C.
 Anshe-Emet Synagogue, Chicago, Ill.
 Oman & Lilienthal & Associates, Architects, Chicago, Ill.

Write for Our Latest "Manual of Veneered Doors"

JOHNS-MANVILLE

EXECUTIVE OFFICES
22 E. 40th Street
NEW YORK, N. Y.

Products

JOHNS-MANVILLE FLUSH DOORS.

For the following Johns-Manville products see File Index: Insulating Board and Insulating Lath; Asphalt Tile Flooring; Acoustical and Sound Isolation Materials; Transite Sheets, Flat and



Corrugated; Home Insulation; Built-up and Insulated Roofs; Asbestos and Asphalt Shingles; Pipe Covering and Insulation; Asbestos Flexboard and Asbestos Wainscoting; Steeltex for Plaster, Stucco and Brick or Stone Veneer; Steeltex Floor Lath; Transite Walls.

JOHNS-MANVILLE FLUSH DOORS

J-M Flush Doors harmonize with almost every type of interior decoration, as they are available in an endless variety of natural woods. They are particularly adaptable for use in private homes, apartments, offices, hospitals and schools, where they add beauty equal to that of high-grade cabinet furniture.

One of the well-known advantages of the flush door, in addition to distinctive appearance, is that dust cannot lodge on its plain, smooth surfaces. This makes the door sanitary and easy to clean or paint. The core of the J-M door is sealed against dirt and vermin and, for exterior use, against moisture.

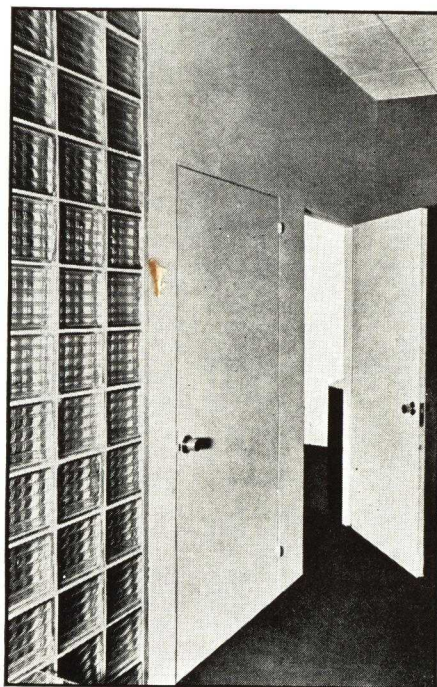
Johns-Manville Flush Doors combine the utmost in appearance with light weight and extreme serviceability. The honeycombed grid and sealed core combine to produce an economical door which will withstand the severest usage.

The center grid is made of 1/2-in. strips of J-M Insulating Board halved together. The strips are of wood fibre, interlaced and compacted into a strong stiff board. The core,

sturdy and light in weight, is completely sealed by the faces, with the best quality of adhesive used in fabrication. This construction eliminates expansion and contraction troubles and reduces the weight that is characteristic of flush doors with a solid wood core.

The craftsmanship employed in the manufacture of the J-M Flush Door has been proved by experiments under conditions far more severe than ordinary door service. Tests reveal that every J-M Door will remain strong and straight after being slammed over 25,000 times with all the force of a half-ton slamming machine. Even soaking in water for seven days has no effect on the J-M doors manufactured to resist moisture.

J-M Doors are easily fitted and hung in the ordinary manner, using regular hardware. The wood-faced doors, lighter than the average door with a solid core, require no special jambs or bucks. The Flexboard door, though heavier than J-M wood-faced doors, still is lighter than a solid-core door of the same size, and needs only standard support.



SIZES AND WEIGHTS

*Standard door sizes	Wel-Built lb. per door		De Luxe lb. per door		Flexboard lb. per door		*Standard door sizes	Wel-Built lb. per door		De Luxe lb. per door		Flexboard lb. per door		*Standard door sizes	Wel-Built lb. per door		De Luxe lb. per door		Flexboard lb. per door	
	1 3/8" thick	1 3/4" thick	1 3/8" thick	1 3/4" thick	1 3/8" thick	1 3/4" thick		1 3/8" thick	1 3/4" thick	1 3/8" thick	1 3/4" thick	1 3/8" thick	1 3/4" thick		1 3/8" thick	1 3/4" thick	1 3/8" thick	1 3/4" thick	1 3/8" thick	1 3/4" thick
1' 6"x6'0"	17	24					2'10"x6'6"	44		46		73	78	2' 0"x7'0"	30	37	32	39	59	64
1' 8"x6'0"	19	27	22	29	39	44	3' 0"x6'6"	46		49		77	82	2' 2"x7'0"	32	39	34	41	63	68
2' 0"x6'0"	24	31	26	33	47	52	3' 6"x6'6"			56			94	2' 4"x7'0"	35	41	37	43	67	72
2' 2"x6'0"	27	33	29	35	51	56	4' 0"x6'6"			62			106	2' 6"x7'0"	37	43	39	45	71	76
2' 4"x6'0"	29	35	31	37	55	60								2' 8"x7'0"	39	46	41	48	75	80
2' 6"x6'0"	31	37	33	39	59	64	1' 6"x6'8"	21	27					2'10"x7'0"		48		50	79	84
2' 8"x6'0"	33	39	36	41	63	68	1' 8"x6'8"	23	29	25	31	47	52	3' 0"x7'0"		50		52	83	88
2'10"x6'0"		41		43	67	72	2' 0"x6'8"	28	34	30	36	55	60	3' 6"x7'0"				59		100
3' 0"x6'0"		43		46	71	76	2' 2"x6'8"	31	37	33	39	59	64	4' 0"x7'0"				65		112
3' 6"x6'0"				53		88	2' 4"x6'8"	33	39	35	41	63	68							
4' 0"x6'0"				59		100	2' 6"x6'8"	35	41	37	43	67	72	2' 6"x7'6"			49			
							2' 8"x6'8"	37	43	39	45	71	76	3' 0"x7'6"			56			94
1' 6"x6'6"	20	27					2'10"x6'8"		45		47	75	80	3' 6"x7'6"			63			106
1' 8"x6'6"	22	30	25	32	45	50	3' 0"x6'8"	48		50	79	84	4' 0"x7'6"			69				118
2' 0"x6'6"	27	34	29	36	53	58	3' 6"x6'8"			57			96							
2' 2"x6'6"	30	36	32	38	57	62	4' 0"x6'8"			63			108	2' 6"x8'0"				53		
2' 4"x6'6"	32	38	34	40	61	66								3' 0"x8'0"			60			100
2' 6"x6'6"	34	40	36	42	65	70	1' 6"x7'0"	23	31					3' 6"x8'0"			66			112
2' 8"x6'6"	36	42	39	44	69	74	1' 8"x7'0"	25	33	27	35	51	56	4' 0"x8'0"			72			124

*Only sizes with weights indicated are standard. Weights are approximate for unpacked doors. About 8 lbs. should be added for crating.

JOHNS-MANVILLE WEL-BUILT FLUSH DOORS—FOR INTERIOR USE ONLY

GUM FACED—GRID CORE

Specification

General—Doors shall be of size and thickness required. Tolerances: thickness $+0$ in. $-\frac{1}{8}$ in.; width and height $\pm\frac{3}{32}$ in.

Stiles and Rails ($1\frac{3}{8}$ and $1\frac{3}{4}$ In. Thick Doors)—Stiles shall be at least $1\frac{3}{8}$ in. wide and rails shall be at least $3\frac{1}{2}$ in. wide. Both shall be of such thickness that the door, after sanding, will meet door-thickness requirements. All material shall be of even-textured yellow poplar. Stiles shall be "clear" $\frac{1}{2}$ in. back from exposed edges.

Lock Blocks—Lock blocks shall be sufficiently wide to allow at least $4\frac{3}{4}$ in. from edge of door to the inside edge of the lock block, and shall be placed at both sides of the door and at the center of the stiles. Maximum distance from the bottom of the lock block to the bottom of the door shall be $28\frac{1}{2}$ in.

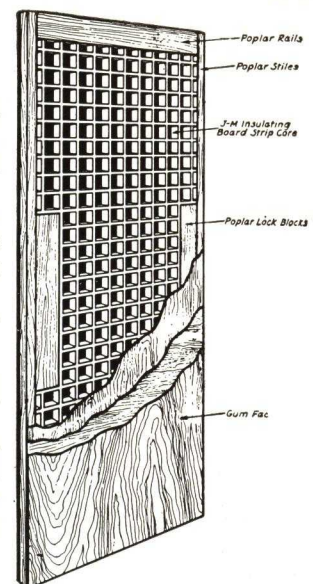
Cores—Cores shall be made in grid pattern. Grid bars shall be of $\frac{1}{2}$ -in. J-M Insulating Board, halved together. Cores shall be of necessary thickness to provide doors of required thickness.

Faces—Each face of the door shall be three-ply plywood, composed of three $\frac{1}{8}$ -in. thick gum veneers. Exposed ply shall be rotary-cut gum, unselected for color. (See note.)

Adhesive—Entire assembly shall be fabricated with a high grade vegetable glue.

Finish—Doors shall be sanded to a smooth, even surface, ready for finish. Edges shall be planer cut—not sanded.

Note: Gum has been chosen as the standard face for Wel-built doors because it works to a fine finish most easily and stains in a remarkable semblance to either mahogany or walnut with the least difficulty. Doors with faces of rotary-cut birch, plain half-round red oak, rotary-matched red gum or sliced knotty pine are available on special order.



JOHNS-MANVILLE DE LUXE FLUSH DOORS—FOR INTERIOR USE

Resin-Bonded—for exterior use

BIRCH-FACED—GRID CORE

Specification

General—Doors shall be of size and thickness required. Tolerances: thickness $+0$ in. $-\frac{1}{8}$ in.; width and height $\pm\frac{3}{32}$ in.

Stiles and Rails ($1\frac{3}{8}$ and $1\frac{3}{4}$ In. Thick Doors)—Stiles shall be at least $2\frac{1}{8}$ in. wide and shall have exposed edgings of birch, not less than $\frac{3}{4}$ in. wide, "lindermanized" to the frame material. Rails shall be at least $3\frac{1}{2}$ in. wide. Both rails and stiles shall be of such thickness that door, after sanding, will meet door-thickness requirements. All material, except exposed edgings, shall be of even-textured yellow poplar.

Lock Blocks—Lock blocks shall be sufficiently wide to allow at least $5\frac{3}{4}$ in. from edge of door to the inside edge of the lock block, and shall be placed at both sides of the door and at the center of the stiles. The maximum distance from the bottom of the lock blocks to the bottom of the door shall be $28\frac{1}{2}$ in.

Cores—Cores shall be made in grid pattern. Grid bars shall be of $\frac{1}{2}$ -in. J-M Insulating Board, halved together. Cores shall be of necessary thickness to provide required door thickness.

Faces—Each face of the door shall be three-ply plywood, composed of two $\frac{1}{8}$ -in. thick gum veneers as back and cross banding. Exposed ply shall be of $\frac{1}{20}$ -in. thick rotary-cut birch, unselected for color. (See note.)

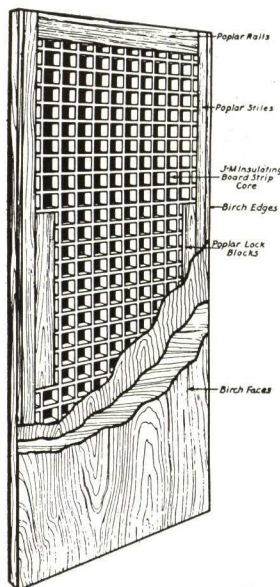
Adhesives—Entire assembly shall be fabricated with casein glue. (See note.)

Finish—Doors shall be sanded to a smooth, even surface, ready for finish. Edges shall be planer cut—not sanded.

Packing and Crating—Each door shall be individually paper wrapped, dust-tight.

Note: J-M De Luxe Doors, "Resin-Bonded," are available on special order. Standard faces are of Birch but they are available in other woods, some of which are listed below. Vertical edges for all the facings listed will be of the same wood as the faces, with the exception of red cedar edges, which cannot be furnished.

Face woods for J-M De Luxe Doors: Selected birch, rotary-cut or sliced, red or white; gum, selected or unselected rotary-cut; red gum, medium or highly-figured, quarter-sliced; mahogany, sliced, plain, quartered or flat cut, plain, ribbon or strong stripe; red oak, rift-sawn, rotary-cut or half-round; white oak, quarter-sawn, rotary-cut or half-round; knotty pine, sliced; walnut, half-round or sliced, plain, no sap, or rotary cut or quarter-sliced, no sap; and aromatic red cedar, sawn.



JOHNS-MANVILLE FLEXBOARD FLUSH DOORS—FOR INTERIOR OR EXTERIOR USE

ASBESTOS FLEXBOARD-FACED—GRID CORE

The J-M door faced with Asbestos Flexboard is especially adaptable where extreme moisture conditions exist or where a door is desired that will offer resistance to the passage of fire. Standard Flexboard facings are $\frac{1}{8}$ in. thick sheets of asbestos fibre and cement. The rigidity of Flexboard and the hot-press resin bonding aid in keeping these doors in their original straight, flat condition. To combine the advantages of Flexboard with the beauty of wood graining and coloring, any commercial veneer may be applied over the Flexboard.

Specification

General—Doors shall be of size and thickness required. Tolerances: thickness $+0$ in. $-\frac{3}{32}$ in.; width and height $\pm\frac{3}{32}$ in.

Stiles and Rails ($1\frac{3}{8}$ and $1\frac{3}{4}$ In. Thick Doors)—Stiles shall be at least $2\frac{1}{8}$ in. wide and rails shall be at least $3\frac{1}{2}$ in. wide. Both rails and stiles shall be of such thickness that door, after sanding, will meet door-thickness requirements. All material shall be even-textured yellow poplar. Stiles shall be "clear" $\frac{1}{2}$ in. back from exposed edges.

Lock Blocks—Lock blocks shall be sufficiently wide to allow at least $5\frac{3}{4}$ in. from edge of door to inside of the lock block, and shall be placed at both sides of the door and at the center of the stiles. Maximum distance from bottom of

lock block to bottom of door shall be $28\frac{1}{2}$ in.

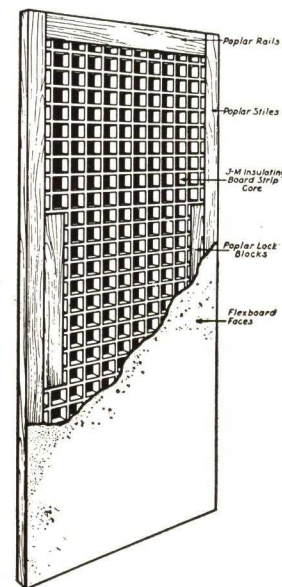
Cores—Cores shall be made in grid pattern. Grid bars shall be of $\frac{1}{2}$ -in. J-M Insulating Board, halved together. Cores shall be of necessary thickness to provide doors of required thickness.

Faces—Faces shall be Johns-Manville Asbestos Flexboard $\frac{1}{8}$ in. thick. Faces shall be steam cured. (See note.)

Adhesive—Entire assembly shall be fabricated with hot-press resin bonding.

Finish—Doors shall be sanded to a smooth, even surface and shall be primed with a coating of aluminum-bronze lacquer.

Note: J-M Flexboard Doors are also made with Decorative Flexboard faces, which may be had in four colors: rose, green, gray or buff. Since Decorative Flexboard needs no finish, the last paragraph of the foregoing specification should be omitted when these faces are desired.



PAINE LUMBER CO. LTD.

Manufacturers of Rezo Light Weight Flush Type Doors

OSHKOSH, WIS.

THE NEW STANDARD OF VALUE IN DOORS

The **REZO** door

TRADE-MARK
(Registered)

The Modern Flush Door

The Paine Rezo Flush door has been introduced in America under U. S. Patent No. 1887814 and has already won recognition as a worthy, modern improvement in door construction. It is a flush type door that measures up to every demand for architectural beauty, has practical utility value and is immune from the usual faults caused by extreme temperatures and atmospheric conditions.

The cross and vertical members of the Rezo door core are alternately grooved and then assembled forming a woven-wood structure. Both sides of the cross members have notched air vents, permitting air to circulate throughout the door after plywood faces have been applied.

This patented interlocking ventilated core affords protection against warping, sagging or swelling, therefore the Rezo door will retain its stability under all conditions.

Moderate in Cost

Savings on hardware—hanging—fitting—sanding—finishing time, produces an installed cost that is no more than common doors.

Outstanding Features

Attractive—Modern smooth surfaces enhance any style of architecture. May be routed, striped, sand-blasted, inlaid or tooled and offers a wide field for creative effort in designing.

Air Conditioned—Continuous air circulation throughout the full length and width of the door prevents swelling, shrinking or sagging. Also provides added insulation against cold, heat or noise.

Strong—Its interlocking grid core carefully mortised and framed together, overlaid with plywood, gives the door unusual strength and rigidity.

Light in Weight—Its patented grid core greatly reduces the weight of the doors. A standard 1 $\frac{3}{8}$ -in. size weighs approximately 30 lbs. Standard hardware services these doors.

All Woods—Birch, oak, gum, walnut, mahogany, etc., to meet any requirement.

Prefitted—Rezo doors are precision made and squared to exact sizes, thus assuring lower installation costs.

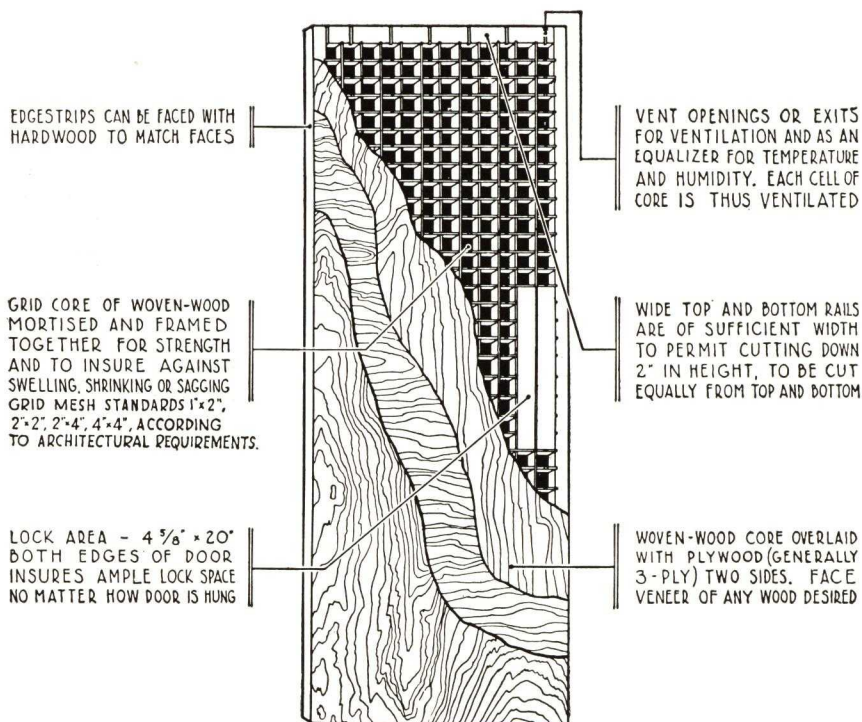
Individually Packed—Each door is paper packaged immediately after sanding operations at factory. This delivers the door, prefitted for the carpenter, sanded ready for the painter, in clean condition and in perfect order.

How to Specify Paine Rezo Doors

Genuine Rezo Doors are manufactured in America under U. S. Patent No. 1887814 by the PAINE LUMBER CO. LTD., Oshkosh, Wis. To insure getting Rezo doors state kind of wood desired for faces and specify that: "All doors shall be Rezo flush type of doors as manufactured by the PAINE LUMBER CO. LTD., Oshkosh, Wis. All Genuine Rezo doors are metal die stamped, top and bottom edges with "U. S. Patent No. 1887814."

Diversity of Uses of Rezo Construction

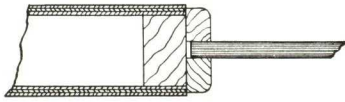
The Rezo construction has unlimited possibilities, and for the building industry can be used for: interior and exterior doors—cupboard doors—fixed and movable partitions—accordion doors—locker doors—fire-resisting doors—panel work, etc.



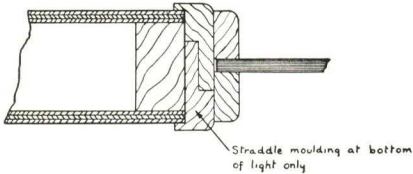
CUTAWAY SECTION TO SHOW CONSTRUCTION
(U. S. Pat. No. 1,887,814)

CONSTRUCTION DETAILS

CONSTRUCTION FOR INTERIOR SASH DOORS

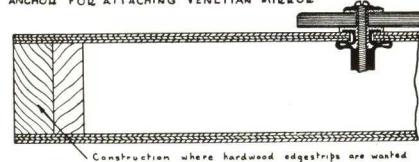


CONSTRUCTION FOR EXTERIOR SASH DOORS

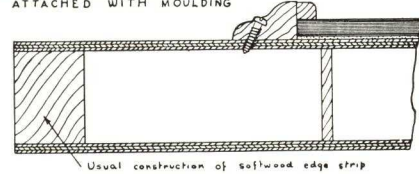


Sash Doors

CONSTRUCTION USING WINGED TOGGLE ANCHOR FOR ATTACHING VENETIAN MIRROR

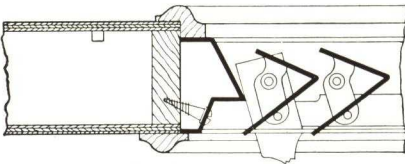


CONSTRUCTION FOR MIRROR ATTACHED WITH MOULDING

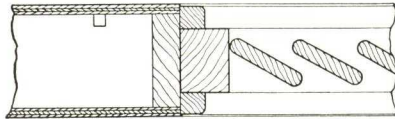


Mirror Doors

CONSTRUCTION USING A STANDARD METAL LOUVER



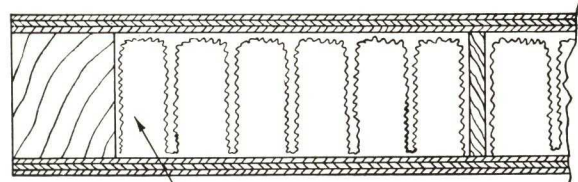
CONSTRUCTION USING A WOOD LOUVER



* Louvers can be any size and located anywhere in the door

Louver Doors

DETAIL FOR SOUND RESISTING DOOR



Cells filled with mineral wool for sound resistance

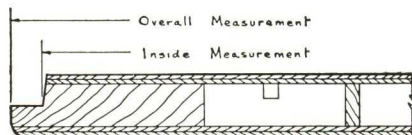
Sound Resisting Door

Rezo Cupboard Door made with framing $2\frac{3}{8}$ " to permit cutting down 2" in width and 2" in length

Rezo Core of White Pine or Basswood

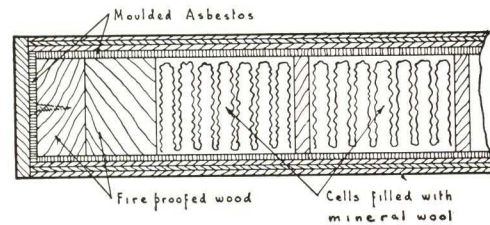
Faces Birch, Oak, Gum, etc

Cupboard Door Thickness $\frac{3}{4}$ ", $\frac{13}{16}$ ", 1", $1\frac{1}{16}$ ", etc. as required



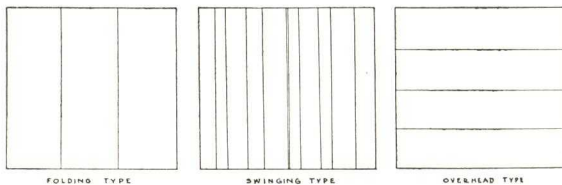
Cupboard Doors

* Detail of Fire Resisting Door on S. S. Normandie according to approved construction of French Underwriters. Details and full particulars upon request.



Fire-Resisting Doors

* Garage doors can be furnished in Rezo construction, in single doors, pairs or sets to accommodate ordinary, overhead or folding type hardware. Weight of Rezo construction about 50% less than ordinary garage doors.



* With the Rezo construction, garage doors can now be designed with surface treatment to harmonize with any style exterior.

Garage Doors



* Weight less than one-half of usual doors. Suitable for various types of hardware. Doors can be made any size or thickness and sound proofed to meet any conditions.

Accordion Doors

THE R. McMILLEN CO.

INCORPORATED 1902

Manufacturers of Hardwood Doors, Pine Doors, Sash and Millwork
OSHKOSH, WIS.

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CHICAGO, ILL., 7942 Green Street—Vincennes 1810

ST. LOUIS, MO., 4533 Tower Grove Place—Prospect 6672

NEW YORK, N. Y., 431 Marlborough Road, Yonkers, N. Y.
PHILADELPHIA, PA., 7117 Wayne Avenue, Upper Darby, Pa.—Boulevard 586

Products and Distribution

VENEERED DOORS of all kinds; PINE DOORS AND SASH; TRIM AND CABINET WORK. We specialize on HARDWOOD VENEERED DOORS. Our products are sold through independent jobbers, wholesale dealers and mills.

Resources and Facilities

A strictly modern plant, equipped with the best of machinery and manned by mechanics of proven skill. Our capacity is in excess of 1200 doors per day.

Our Guarantee

We unconditionally guarantee our product to be of first quality material, carefully seasoned and well manufactured. If made to our specification, we will replace any door or other product which, within two years, is shown to have been defective in either material or workmanship.

We ask only the exercise of ordinary care in the storage and installation of our products.

Samples

On orders totalling 500 or more doors, if desired, a full size typical sample door will be furnished gratis for architects' approval before we manufacture the job. On smaller jobs, such sample may be had at actual cost. Sample corner sections, showing construction, gratis at all times.

Catalogs and Literature

A complete series of catalogs and brochures showing a full line of our products and details of construction may be had by writing our Oshkosh, Wisconsin, office. Also available are "Suggestions for the Proper Storage and Installation of Veneered Doors."

STANDARD SPECIFICATIONS FOR VENEERED DOORS

All doors shall be of size, thickness and design as called for on plans.

Interior Doors of Stile and Rail Type

These shall be constructed of thoroughly seasoned materials redried by door manufacturer before assembly to a proper and uniform moisture content suitable for the climate in which the doors are to be used. All core materials shall be of soft pine glued up of blocks not over 2 inches wide on the face and joints in adjacent rows of core well staggered. Unless otherwise stated, exposed edges shall have a $\frac{3}{4}$ -inch thick strip of the same wood as the face veneer. Veneers for stiles and rails shall be $\frac{1}{8}$ inch before sanding unless otherwise noted. All glue used in the door construction must be a high grade vegetable or water resistant casein glue, equally distributed over the surface and applied under pressure before "chilling." Panels shall be three or five-ply as noted. Joints shall be assembled with hardwood spiral groove dowels not less than $\frac{5}{8}$ x5 inches, joints 6 inches or less to have two dowels with an additional dowel for each additional 3 inches or fraction in width. All joints must be well fitted and all moulded edges smoothly machined. Unless otherwise noted, all doors shall be smoothly machine sanded with "00" sandpaper.

Interior Doors of Flush Type

These shall have cores constructed of vertical blocks not over 2 inches

wide on the face, well glued together with joints well staggered and surrounded with $\frac{3}{4}$ -inch hardwood edge strip on all four edges. All cores shall be of soft pine properly dried and seasoned as described above. Assembled core shall be brought to a uniform surface to which shall be applied a $\frac{1}{8}$ -inch horizontal cross banding extending to edges of door and a $\frac{1}{8}$ -inch before sanding (or a $\frac{1}{2}$ -inch before sanding if preferred by Architect) vertical face veneer. All glue shall be a high grade vegetable or water resistant casein product equally distributed and applied under pressure before "chilling." Unless otherwise noted all flush doors shall be smoothly machine sanded with "00" sandpaper.

Note: In lieu of above, Flush Doors may be made with cores of stile and rail construction, assembled with $\frac{5}{8}$ x5-inch spiral grooved hardwood dowels with cross banding concealed on vertical edges and face veneer not less than standard $\frac{1}{8}$ inch thick before sanding.

Exterior Doors

These shall be made to the same specifications, except that veneers for stiles and rails and flush doors shall not be less than $\frac{1}{4}$ inch before sanding and shall be applied with a high-grade casein water-resistant glue.

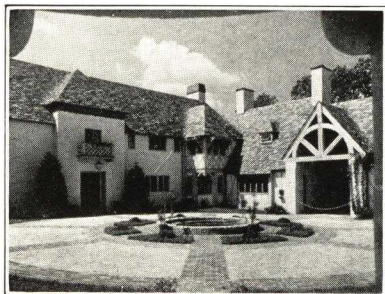
The manufacturers' trade-mark or label shall appear on all doors. All doors shall be as manufactured by THE R. McMILLEN CO., Oshkosh, Wisconsin, or other approved manufacturers.

A FEW RECENT AND REPRESENTATIVE INSTALLATIONS OF McMILLEN DOORS

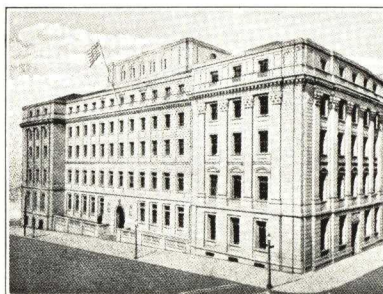
(Architects' name upon request)
Beta Theta Pi Fraternity House, Hanover, N. H.
U. S. Marine Hospital, Baltimore, Md.
Northam Warren Residence, Garden City, L. I.
Colwyn Grade School, Colwyn, Pa.
New York State Hospital, Letchworth Village, N. Y.
Epileptic Hospital, Cambridge, Minn.
E. E. Reed Residence, Deer Isle, Me.
LaRabida Sanitarium, Jackson Park, Chicago, Ill.
Roosevelt Junior High School, Middletown, Ohio.
U. S. Post Office, Trenton, N. J.
U. S. Veterans' Hospital, Augusta, Ga.
Home for Confederate Women, Richmond, Va.

Guggenheim Airship Institute, Akron, Ohio.
Baptist Church, Lake Villa, Ark.
St. Barnabas School, Belmore, L. I., N. Y.
University of Texas (3 Buildings), Austin, Tex.
U. S. Post Office, Fort Worth, Tex.
U. S. Forest Products Laboratory, Madison, Wis.
Ocean Forest Hotel, Myrtle Beach, S. C.
Medical Arts Building, Birmingham, Ala.
U. S. Customs House, Denver, Colo.
Hotel Dempsey, Macon, Ga.
Recital Hall, State College, Bowling Green, Ohio.
Forrest General Hospital, Gadsden, Ala.
U. S. Botanic Gardens, Washington, D. C.
Model Home, Pittsburgh, Pa.

Temple University Hospital, Philadelphia, Pa.
Y. W. C. A. Building, New Haven, Conn.
University of Rochester, Rochester, N. Y.
Christ Church, Winnetka, Ill.
U. S. Veterans' Hospital, Harlencross, Tex.
St. Luke's School, St. Paul, Minn.
Criminal Court House, Chicago, Ill.
King Hotel, Baton Rouge, La.
Albers Residence, Saddle River, N. J.
Bennington College Buildings, Bennington, Vt.
Swedish Covenant Hospital, Chicago, Ill.
Waltham School, Waltham, Mass.
Park Place Hotel, Traverse City, Mich.



Horn Residence, Kansas City, Mo.



U. S. Post Office and Court House,
Baltimore, Md.



Stone Hall, Wellesley College,
Wellesley, Mass.

Doors by **RODDIS**

Guarantee :

Doors made to Roddis specifications are unqualifiedly guaranteed for two years against defective material and workmanship.

Roddis Lumber and Veneer Company

RODDIS LUMBER AND VENEER COMPANY

Marshfield, Wisconsin



RODDIS LUMBER and VENEER COMPANY

MARSHFIELD, WIS.



EXPERIENCE • FACILITIES • RESPONSIBILITY

EXPERIENCE—Established in 1890, Roddis Lumber and Veneer Company has, during its forty-eight (48) years of door-building experience, achieved an enviable reputation for high quality. The Company has, during this period, made doors of every conceivable type of construction and has pioneered in the development of many outstanding improvements, resulting in today's Roddis Guaranteed, Time-Tested, Standard Construction which permits unrestricted latitude so far as the architectural design is concerned.

FACILITIES—Except for certain foreign cabinet-wood logs, Roddis controls all operations from forest to finished product. Roddis experts and woodsmen select trees from Roddis owned timber land, fell them, and cut the logs. Roddis railroads haul the logs to Roddis mills where all lumber is sawn and fully cured for years before cutting into door stock. Roddis mills, manned by experienced tradesmen, are equipped with every modern facility to produce the highest quality veneered doors and plywood.

RODDIS LUMBER & VENEER CO.

GUARANTEE BOND

Know All Men By These Presents, That the Roddis Lumber & Veneer Co. with office in the city of Marshfield in the State of Wisconsin, is held and firmly bound unto _____ (his) (their) heirs or assigns in the penal sum of _____ (\$ _____) for the payment of which it binds itself, its successors and assigns.

The Condition of the Above Obligation is Such That, Whereas the said _____ has purchased of the Roddis Lumber & Veneer Co. _____ doors for _____ of _____, said doors manufactured by the Roddis Lumber & Veneer Co. of Marshfield, Wis., and in consideration of such purchase said company guarantees the said doors for two years from date of delivery against defective material and workmanship, and agrees to repair at its own expense any such defects that may be found in such doors during said period of two years, or furnish new doors to replace such defective doors of which it may have notice within said time.

Now, Therefore, If the said Roddis Lumber & Veneer Co. shall properly repair any defects in material and workmanship that may be found in the said doors or any of them within two years from date of delivery, or shall furnish new doors for any defective doors of which it may be notified before the expiration of the said two years, then this obligation shall be void, otherwise to remain in full force.

In Witness Whereof: The said Roddis Lumber & Veneer Co. has caused these presents to be signed by its president on this _____ day of _____ 193____.

RODDIS LUMBER & VENEER CO.

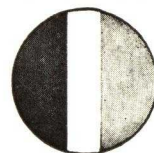
Per _____ President

Attest: _____

RESPONSIBILITY—The Roddis Lumber and Veneer Company will assume full responsibility for its products and will furnish its Guarantee Bond where the construction of its doors follows its recommended standards as hereinafter established. This in no sense need be construed as conflicting with the architect's prerogative of design control.

SERVICE—Roddis distributors and experienced representatives are located in all principal cities of the United States. Complete information regarding Roddis products, samples, detail drawings, consultation and advice relative to unusual problems and comparative cost data will be furnished promptly when requested.

IDENTIFICATION — Every Guaranteed Roddis Door is distinctly and permanently marked for identification with the Roddis red, white, and blue hard wood dowel inserted in the edge—a further evidence of Roddis responsibility.



• RODDISCRAFT DOORS •

WATERPROOF FLUSH VENEER CONSTRUCTION

RADICALLY NEW PROCESS OF FABRICATION — Flush door construction has been improved from time to time during the past fifty years. The first flush doors produced were made with animal or vegetable glue. About twenty years ago Roddis Lumber & Veneer Company perfected a waterproof glue for fabricating U. S. Government aircraft plywood and pioneered in the use of this "wet" glue for flush doors—a forward step in improved door construction.

Now, after twenty years' experience with waterproof adhesives, this company is able to announce the perfection of a waterproof "dry glue" film that is the greatest improvement in flush door construction in half a century. The bond is produced by the simultaneous application of heat and pressure without introducing water into the dry lumber and veneers and is known as the Roddiscraft process. The kiln dried, glued-up door core, crossbandings, and face veneers are assembled with thin sheets of dry glue laid between core, crossbandings, and face veneers. The entire assembly is placed in a hot plate press where, under tremendous pressure and heat, the glue films are fused and the five separate plies are literally welded into one solid block with four permanently waterproof films over the entire door area. No moisture has been added to the door, and no moisture can penetrate the waterproof glue film after completion.

THE GLUE—PERMANENTLY WATERPROOF — The "dry-glue" process has proven its practicability and permanently waterproof qualities in Europe over a period of ten years. Only the cost of foreign-made, patented equipment has prevented its more general use in America. It is inert to water or any known chemical solution.

THE CORE—Roddis Cores are of selected, narrow pine strip-blocks **all running in one direction**, waterproof-glued together under pressure, and scientifically kiln-dried to the proper moisture content — a time-tested Roddis Standard Construction.

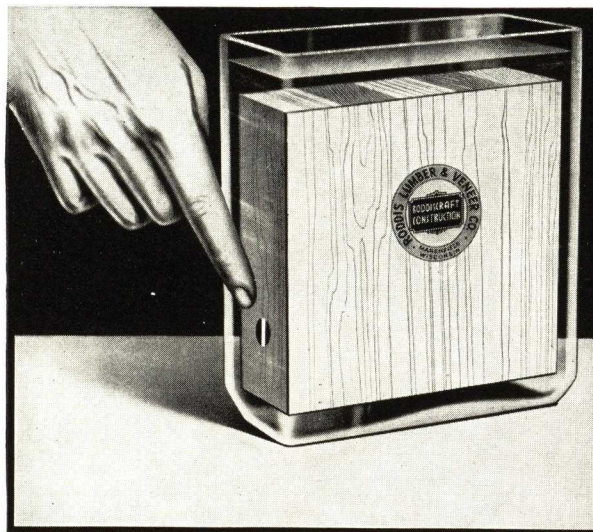
THE CROSSBANDING — Roddis hardwood crossbanding, $\frac{1}{16}$ inch thick, is cut from Roddis logs in Roddis veneer mills, carefully selected for quality, strength, freedom from imperfections, and machine dried to the proper moisture content before use.

THE FACE VENEERS—Most face veneers for Roddis Doors are cut from specially selected Roddis logs in Roddis veneer mills. For foreign veneers, selected flitches are purchased and the veneers carefully matched in the Roddis mills. All face veneers are scientifically cured and machine dried.

WHY STANDARD THICKNESS FACE VENEERS ARE BEST — Solely in the interest of better construction backed by its forty-six years of door-building experience, the Roddis Company has incorporated standard thickness face veneers (as opposed to $\frac{1}{8}$ inch and thicker veneers) as an important element of its Standard Construction carrying its unqualified guarantee. The following factors are salutary: (1) The thickness of the face veneers in no way affects the appearance or limits the finish; (2) The "dry-glue" fabrication so permanently and inseparably bonds the face veneers to the tough hard wood crossbanding that they function as a unit, resulting in a strong, durable door surface; (3) Obviously the less moisture absorbing wood exposed outside the protective waterproof glue film the better; (4) Due to the reduced wood thickness, the edges of matched or joining veneers will not shrink, swell or cup; (5) More perfect book-leaf matching can be secured with Standard Thickness face veneers than with thicker veneers.

RODDIS FINISHING SERVICE—For more than thirty years the Roddis Company has maintained a high quality finishing department for the convenience of Roddis Woodwork customers. This department is

equipped with modern machinery, handled by experts competent to match perfectly the architect's samples. Doors which are dry and properly cleaned and prepared at the Roddis plant for finish should always be protected against moisture absorption and dirt by priming, if to be painted, or by staining, filling, and shellacing before they leave the factory. The work of final painter's finish over the priming coat and varnishing over the shellac should invariably be done at the job. In the case of inlaid doors which are stained, the staining should always be done before inlaying to assure clear, well defined lines. The cost of this protective, preliminary priming and finishing is decidedly moderate.



MAKE YOUR OWN TEST

THE COMPANY WILL FURNISH A SECTION OF RODDISCRAFT FLUSH VENEER DOOR CONSTRUCTION TO ANY ARCHITECT TO DEMONSTRATE ITS PERMANENT WATERPROOF QUALITIES. IMMERSE THE SECTION FOR ANY LENGTH OF TIME IN A RECEPTACLE CONTAINING WATER.

• RODDIS FLUSH VENEER DOORS •

Outstanding Features

WATERPROOF CONSTRUCTION — Roddis five-ply flush veneer doors (core, crossbandings, and face veneers) when made in accordance with RODDIS STANDARD CONSTRUCTION are permanently waterproof and resistant to decay, mildew or fungi. The pine cores are fabricated under pressure with special casein waterproof glue. The exposed top and bottom edges of the soft wood core as well as the sides are sealed with hard wood edge strips. Crossbandings and face veneers are glued to both sides of the kiln dried core by the "dry-glue" process, forming two complete, permanently waterproof glue films over the entire area of each face.

STAVED CORES — The cores are made up from narrow, uniform width, clear pine strips of varying lengths assembled with the grain all running in the same direction (from top to bottom of the door). Hard wood edge strips are provided at top, bottom, and two sides—an exclusive Roddis feature. Core strips and edge strips are glued together under pressure with casein waterproof glue. After gluing, the cores are kiln dried, seasoned to atmospheric conditions and planed smooth to receive the crossbanding.

CROSSBANDINGS — Selected Roddis hard wood crossbandings, $\frac{1}{16}$ inch thick, laid with the grain run-

ning at right angles to the core grain, are glued to both sides of the core by the Roddiscraft waterproof "dry-glue" method (pressure and heat).

FACE VENEERS — Standard thickness face veneers (see below), laid with the grain running normally at right angles to the grain of the crossbandings (from top to bottom of the door), are glued over the crossbandings by the Roddiscraft waterproof "dry-glue" method. Face veneers may be of domestic or foreign woods; sliced or rotary cut; plain or figured; matched or in combination patterns; with or without inlays at the designer's discretion. Samples of obtainable plain and figured woods will be submitted for selection.

INTERIOR AND EXTERIOR DOORS — The Roddis Standard Construction 5-ply flush veneer doors as described above are adapted for both exterior and interior use. No special construction is required for exterior exposure to moisture or sun.

TESTS — The Company prefers that the architect conduct his own tests as evidence of the waterproof quality of the Roddis Construction. A sample door section will be sent for this purpose on request. See illustration of suggested water test on page 2.

Specifications

INTERIOR and EXTERIOR FLUSH VENEER DOORS

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those clauses which apply. Words in bracketed bold face type are selective.

(1) **GENERAL** — All doors (so indicated on door schedules) shall be 5-ply Flush Veneer Doors made by Roddis Lumber and Veneer Company, Marshfield, Wisconsin.

(1a) Doors shall be constructed in strict accordance with Roddiscraft Standard Construction covered by their two-year Guarantee Bond.

(1b) Doors shall be of sizes and thicknesses called for (in door schedules) (on plans).

(2) **CORES** — Cores shall be made of clear pine strip-blocks of uniform width assembled with the grain running parallel and vertically (from top to bottom of door). Cores shall be railed on all four edges with $\frac{3}{4}$ inch wide hard wood strips. Those on side edges to match face veneer. The whole assembly shall be glued under pressure with casein waterproof glue and thoroughly kiln dried, seasoned and planed smooth.

(3) **CROSSBANDINGS** — Crossbandings of $\frac{1}{16}$ inch thick, thoroughly kiln dried, hard wood veneer shall be laid with the grain at right angles to that of the core and glued by the waterproof "dry-glue" process (pres-

sure and heat) to both sides of the core. Crossbanding shall run full to the four edges of the door.

(4) **FACE VENEERS** — Thoroughly kiln dried, standard thickness, (specify wood) face veneers (of woods hereinafter specified), laid with the grain at right angles to that of the crossbandings, shall be glued by the waterproof "dry-glue" process (pressure and heat) to both faces of the door and belt sanded smooth.

(4a) Face veneers shall be as follows:

Note: Here describe any special requirements of species, figure, pattern, inlays, etc. If more than one type is required, specify each separately and locate here or by reference to door schedules or special detail drawings.

(5) **GLAZING** — (Not by door manufacturer) — All glass for glazed doors shall be (specify).

(5a) Glazing shall be accomplished (in accordance with details), using removable wood glazing moulding set in lead or varnish to seal against moisture absorption.

(5b) Where called for (on door schedules) (on plans), doors shall be equipped with (specify grade and type) (specify size) mirrors in accordance with details.

(6) **FINISHING** —

Note: Here specify preliminary finishing to be applied by the door manufacturer. See page 2.

STANDARD FACE VENEERS

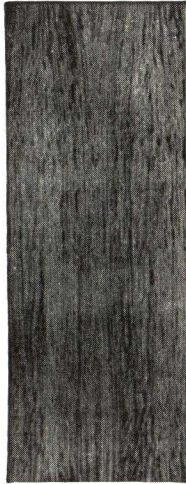
Standard thickness of face veneers before sanding: Rotary cut or Plain Sawn Birch, Oak, or Gum, $\frac{1}{20}$ in.; White Pine, $\frac{1}{16}$ in.; Quartered Oak, $\frac{1}{20}$ in.; Quartered Gum, $\frac{1}{24}$ in.; Sliced Walnut, Mahogany, or foreign woods, $\frac{1}{28}$ in.

RODDIS FLUSH VENEER DOORS

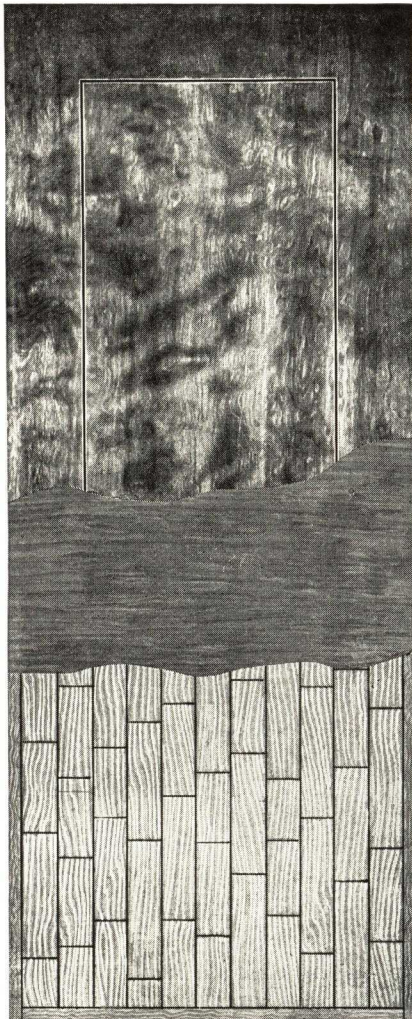
Typical Designs



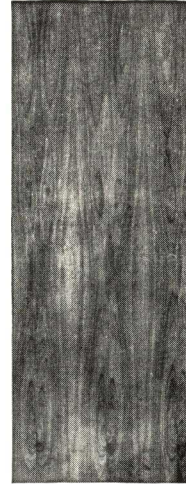
Prima Vera



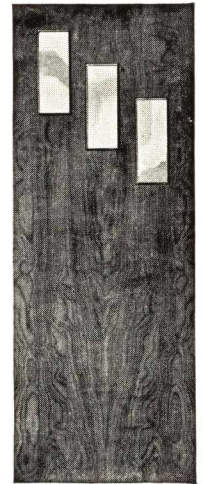
Avodire



Roddis Construction



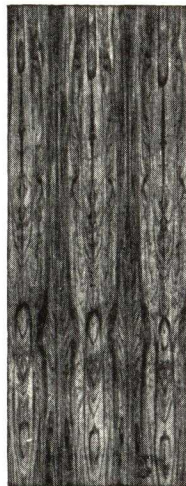
Walnut



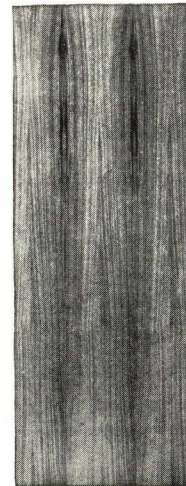
Curly Birch



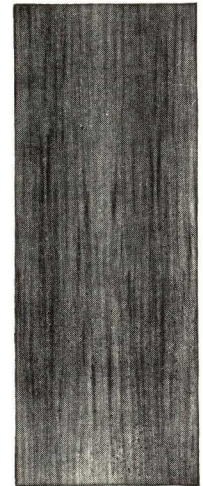
Red Birch



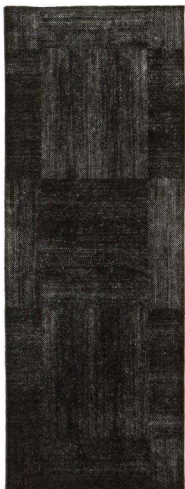
Qtd. Gum



Tigerwood



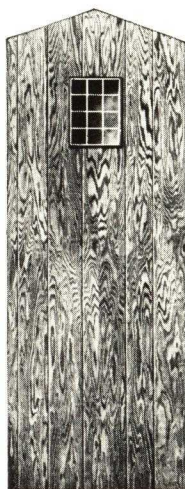
Mahogany



Qtd. Walnut



Rotary Ash



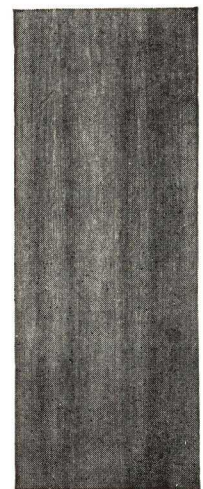
White Oak



Rotary Elm

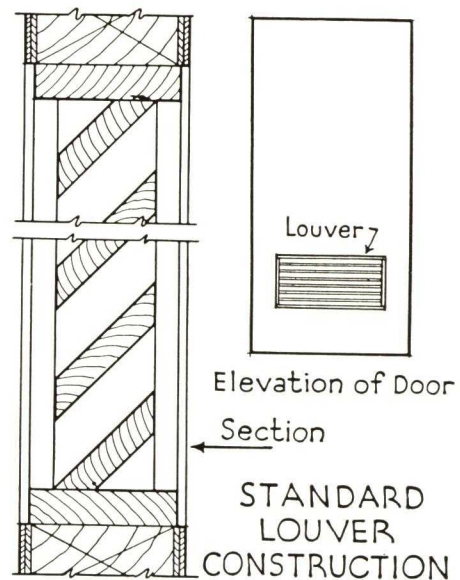
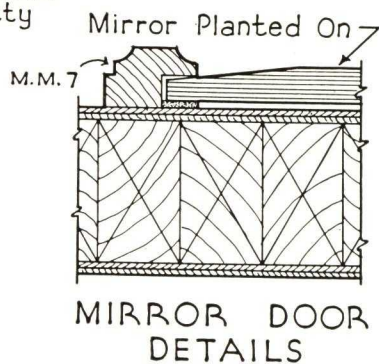
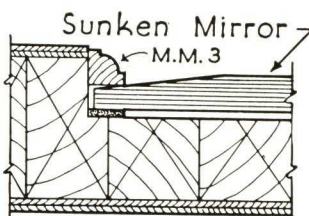
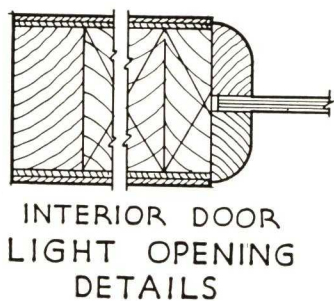
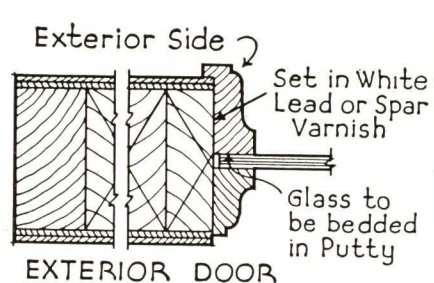
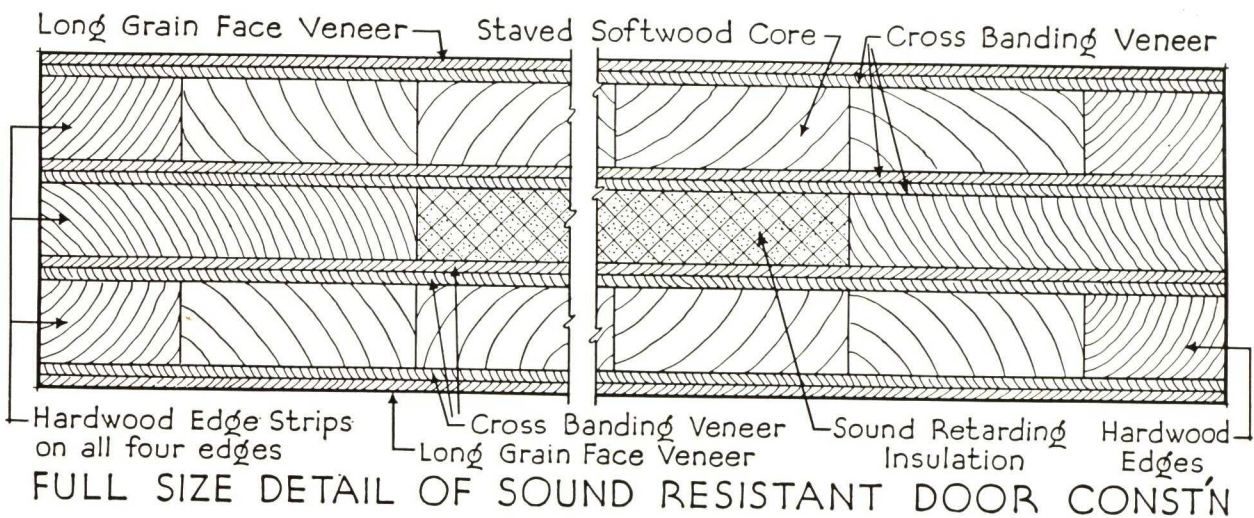
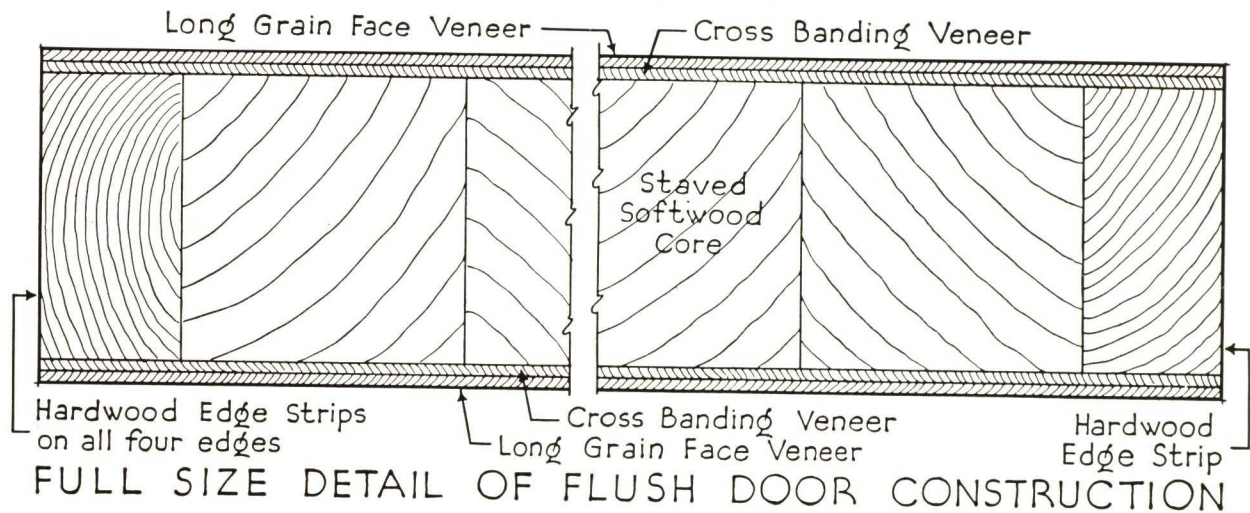


Oriental Wood

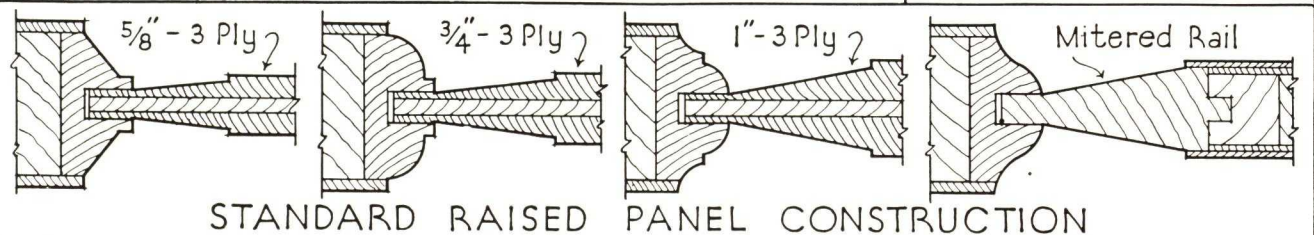
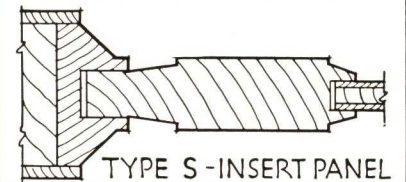
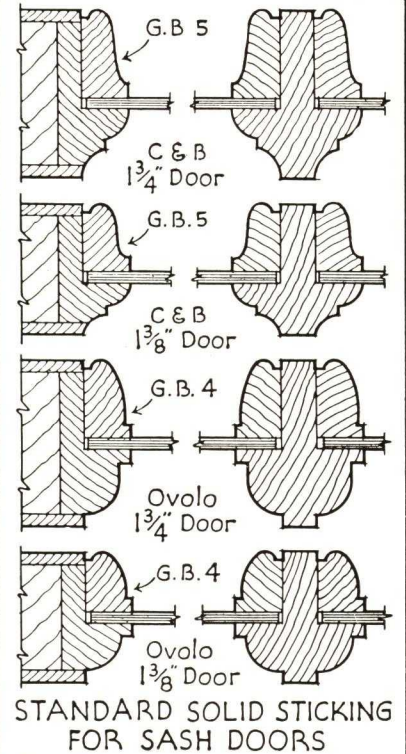
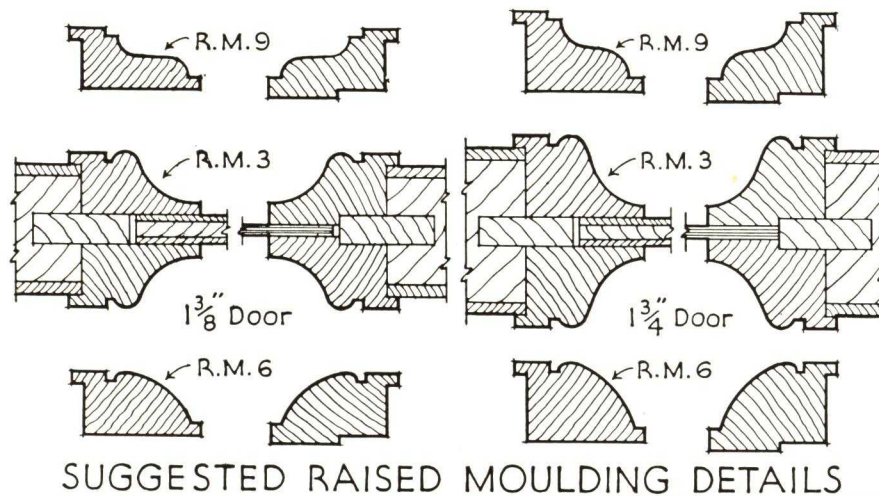
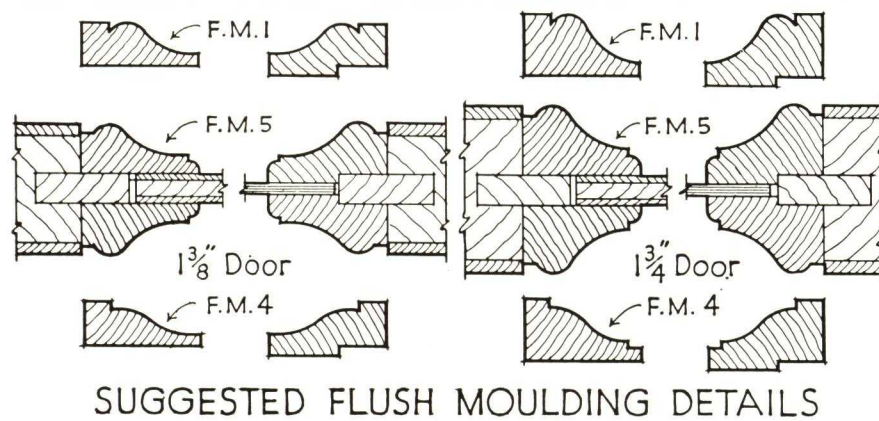
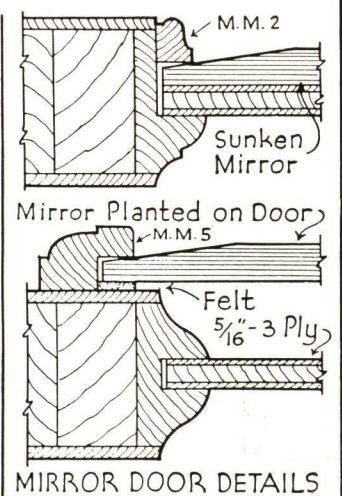
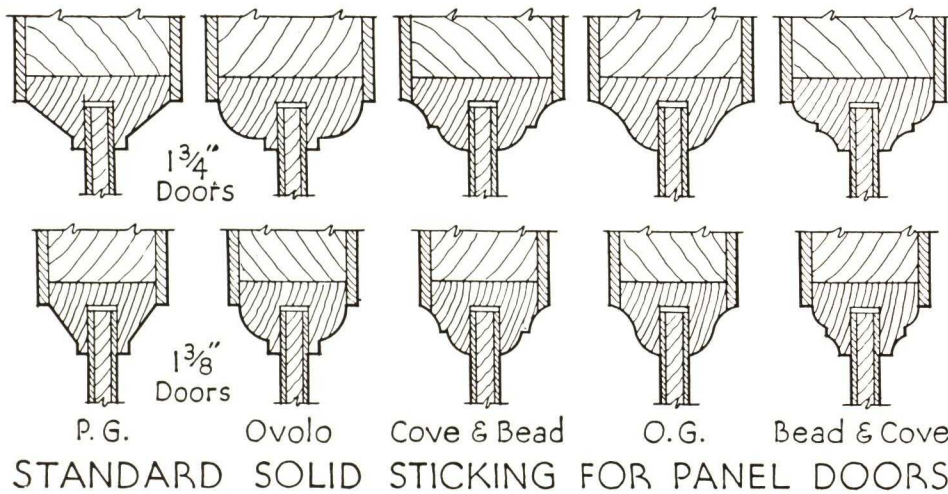


Rift Sw. Oak

DETAILS OF FLUSH DOORS



DETAILS OF PANEL DOORS



• RODDIS STILE and RAIL DOORS •

Outstanding Features

CUSTOM BUILT—Roddis Stile and Rail Doors, where desired, are custom built accurately following the architect's special detail. Stile and rail dimensions, panel arrangement and detail, and panel mouldings may all vary from standard. Only major construction features, which in no way affect the design, need follow Roddis Standard Construction to carry the Roddis two-year Guarantee. Obviously, the use of standard dimensions, panel thicknesses, and moulding profiles will effect economies and hasten deliveries.

STILE AND RAIL CONSTRUCTION—Stiles and Rails are 3-ply construction. Cores are identical in material and construction to those described on page 3 for flush veneer doors. The exposed door edges, top, bottom and two sides are edged with hard wood strips (including top and bottom of side stiles on exterior doors). Since there is no crossbanding, $\frac{1}{8}$ inch thick face veneers are glued directly over the core (by the Roddiscraft waterproof "dry-glue" process on exterior doors only). Stiles and rails are doweled together.

PANELS—Standard interior door panels are flat 3-ply construction, $\frac{5}{16}$ inch thick. Those for exterior doors are flat 5-ply, $\frac{3}{8}$ inch thick. Face veneers for both interior and exterior doors are of standard thicknesses. Special laminated panels of other than standard thicknesses, either flat or raised, are obtainable.

veneers—The same choice of domestic or foreign veneers as described on page 3 for flush veneer doors is obtainable for stile and rail doors.

EXTERIOR DOOR WATERPROOF CONSTRUCTION—Cores for stiles and rails are constructed like those for flush veneer doors. Tops, bottoms, and sides of the doors, including the side stile ends, are sealed with hard wood edging strips. Stile and rail face veneers are applied by the waterproof "dry-glue" method (pressure and heat). Panels are five-ply construction glued by the waterproof "dry-glue" process. This recommended waterproof construction costs but slightly more than the customary construction.

Specifications

INTERIOR and EXTERIOR STILE and RAIL DOORS

Note: Notes are explanatory or advisory only and should not be included in the specifications.

Note: Select and include only those clauses which apply. Words in bracketed bold face type are selective.

(1) **GENERAL**—All doors (so indicated on door schedules) shall be Stile and Rail Doors made by Roddis Lumber and Veneer Company, Marshfield, Wisconsin.

(1a) Doors shall be constructed in strict accordance with Roddis Standard Construction covered by their two-year Guarantee Bond.

(1b) Doors shall be of sizes, thickness, and design called for (in door schedules) (on plans) (and) (as detailed).

(1c) All doors shall be belt sanded smooth for finish.

(2) **STILES AND RAILS**—Cores shall be of clear pine strip-blocks assembled with the grain running parallel and lengthwise of the member. Outside core edges shall be edged with $\frac{3}{4}$ inch wide hard wood strips, matching face veneer wood, on door side stiles (including tops and bottoms on exterior doors) and on top and bottom rails. The whole core assembly shall be glued under pressure (with casein waterproof glue for exterior doors) and thoroughly kiln dried and planed smooth.

(2a) Where the panel and moulding design require it, the panel edge of stiles and rails shall be trimmed with face veneer wood.

(2b) Face veneers shall be glued (by the waterproof "dry-glue" process on exterior doors) to both sides of the core.

(2c) For flush or raised moulded doors all stiles and rails shall be plowed and furnished with hard wood panel splines glued to the core construction.

(2d) All stiles and rails shall be set together in glue with 9/16 inch hard wood dowels spaced approximately 3 inches apart on centers.

(3) **PANELS**—(Except for the cores of Staved-core panels) all flat panels for exterior doors shall be fabricated by the waterproof "dry-glue" process, the grain of alternate plies of veneer crossing in opposite directions.

(3a) Interior door panels shall be flat 3-ply, 5/16 inch thick.

(3b) Exterior door panels shall be flat 5-ply, $\frac{3}{8}$ inch thick.

(3c) Panels shall be constructed as follows:

Note: Here describe and locate special flat or raised panel construction at variance with standards as above in (3a) or (3b).

(3d) All panels shall be loose and in no way attached to stiles, rails, or mouldings.

(4) **veneers**—Concealed laminated panel veneers shall be of selected, kiln dried hard wood.

Face veneers shall be thoroughly kiln dried of (woods called for in door schedules) (woods specified hereinafter) (specify wood), $\frac{1}{8}$ inch thick (before sanding) for stiles and rails and standard thickness for flat panels.

(4a) Face Veneers shall be as follows:

Note: Here specify and locate the various veneers selected. For standard thicknesses see page 3.

(5) **PANEL MOULDINGS**—Panel mouldings shall be (solid stuck) (flush) (raised) of wood (to match stile and rail face veneers) (specify) (made in accordance with details).

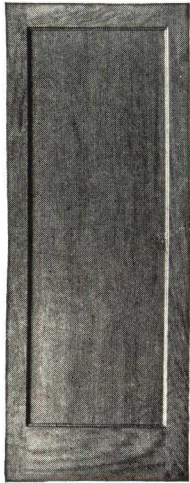
(5a) Panel moulding shall be glued and bradded to the stiles and rails only—not to the panels.

(6) **GLAZING**—**Note:** See paragraph (5), page 3.

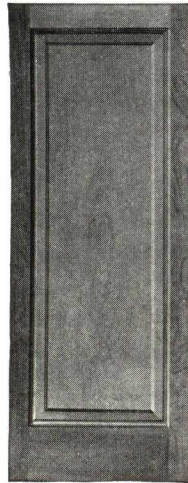
(7) **FINISHING**—**Note:** See paragraph (6), page 3.

RODDIS STILE and RAIL DOORS

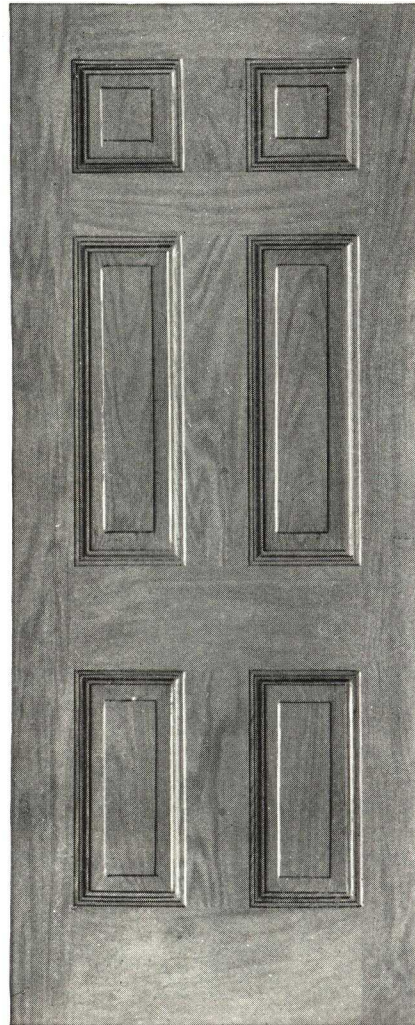
Typical Designs



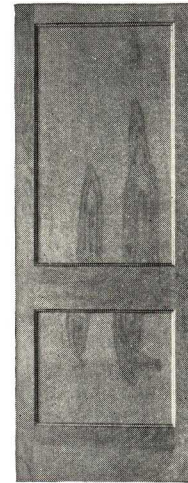
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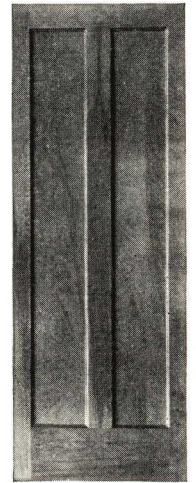
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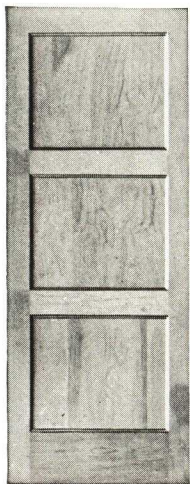
Type L—R.P.—F.M.



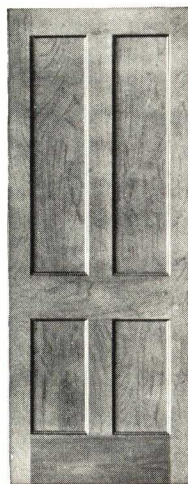
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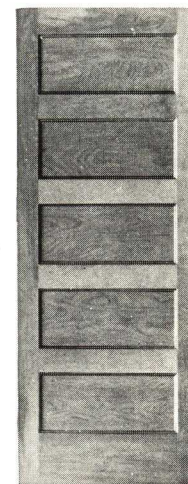
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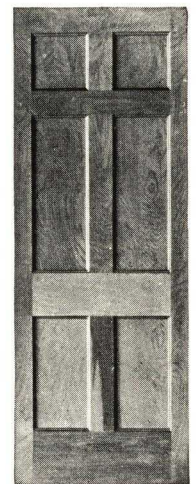
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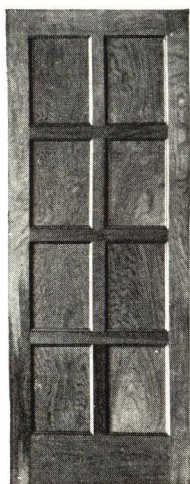
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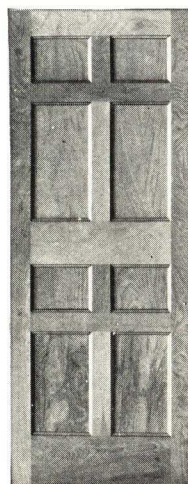
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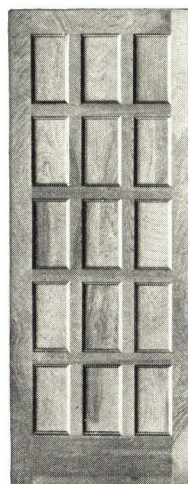
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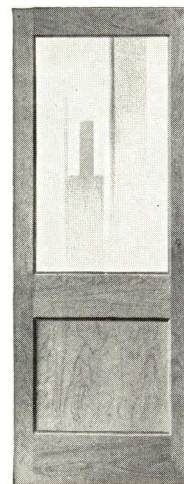
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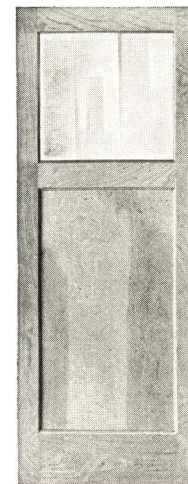
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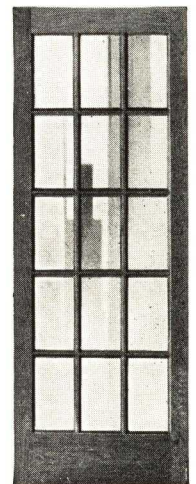
Type O



Type B-B

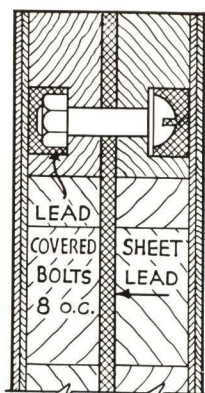
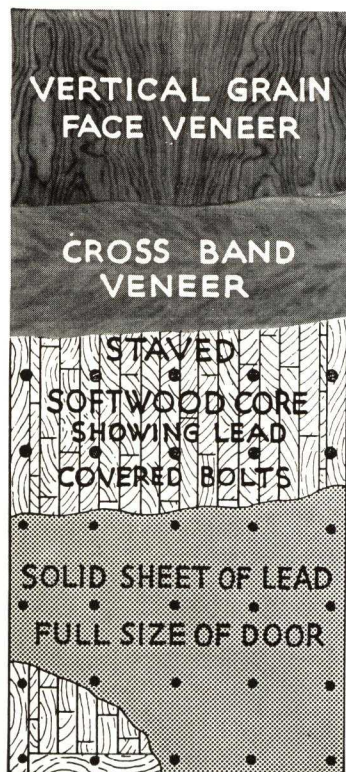


Type O-O



A-A 15 Lt.

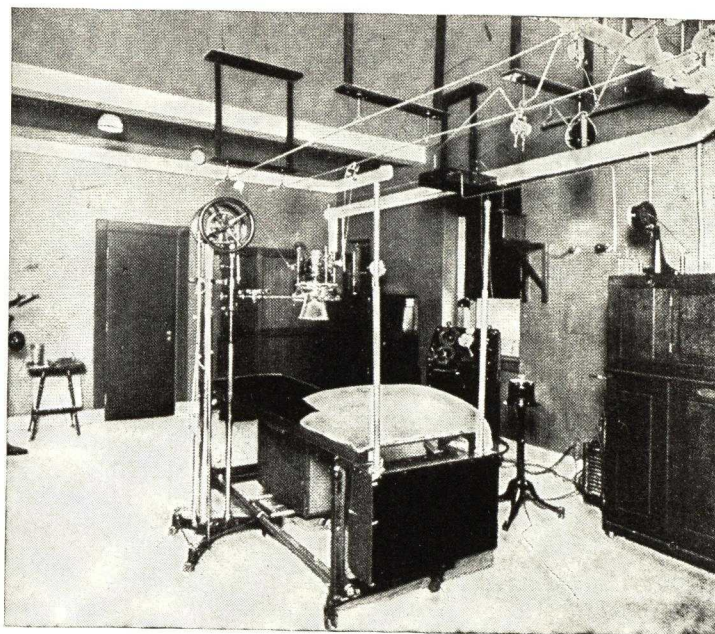
RODDIS X-RAY DOOR



The Roddis X-Ray Door is lighter and less cumbersome than the usual door of this type. In appearance and finish it matches the standard Roddis Flush Veneer Door.

The Roddis X-Ray Door was designed for the Roddis Company by a prominent architect specializing in hospital buildings. This door functions like other X-Ray doors but is not as heavy, awkward, and unsightly in appearance as the usual door of this type.

The Roddis X-Ray Door is equipped with a thick, continuous sheet of lead set midway between a divided wood core. The lead is securely held in position with counter-sunk, lead-covered through bolts, spaced 8 inches on center. Otherwise the Roddis X-Ray Door



is identical in all respects with the standard Roddis Flush Veneer Door described in detail on page 3 and carries the Roddis two-year Guarantee. The divided pine core, edged on all sides with hard wood edging strips, fabricated with waterproof glue, is the same. Crossbandings and face veneers secured together and to the core by the waterproof "dry-glue" process are the same. Consequently, the X-Ray doors match in appearance and finish the doors used elsewhere in adjoining parts of the building.

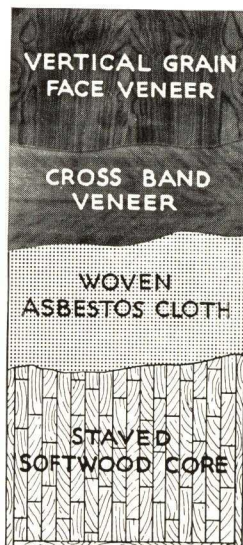
The Roddis X-Ray Door has been used in hospitals throughout the United States selected for its efficiency and outstanding construction and appearance features by discriminating architects.

RODDIS FIRE RESISTANT FLUSH DOORS

PROTEX FLUSH DOORS—Roddis Protex Flush Doors are built to order. Over each side of the soft wood core is applied a sheet of woven asbestos cloth. Over these fire-resistant membranes are applied the Roddis standard crossbandings and face veneers. The door construction, other than the introduction of the two layers of woven asbestos cloth between the core and crossbandings, is exactly the same as that described in detail for Roddiscraft Flush Veneer Doors on pages 2 and 3. Their appearance is the same, they take the same finish, and they have the same waterproof qualities. Consequently, they are covered by the same Roddis two-year Guarantee as shown on page 1.

FIREPROOFED WOOD CONSTRUCTION

—The Building Codes in some cities re-



quire that doors for stairways and similar locations be made of fireproofed wood. In this construction the woven asbestos cloth included in the construction of the Protex Flush Door is not required. Roddis Flush Veneer Doors can be furnished to pass these ordinances with the core, crossbandings, and edge strips treated to make the wood fireproof. Face veneers 1/16 inch thick or thinner, such as are used in Roddiscraft doors, need not be fireproofed. (Where face veneers are over 1/16 inch thick, they too must be fireproofed. They cannot be finished with ordinary stains). The reason these doors are accepted as fireproof is that the chemically treated wood gives off, when heated, a non-inflammable gas which forms a coating excluding the oxygen.

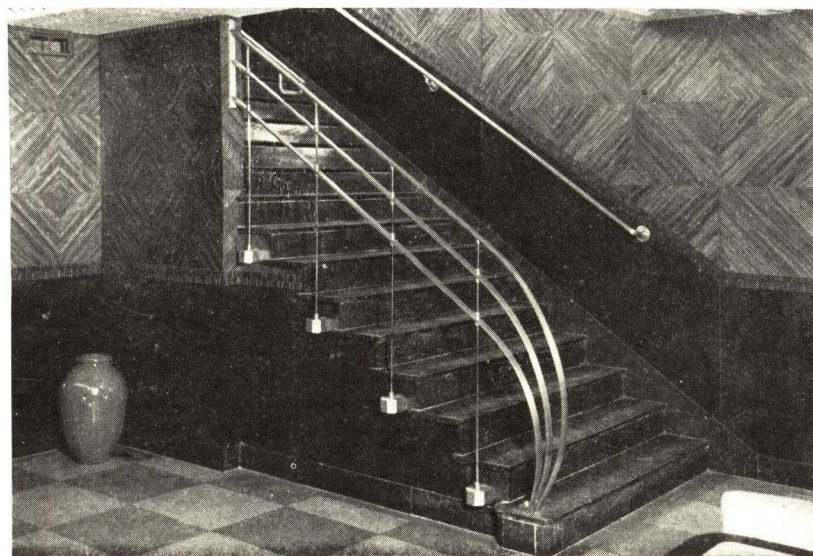
RODDIS WAINSCOTING

CONSTRUCTION—The fabrication of Roddis Wainscoting follows closely the procedure of Roddis veneered doors. The wainscoting is made by the same experienced craftsmen and from the same selected stocks as Flush Doors. Wainscoting may be obtained in any design made to the architect's details in any wood—domestic or foreign, selected for color, figure, and continuity around the room. Flush doors and adjacent wainscoting can be made with face veneers from the same flitch to insure perfectly matched woodwork.

Cores are built up of seasoned, narrow strip-blocks of Northern Basswood or clear Pine, glued together in clamps and allowed to thoroughly season before being planed to accurate thickness. Crossbandings are of selected, machine-dried hardwood veneers. Face and back veneers applied over crossbandings are of standard thickness (see page 3). Unexposed back veneers are of sound reject veneers. The standard thickness for wainscots is $\frac{1}{4}$ inch.

FABRICATED WAINSCOTING—Roddis experience and facilities are unsurpassed for the production of high quality wainscoting, fabricated and finished at the factory. Trained craftsmen will estimate the cost of the job from the architect's plan and specifications, and, if desired, will recommend and submit samples of face veneers to carry out the architectural design. Each piece of wainscoting can be cut at the factory to exact size and form, rabbeted, beveled, bored for countersunk screw holes, light openings cut in, etc., ready for installation without further fitting at the job.

The backs of panels and all edges can be shellacked to seal the wood against moisture absorption and the faces completely finished except for the final varnish or lacquer coats. This company recommends that the final coat shall always be applied by the painting contractor after the wainscoting is completely installed. Each panel is numbered on the back to show location for continuity of face veneers.



THE GLUE—Roddis wainscoting can be manufactured by either the "wet-glue" process or by the Roddiscraft waterproof "dry-glue" process.

Cores for either process are made up from narrow strips, glued together under pressure with casein waterproof glue. After gluing, the cores are kiln dried, seasoned to atmospheric conditions, and planed smooth to receive the crossbanding. Selected hardwood crossbandings, $\frac{1}{16}$ in. thick, laid with the grain running at right angles to the core grain, are glued to both sides of the core. Standard thickness face veneers (see page 3), laid with the grain running normally at right angles to the grain of the crossbanding, are glued to the crossbanding.

In the "wet-glue" process the crossbandings and face veneers are glued with vegetable or stainless glue, and assembled under pressure in a cold hydraulic press, and the glued up panels are seasoned in a dry kiln. In the Roddiscraft waterproof "dry-glue" process the crossbandings and face veneers are glued with dry glue film and fused together under simultaneous application of heat and pressure.

TO SPECIFY—Follow specifications for Flush Veneer Doors as given on page 3.

Note that cores are railed on only such edges as are exposed. Unexposed back veneers are sound rejects. Exposed face veneers are selected. Standard wainscot thickness is $\frac{1}{4}$ inch.

Specify that wainscots shall be factory fitted in units easily handled and erected. Specify that wainscots shall be factory finished on faces, backs, and edges except for final coat.

Doors by **RODDIS**

Guarantee :

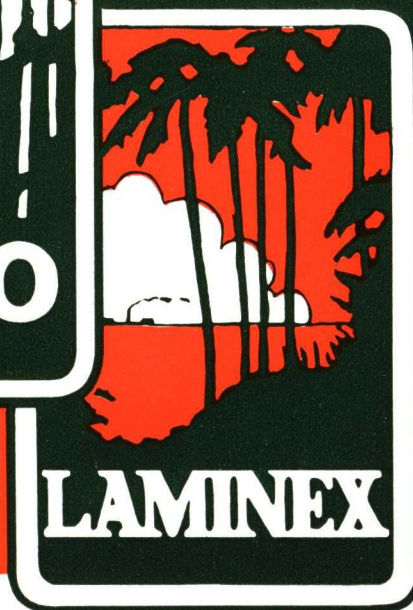
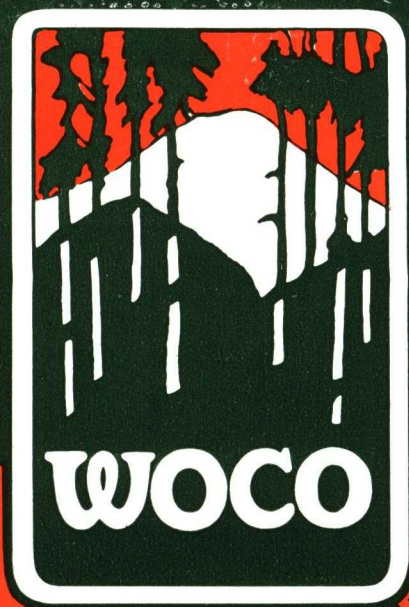
Doors made to Roddis specifications are unqualifiedly guaranteed for two years against defective material and workmanship.

Roddis Lumber and Veneer Company

RODDIS LUMBER AND VENEER COMPANY

Marshfield, Wisconsin





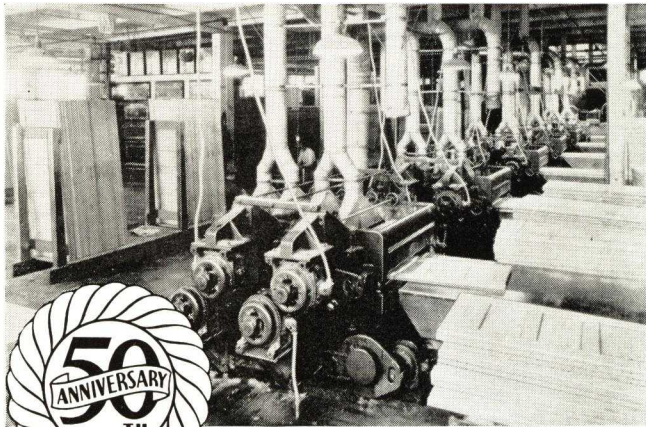
DOORS

The Country's Most Complete Line of Doors
OVER 300 DESIGNS

C A T A L O G 3 9

WHEELER OSGOOD SALES CORPORATION

THERE IS A WHEELER OSGOOD WOCO OR LAMINEX DOOR FOR *Every Requirement*



The durable construction and excellent finish of LAMINEX and WOCO Doors are made possible by advanced design and the use of modern equipment; part of which is the largest battery of 8-drum, motor-driven sanders in the world, shown above.

Design, Equipment, Manufacturing Capacity.

Fifty years of designing to meet all door requirements—manufacturing to assure maximum economy and satisfaction—and a production record of **over 27 million doors** are behind the complete line of Wheeler Osgood products.

As the factory is located "next door" to the great Douglas Fir forests, carefully selected virgin growth timber is readily available for scientific kiln drying and further processing.

To complete the line of products now offered, Wheeler Osgood utilizes the resources of its Philippine connections, thus assuring an adequate supply of Philippine hardwoods.

The use of adequate, modern equipment assures high quality; it also permits the production of doors in the quantities which provide exceptional economies to the builder.

TWO TYPES OF WHEELER OSGOOD DOORS.

Wheeler Osgood doors all carry one of two trade-marks—either WOCO or LAMINEX. All Wheeler Osgood doors have 10 points of superiority, yet they are manufactured under two separate construction principles—each being recognized as best suited for its individual requirement.

WOCO TYPE. WOCO Doors are built with solid stiles and rails. They conform to rigid standards of workmanship and materials. All members of the doors are cemented together with water-resistant cement, and the use of more and larger dowels in WOCO Doors gives them greatly increased strength. Panels are 3-ply Laminex. WOCO Doors are available in a range of designs wide enough to meet virtually any requirement for either interior or exterior use.

LAMINEX TYPE. LAMINEX Doors are built by our special process of construction—one embodying the principle of lamination. The grain of the adjoining sections is so "crossed" that it equalizes all expansion and contraction, and holds the whole in check, for wood cannot shrink in length and the LAMINEX cement is stronger than the wood. LAMINEX Doors are furnished in both vertical and flat grain stiles and rails.

GUARANTEED DOORS. Both WOCO and LAMINEX are guaranteed doors. Be sure that the WOCO and LAMINEX guarantee label is on each door when it is delivered. The careful selection of raw materials and craftsmanship construction of genuine WOCO and LAMINEX Doors are further assurance of satisfaction and years of trouble-free service.

CO-OPERATION WITH ARCHITECTS. To architects, engineers, contractors, and owners, Wheeler Osgood Sales Corporation freely offers its services in planning efficient application and use of any of their products. Samples and further details are available on request.

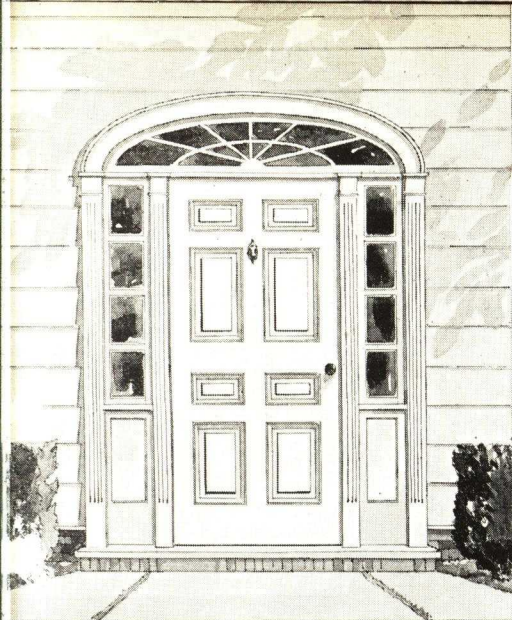
27 million doors offer testimony to the satisfactory service provided by these Wheeler Osgood products. The preference for WOCO and LAMINEX Doors has been maintained for 50 years



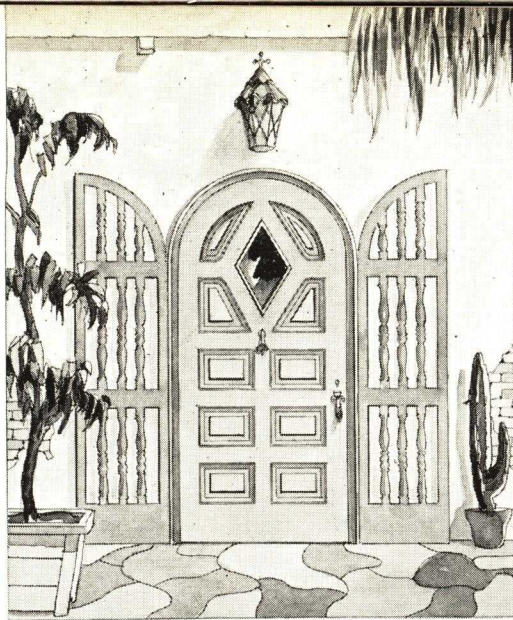
because of their 10 points of superiority: (1) Absolutely square—no sagging. (2) No loose or torn grain. (3) Perfect, uniform distribution in dowel holes and corner joints. (4) Smooth, clean mouldings around panels—no ragged edges. (5) No warping or swelling in Laminex construction; and maximum resistance in Woco solid designs. (6) No open joints. (7) Heavy dowels to give 30% more glue contact area. (8) Smooth, perfectly sanded finish. (9) Carefully selected woods—scientifically dried—easy to mortise and gain. (10) Trade-marked, guaranteed and backed by more than 50 years' experience.

WHEELER OSGOOD SALES CORPORATION

FACTORY: Tacoma, Washington • GENERAL SALES OFFICES: 122 S. Michigan Ave., Chicago, Ill.



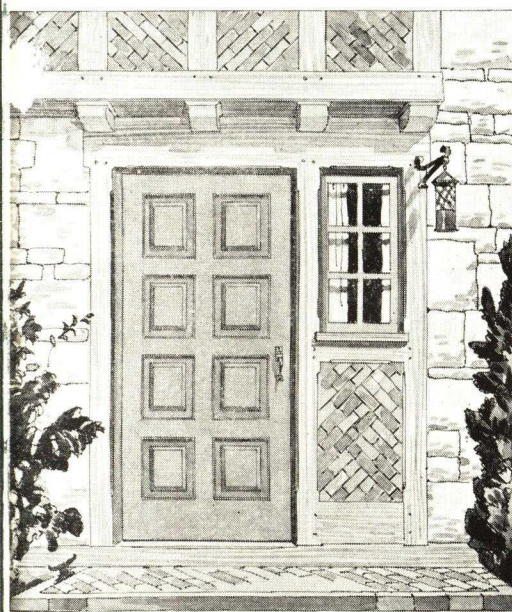
DESIGN 88 COLONIAL †



DESIGN 1110 †



DESIGN 66 †

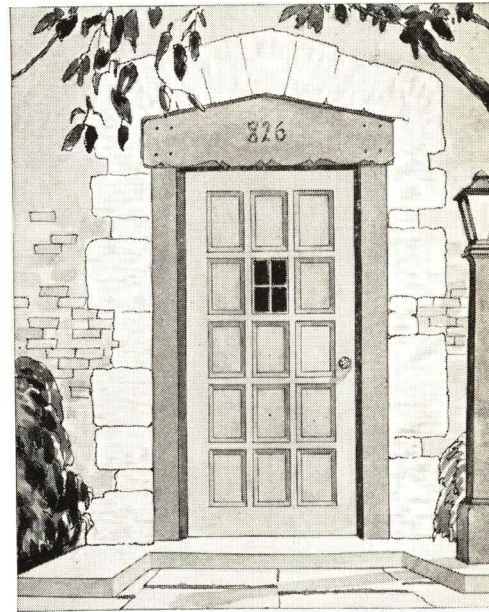


DESIGN 1030 †

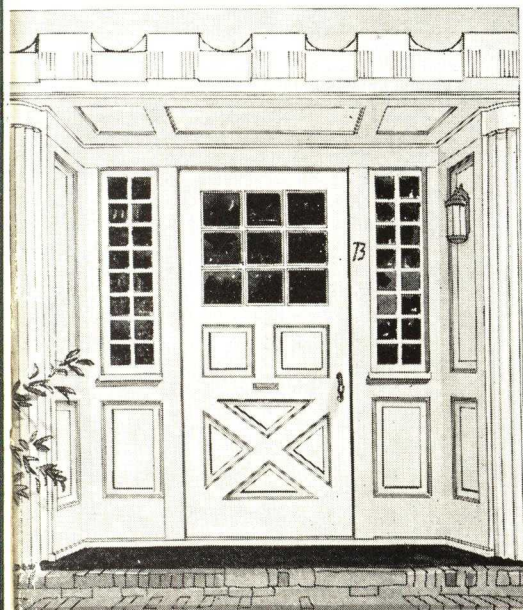
TYPICAL WHEELER OSGOOD

Entrance Doors

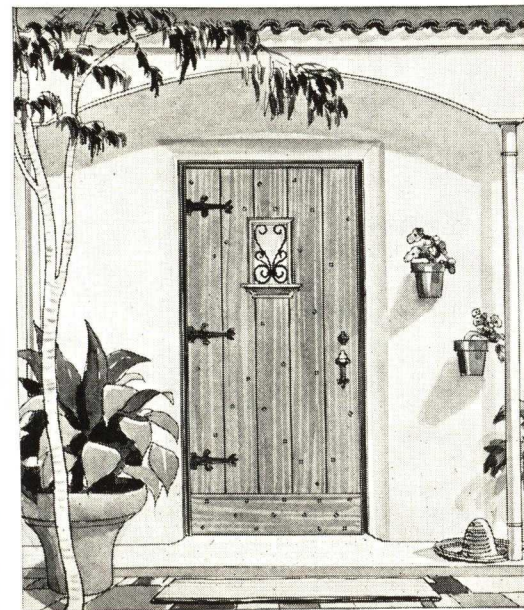
The wide range of designs in the complete Wheeler Osgood line makes it possible to select architecturally correct doors, which meet individual preference requirements—doors which will fit in perfectly with every period and style of architecture or entrance treatment. A number of the principal designs of Wheeler Osgood entrance and slab doors are illustrated on pages 4 and 5 of this catalog. Construction details and layouts are given on page 6. Additional information on entrance doors will be furnished on request.



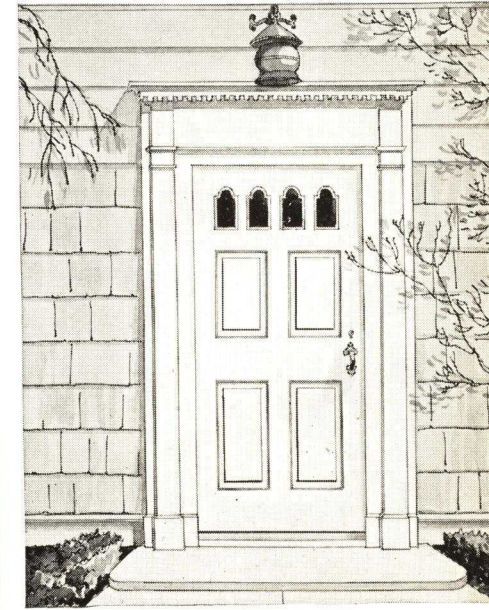
DESIGN 605 †



DESIGN 609 †



DESIGN 507 §



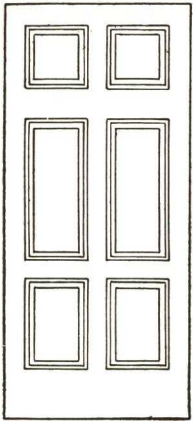
DESIGN 607 †

SEE PAGE 6 FOR LAYOUTS

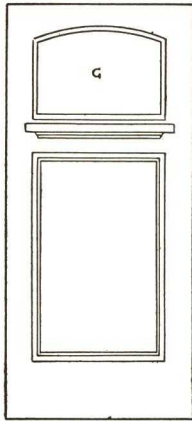
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§ LAMINEX CONSTRUCTION

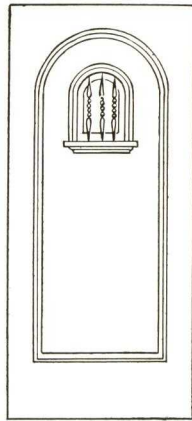
† WOCO OR LAMINEX CONSTRUCTION



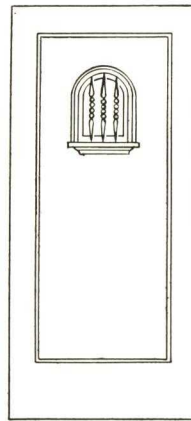
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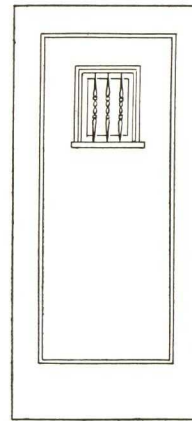
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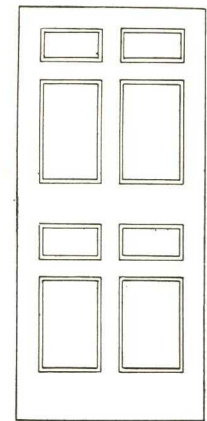
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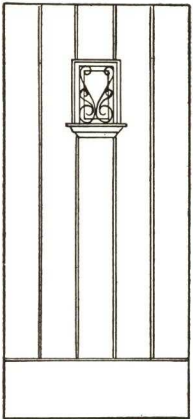
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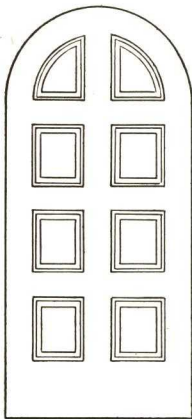
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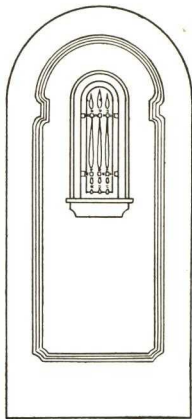
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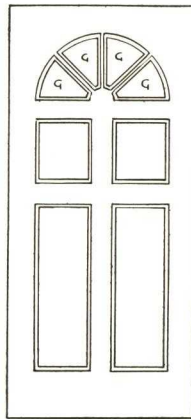
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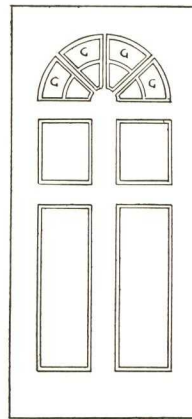
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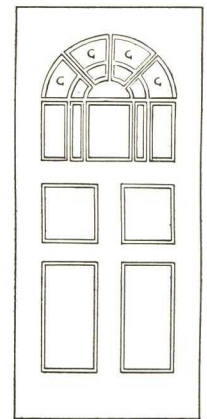
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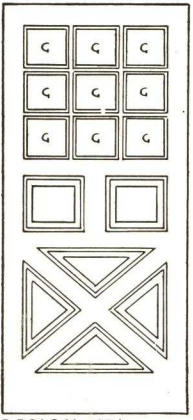
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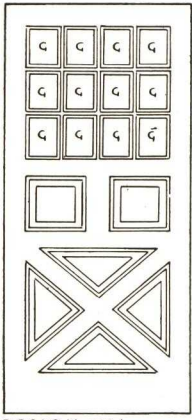
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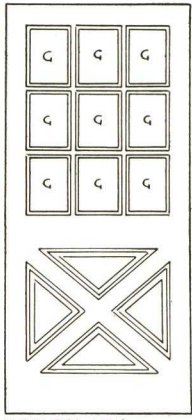
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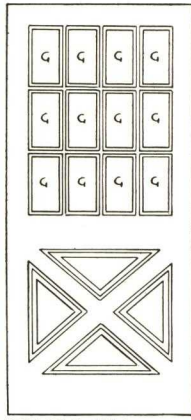
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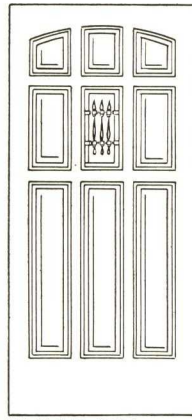
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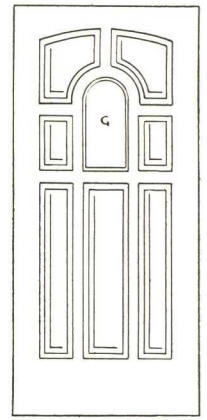
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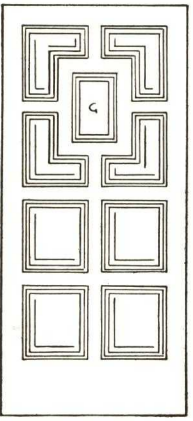
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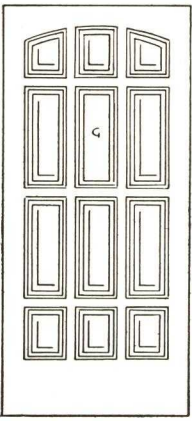
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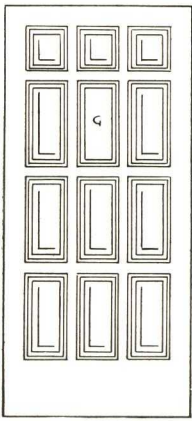
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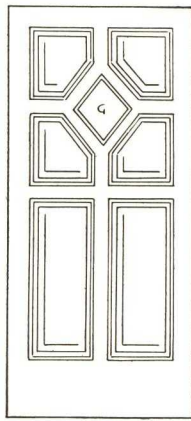
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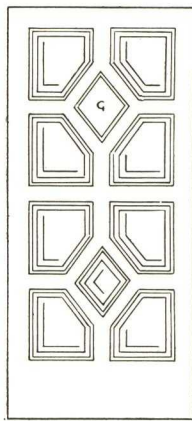
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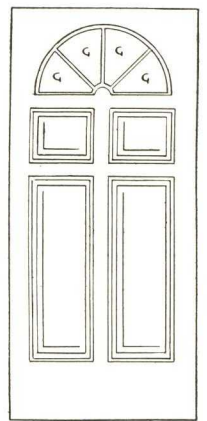
DESIGN 1065†



DESIGN 1080†



DESIGN 1085†

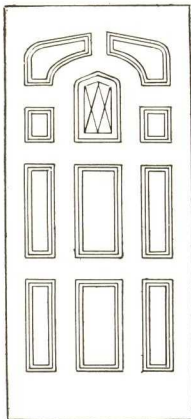


DESIGN 1090†

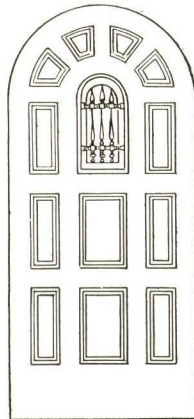
Wheeler Osgood Entrance Doors

KEY:

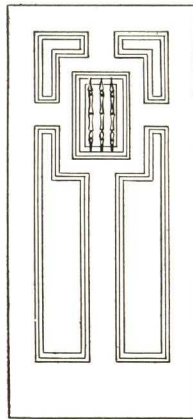
† WOCO OR LAMINEX CONSTRUCTION
 * LAMINEX CONSTRUCTION
 * WOCO CONSTRUCTION



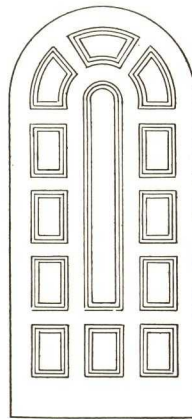
DESIGN 501 §



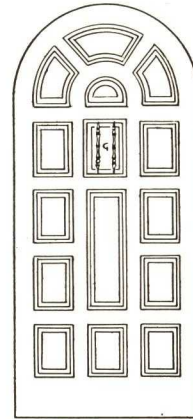
DESIGN 502 §



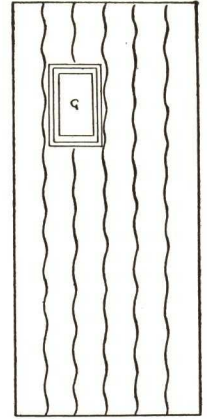
DESIGN 503 §



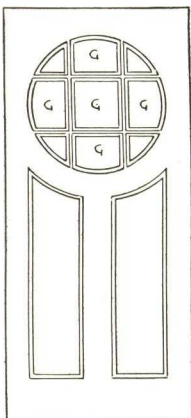
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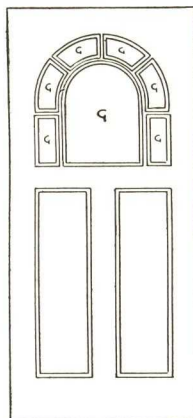
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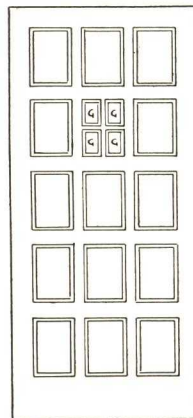
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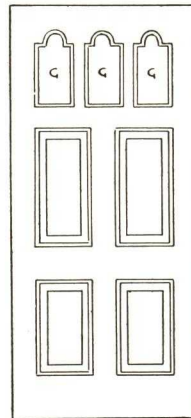
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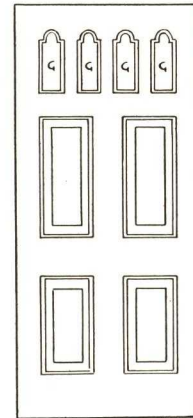
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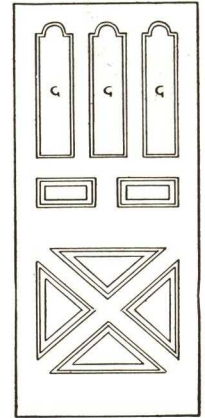
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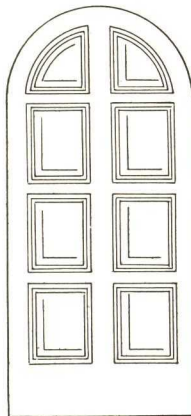
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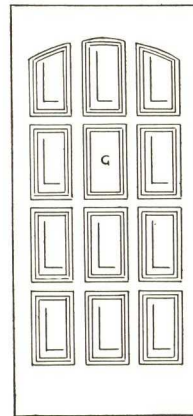
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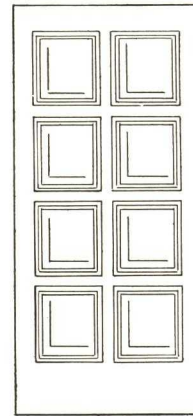
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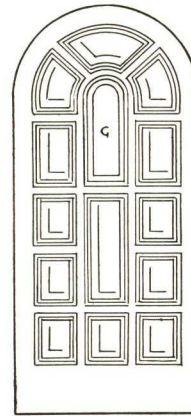
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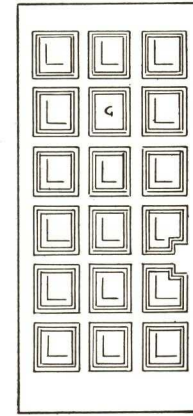
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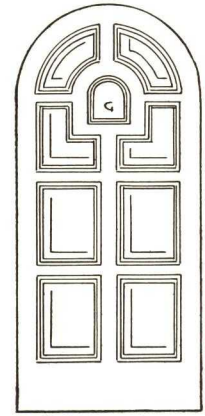
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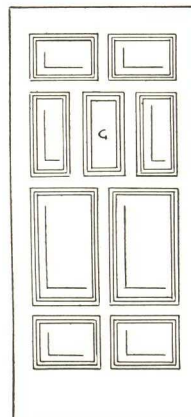
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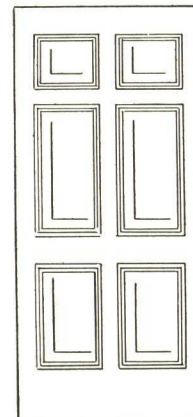
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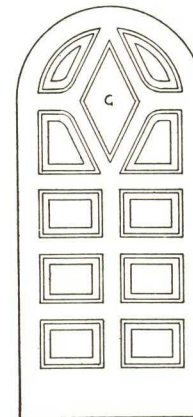
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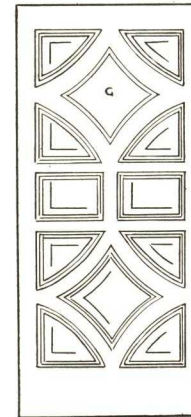
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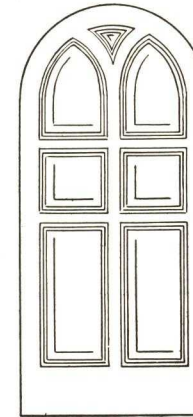
DESIGN 1105 †



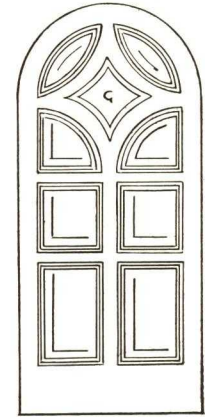
DESIGN 1110 †



DESIGN 1115 †



DESIGN 1120 †



DESIGN 1125 †

SEE PAGE 6 FOR LAYOUTS

LAYOUTS and Construction Features WHEELER OSGOOD ENTRANCE DOORS IN DOUGLAS FIR AND PHILIPPINE MAHOGANY

LAYOUTS ARE LISTED IN SEQUENCE TO CORRESPOND WITH ILLUSTRATIONS ON PAGES 4 AND 5

Design No.	66	70	73	74	75	88 Col.	501	502	503	504	505	506	507	508	509	600
Stiles	4 $\frac{1}{16}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	Slab Doors—Mouldings Planted On	Slab Doors—Mouldings Planted On	Slab Doors—Mouldings Planted On	Slab Doors—Mouldings Planted On	Slab Doors—Mouldings Planted On	Slab Doors—Mouldings Planted On	Slab Doors—Mouldings Planted On	Slab Doors—Mouldings Planted On	Slab Doors—Mouldings Planted On	5 $\frac{3}{8}$
Top Rail	4 $\frac{1}{16}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$										5 $\frac{3}{8}$
Intermediate Rails	4 $\frac{1}{2}$	.....	.....	.....	.....	5 $\frac{3}{8}$										4 $\frac{1}{2}$
Lock Rail	8	8	.....	.....	.....	6 $\frac{3}{8}$										5 $\frac{3}{8}$
Mullion	4 $\frac{1}{2}$	.....	.....	.....	.....	4 $\frac{1}{2}$										4 $\frac{1}{2}$
Bars Between Glass	.....	.....	.....	.....	.....	.....										1 $\frac{1}{2}$
Bottom Rail	9 $\frac{3}{8}$	11 $\frac{3}{8}$	11 $\frac{3}{8}$	11 $\frac{3}{8}$	11 $\frac{3}{8}$	9 $\frac{3}{8}$										9 $\frac{3}{8}$
Panels	F or R*	Flat	Flat	Flat	Flat	F or R*										F or R*
Sticking**	Std.**	Std.**	Std.**	Std.**	Std.**	Std.**										Std.**

Design No.	601	602	603	604	605	606	607	608	609	610	612	613	1000	1005	1010	1025
Stiles	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	4 $\frac{1}{16}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$
Top Rail	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	4 $\frac{1}{16}$	6 $\frac{3}{8}$	5 $\frac{3}{8}$	6 $\frac{3}{8}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$
Intermediate Rails	4 $\frac{1}{2}$	4 $\frac{1}{2}$	.....	.....	2 $\frac{3}{4}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	.....	.....	8 $\frac{3}{8}$	8 $\frac{3}{8}$	15 $\frac{3}{8}$	8 $\frac{3}{8}$
Lock Rail	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	.....	8	9 $\frac{3}{8}$	9 $\frac{3}{8}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	.....	.....	.....	3 $\frac{1}{2}$	4 $\frac{1}{2}$	3 $\frac{1}{2}$
Cross Muntins	.....	.....	.....	.....	.....	.....	.....	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{3}{4}$	4 $\frac{3}{4}$	.....	.....	.....	.....
Mullion	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	2 $\frac{3}{4}$	5 $\frac{3}{8}$	5 $\frac{3}{8}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	.....	.....	3 $\frac{1}{2}$	3 $\frac{1}{2}$	4 $\frac{1}{2}$	3 $\frac{1}{2}$
Bars Between Glass	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1"	1 $\frac{1}{2}$	2"	1 $\frac{3}{8}$	2"	1 $\frac{1}{2}$	1 $\frac{1}{2}$	.....	.....	.....	.....	.....	.....
Bottom Rail	9 $\frac{3}{8}$	9 $\frac{3}{8}$	9 $\frac{3}{8}$	9 $\frac{3}{8}$	9 $\frac{3}{8}$	9 $\frac{3}{8}$	9 $\frac{3}{8}$	8 $\frac{3}{4}$	8 $\frac{3}{4}$	8 $\frac{3}{4}$	8 $\frac{3}{4}$	8 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$
Panels	F or R*	F or R*	F or R*	F or R*	F or R*	3 $\frac{1}{4}$ "	3 $\frac{1}{4}$ "	1 $\frac{1}{8}$ "	1 $\frac{1}{4}$ "	1 $\frac{1}{4}$ "	1 $\frac{1}{8}$ "	1 $\frac{1}{8}$ "	F or R*	F or R*	F or R*	F or R*
Sticking**	Std.**	Std.**	Std.**	Std.**	Std.**	Std.**	B&C	B&C	B&C	B&C	B&C	B&C	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee

Design No.	1030	1040	1045	1050	1055	1060	1065	1080	1085	1090	1095	1105	1110	1115	1120	1125
Stiles	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$
Top Rail	4 $\frac{1}{16}$	15 $\frac{3}{8}$	4 $\frac{1}{16}$	15 $\frac{3}{8}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	5 $\frac{1}{2}$	15 $\frac{3}{8}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$	15 $\frac{3}{8}$	4 $\frac{1}{16}$	4 $\frac{1}{16}$
Intermediate Rails	4 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	.....	4 $\frac{1}{2}$	5 $\frac{3}{4}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$
Lock Rail	4 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	.....	4 $\frac{1}{2}$	3 $\frac{1}{2}$	.....	6	6	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$
Mullion	4 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	8	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$	4 $\frac{1}{2}$
Bottom Rail	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$	10 $\frac{3}{4}$
Panels	F or R*	F or R*	F or R*	F or R*	F or R*	F or R*	F or R*	F or R*	F or R*	F or R*	F or R*	F or R*	F or R*	F or R*	F or R*	F or R*
Sticking**	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee	3 $\frac{1}{4}$ " Sunk Ogee

*F or R indicates Flat or Raised Panels. ** Std. will be considered as Bead and Cove Sticking unless Ovolo, Sunk Ogee or Square Sticking is specified. Measurements shown in the layouts are overall and include sticking.

WOCO AND LAMINEX ENGINEERED DOORS

Designed scientifically as well as being architecturally correct, Laminex and Woco Doors are built to give long, trouble-free service. Careful selection of materials and precision controlled kiln drying assure uniform moisture content and maximum protection against warping. Wheeler Osgood doors as tested by Professor Bror L. Grondal, M.S.F. School of Forestry, University of Washington, Seattle, prove their extreme resistance to the usual tendencies to shrink, swell, warp or come apart.

Typical Cross-Section Through the Stile or Rail of a Laminex Door.



Note the solidity of "built-up" core construction.

Typical Cross-Section Through the Stile or Rail of a Woco Door.



PANEL CONSTRUCTION OF LAMINEX AND WOCO FIR DOORS

Clear Flat Grain 3-ply Laminated panels with grain crossed. Panels are welded together with Laminex water-resistant cement, forming a bond stronger than the wood itself.

DOWEL CONSTRUCTION IN ALL WHEELER OSGOOD DOORS

Four wooden dowels are used in the construction of bottom rail joints and two in top rail joints. All dowels are $\frac{5}{8}$ in. in diameter and 5 in. long. They give over 50% greater strength and 30% more glue contact area than doors with half-inch dowels.

CONSTRUCTION OF EASTWOOD AND LOS ANGELES DOORS

Core consists of two stiles, wide top, bottom and cross rails jointed together, making a flush, solid, built-up core. Any type of light may be cut in.

All Eastwood doors are 3-ply construction, all Los Angeles doors are 5-ply construction including face veneers.



STANDARD SPECIFICATIONS FOR WOCO DOORS

All doors throughout shall be (Woco Fir) manufactured by WHEELER OSGOOD SALES CORPORATION, Tacoma, Wash.

Stiles and rails shall be solid. Door panels shall be Laminex 3-ply, cemented together with Laminex water-resistant cement.

The doors, when delivered to the job, shall bear the WOCO guarantee label and trade-mark.

STANDARD SPECIFICATIONS FOR LAMINEX DOORS

All doors throughout shall be (Laminex Fir, Philippine Mahogany or other hardwoods) manufactured by WHEELER OSGOOD SALES CORPORATION, Tacoma, Wash.

Stiles and Rails shall be built-up (Laminex processed).

In Laminex Douglas Fir, face veneers shall be either flat or vertical grain cemented to cores with Laminex water-resistant cement.

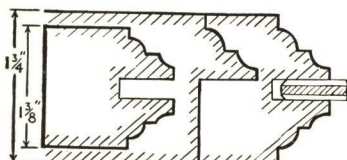
In Philippine Mahogany, face veneers shall be ribbon grain cemented to cores with Laminex water-resistant cement.

Door panels shall be 3-ply, made up with Laminex water-resistant cement.

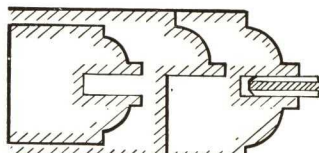
Doors, when delivered, shall bear the Laminex guarantee label and trade-mark.

SUGGESTIONS FOR ORDERING

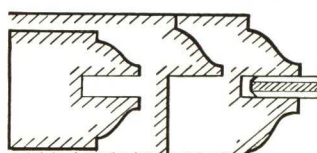
Order by design numbers as shown in this catalog. Specify grade desired. If other than Flat panels are desired, it should be specified.



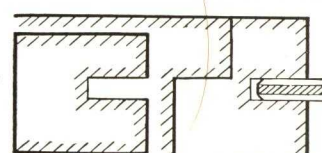
BEAD & COVE STICKING



OVOLO STICKING



SUNK OGEE STICKING



SQUARE STICKING

LAMINEX *Streamliner* DOOR

The **Laminex Streamliner** is the new, improved, hollow-core type door. It meets, perfectly, the modern need for lighter weight, stronger doors which are attractive in appearance, yet low in cost.

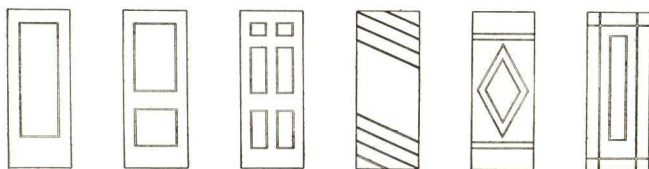
The development of the **Streamliner** hollow-core type of door is the result of Wheeler Osgood's 50 years' experience in designing and manufacturing doors. Dead weight has been discarded without sacrificing strength or durability. Economy is provided without reducing excellence of workmanship or materials.

REDUCED WEIGHT WITHOUT LOSS OF STRENGTH

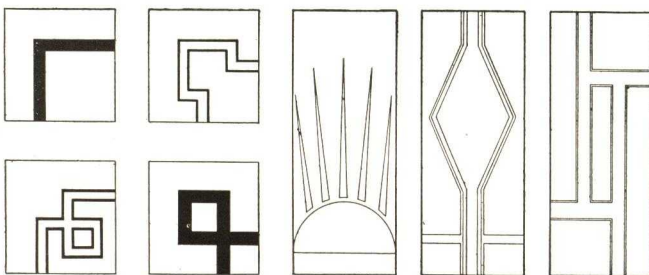
The **Streamliner** is lighter in weight than ordinary flush or slab doors. It affords greater ease of hanging, handling and operation. The reduction in weight, without loss of strength, is made possible by the unique core construction.

The **Streamliner** is adaptable to any finish treatment. The plain panel surfaces offer endless possibilities. (For enamel, stain, paint or wax finish see page 15.)

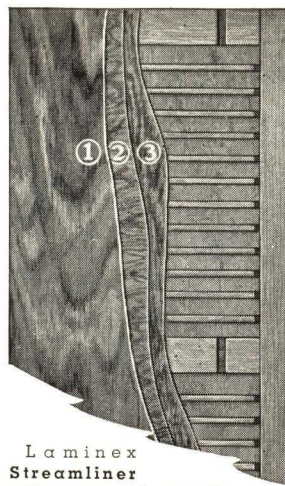
The **Streamliner** also lends itself perfectly to innumerable inlaid or routed decoration treatments. Any conceivable pattern or style is obtainable. The recommended depth of routing is $\frac{3}{8}$ in., width $\frac{1}{4}$ in.



Typical decorations that may easily be applied to the plain surface of the **Streamliner** Door by routing or painting on the job. Special orders requiring routing or inlay decorations can be handled at the factory.



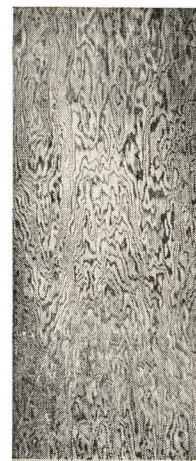
A few suggestions for treatment of paneling of inlay work.



Laminex **Streamliner** with one panel partially cut away showing construction of stiles, rails and horizontal bracing bars.

A MODERN DEVELOPMENT COMBINING

. . . . *Strength*
. . . . *Beauty*
. *Light Weight*
. . *and Economy*



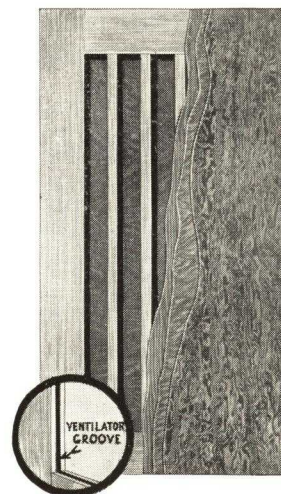
The numerous advantages afforded by the **Streamliner** have led to its use in practically every type of home and commercial building.

The **Streamliner** can be furnished in **Fire-Retarding** construction, in accordance with architect's specifications or requirements.

A NEW CUPBOARD DOOR —a small Streamliner

The hollow-core construction principle is also used in the manufacture of **Streamliner** cupboard doors. Light weight and increased strength afford easier hanging and operation. Ventilated —the **Streamliner** cupboard door is guarded against the warping effects of temperature changes, dryness and moisture.

The ventilation groove around the inside edge of stiles and rails allows complete circulation of air. Air ducts are located at top and bottom of door.



BOTH ARE BACKED BY THE FAMOUS LAMINEX STREAMLINER GUARANTEE

The **Streamliner** is a guaranteed Laminex door. As proved by thousands of installations, when properly installed the **Streamliner** gives absolutely trouble-free service. There is a guarantee label on every genuine **Streamliner** door.

CONSTRUCTION FEATURES OF LAMINEX *Streamliner* DOORS

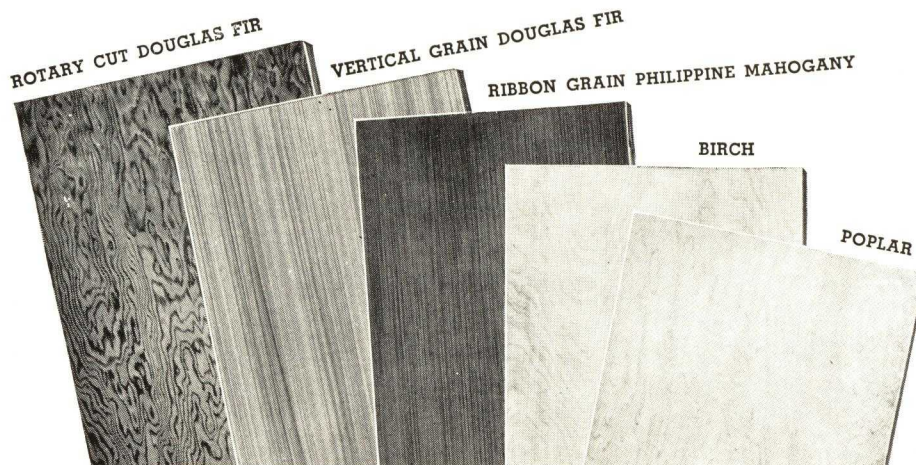
MANUFACTURED IN FIVE WOOD SURFACES

The **Rotary Cut Douglas Fir**, with its popular grain effects, takes stain or wax with unusually attractive results, also suitable for paint or enamel finishes—furnished resin sealed, at a slight additional cost, the door may be used appropriately anywhere. The attractive appearance is enhanced and the possibility of grain raising or hair checking is practically eliminated.

The fine texture of the **vertical grain, selected old growth Douglas Fir** is particularly suited for smooth, painted or enameled surfaces.

Philippine Mahogany, with its beautiful ribbon grain, can be finished in all shades—light or dark mahogany, light walnut, or the beautiful natural finish. Proper staining and finishing bring out the desired effects at moderate cost.

Birch provides strikingly beautiful effects in "natural" finish, or when either light or dark stains are used.



Poplar, stained light or dark, as desired, provides unusually attractive effects, also suitable for paint, enamel or natural finishes.

As in all 10-point doors, the surfaces are smoothly sanded with care and skill—providing a door that is equal in quality to a fine custom-built product.

BOX GIRDER CONSTRUCTION ASSURES GREATER DOOR STRENGTH THAN WOULD EVER BE REQUIRED

Before the **Streamliner** was put on the market, strength tests were made to doubly insure the design-work of Wheeler Osgood engineers. Tests were made under the supervision of Professor Bror L. Grondal at the School of Forestry, University of Washington, Seattle.

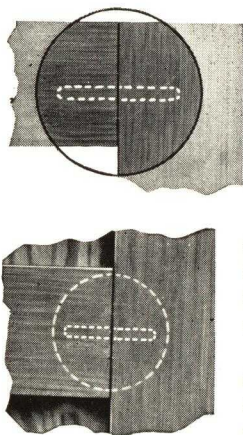
A stock door was placed in a testing frame built to exactly duplicate a typical door frame. Measured pressure assured an accurate test of the impact strength of the **Streamliner** door.

The result of the test showed conclusively that the **Streamliner** door has far more strength than would ever be required in the hardest service imaginable. The 3-ply panel faces of the **Streamliner** door act with the hollow (girder-like) core frame to make each door in effect a section of a box girder. These faces distribute the load of both tests and service so effectively that it resists extremely high pressure. The **Streamliner** assures long, trouble-proof service.

ENGINEERED DESIGN—CORE CONSTRUCTION STILES, RAILS

The core is constructed of two stiles and three rails, horizontally braced, by twenty-four bars, which are mortised into the stiles. Two Laminex-built panels—three-ply construction—are cemented to this rigid frame, by the hot plate press method, providing the unusual lightness and exceptional strength characteristics of the **Streamliner**.

Although it offers many exclusive advantages, the **Streamliner** costs less than ordinary flush or slab doors.



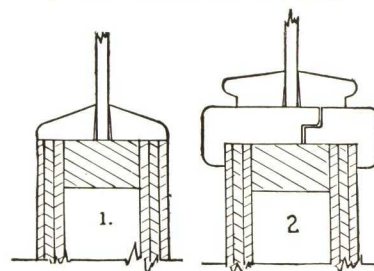
STILES AND RAILS ARE JOINED BY DOWELS

at joints, assuring tight construction. The sturdy bars are placed "edgewise" to give uniformly perfect glue contact area. Each bar is a rigid member mortised into the stile—providing a construction similar to that used in many bridges.

CUT-IN LIGHTS IN STREAMLINER DOORS

Streamliner doors may be secured with one light opening or with divided lights. Sketches show construction of opening and beads.

Construction as shown in sketch No. 1 or sketch No. 2 may be secured for one-light opening or for divided lights.

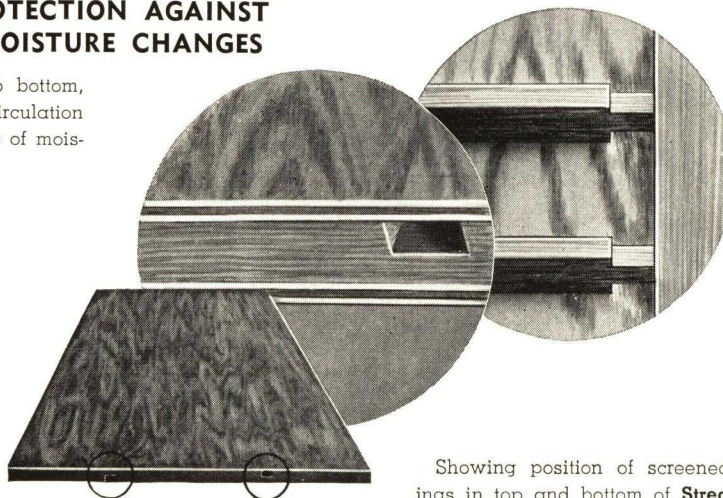


VENTILATION FOR PROTECTION AGAINST TEMPERATURE AND MOISTURE CHANGES

In the **Streamliner**, channels from top to bottom, with screened openings, allow a constant circulation of air, guarding against the warping effects of moisture, dryness and temperature changes.

LAMINEX CEMENT

Throughout all joints in the **Streamliner** Door the same famous Laminex cement welds the sections together under high pressure—forming a rigid unit with joints that are stronger than the wood itself—making a door that is one solid unit.



At both ends of each bar, openings provide passageways for ventilation, assuring resistance to warping.

Showing position of screened ventilation openings in top and bottom of **Streamliner** door.

WHEELER OSGOOD OFFERS THE COUNTRY'S MOST COMPLETE LINE OF DOORS.
OVER 300 *Standard Designs* IN DOUGLAS FIR AND PHILIPPINE MAHOGANY.
BOTH SOLID AND BUILT-UP CONSTRUCTION *Consisting of* Sub-Frame Doors, Panel Doors, Sash
Doors, French Doors, Side Lights, Storm Doors, Cupboard Doors

In the complete Wheeler Osgood line of WOCO and LAMINEX Doors, there is a door to meet every residential, garage and commercial building (hotel, office buildings, etc.) requirement. The present Wheeler Osgood line is the result of over 50 years' experience and the production of over 27 million doors.

The Research and Laboratory Division is maintained for the purpose of developing and further improving Wheeler Osgood Products and to assure continued uniformity and unexcelled quality.

CONSTRUCTION DETAILS AND LAYOUTS

The details of construction and layouts, for the designs shown on this and the following pages, are shown on pages 12 and 13 of this catalog.

The Wheeler Osgood engineering department will be glad to furnish any additional data which is desired.

ONLY PRINCIPAL DESIGNS SHOWN

The designs shown here constitute the principal designs in both the WOCO and LAMINEX lines. If your requirements call for designs other than those shown here—send us your specifications and we will forward special data immediately.

WHEELER OSGOOD GUARANTEED DOORS

Wheeler Osgood Doors are fully guaranteed. When properly installed, long life and trouble-free service are absolutely assured.



LAMINEX guarantee label on every LAMINEX door. WOCO guarantee label on every WOCO door.

SELECTED FROM THE 300 DESIGNS IN THE COMPLETE LINE OF WHEELER OSGOOD DOORS

Note on Keys: Numbers on Drawings

The following line drawings are for design purposes only—for actual layouts and construction features refer to pages 12 and 13.

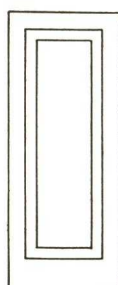
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§ LAMINEX CONSTRUCTION

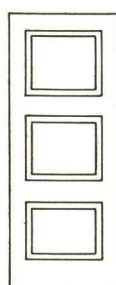
† WOCO AND LAMINEX CONSTRUCTION



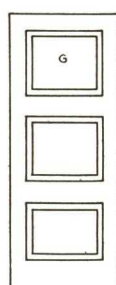
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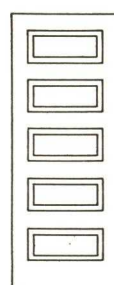
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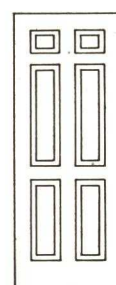
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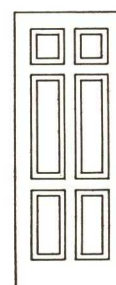
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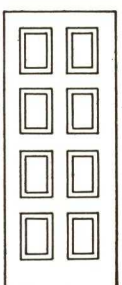
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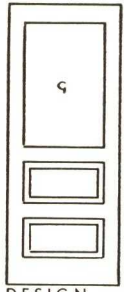
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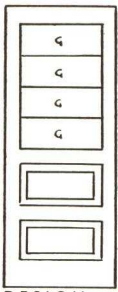
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COLONIAL †



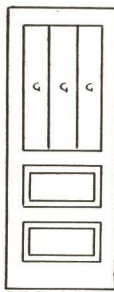
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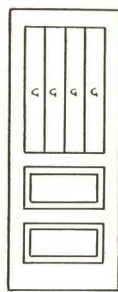
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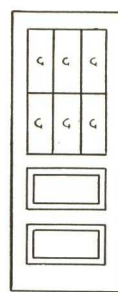
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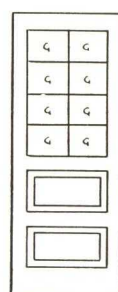
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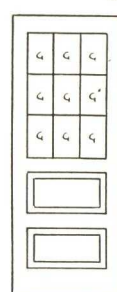
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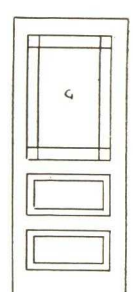
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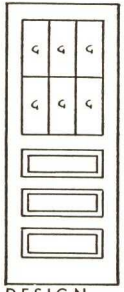
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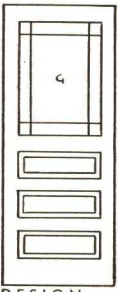
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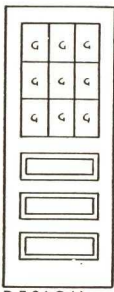
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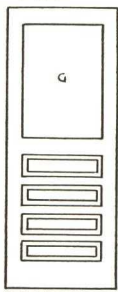
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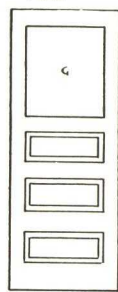
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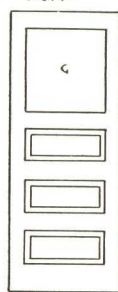
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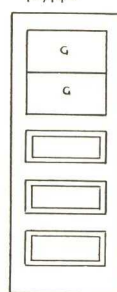
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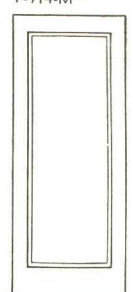
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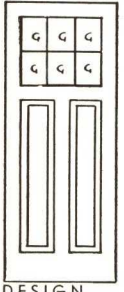
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DESIGN
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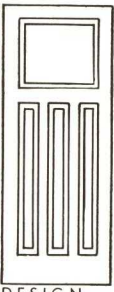
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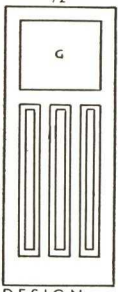
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DESIGN
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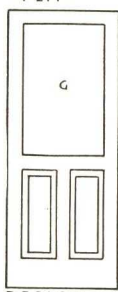
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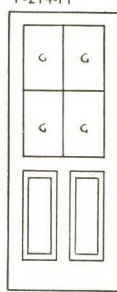
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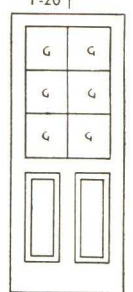
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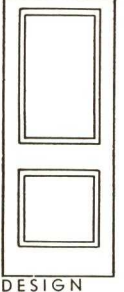
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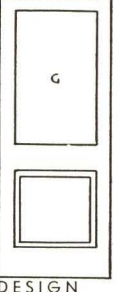
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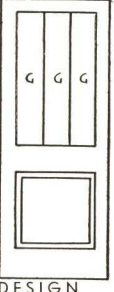
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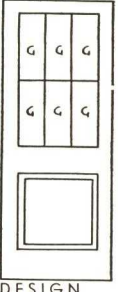
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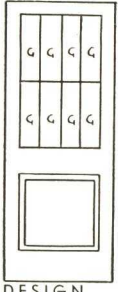
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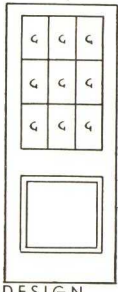
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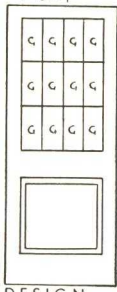
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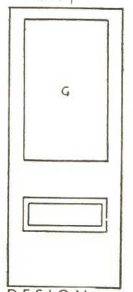
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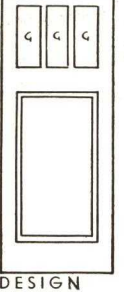
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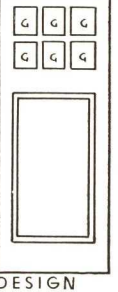
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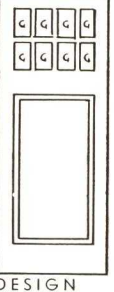
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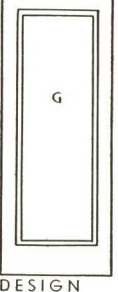
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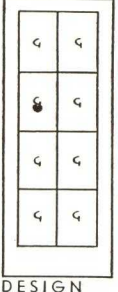
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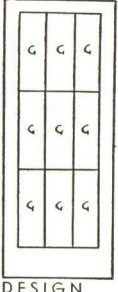
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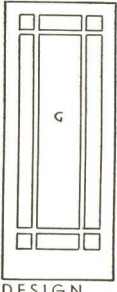
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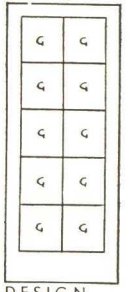
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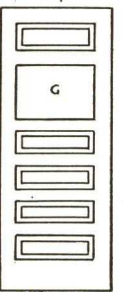
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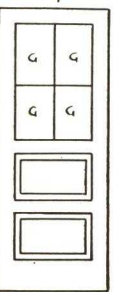
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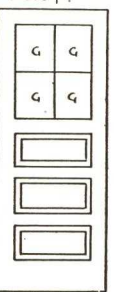
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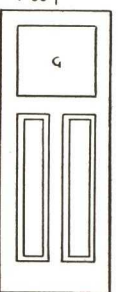
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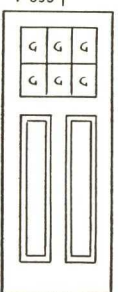
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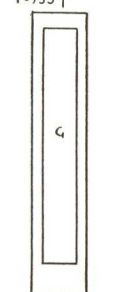
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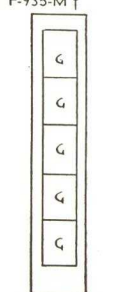
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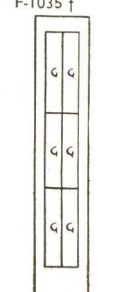
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DESIGN
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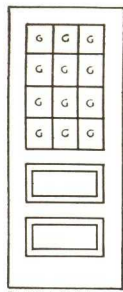
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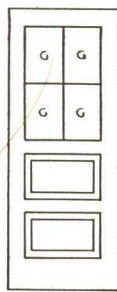
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COMPLETE LINE OF WHEELER OSGOOD DOORS

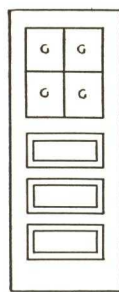
KEY: * WOCO CONSTRUCTION
§ LAMINEX CONSTRUCTION
† LAMINEX AND WOCO



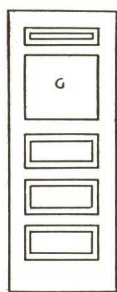
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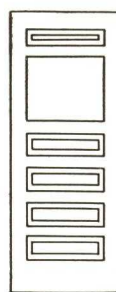
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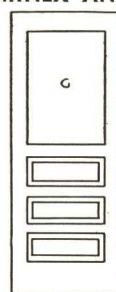
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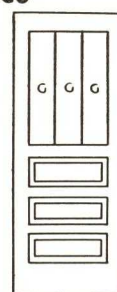
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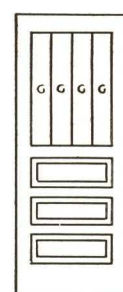
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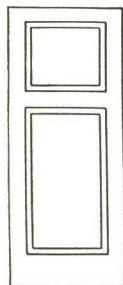
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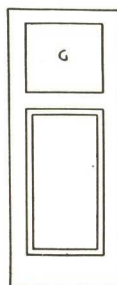
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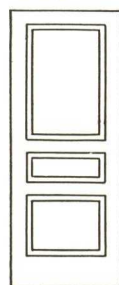
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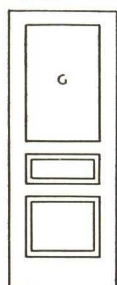
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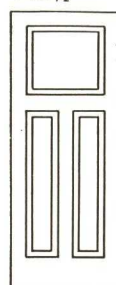
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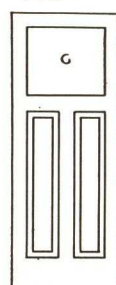
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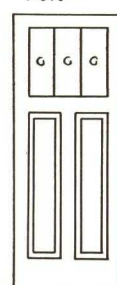
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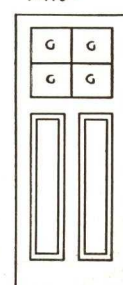
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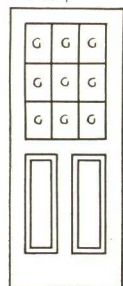
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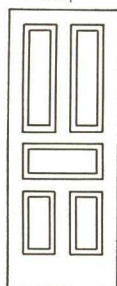
DESIGN
F-362†



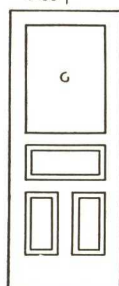
DESIGN
F-462†



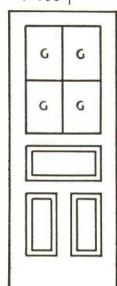
DESIGN
F-944†



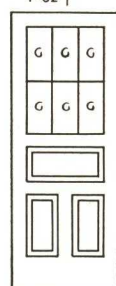
DESIGN
F-45†



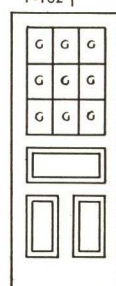
DESIGN
F-145†



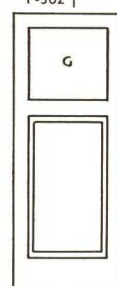
DESIGN
F-445†



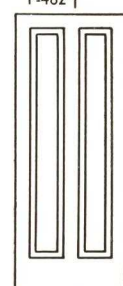
DESIGN
F-645†



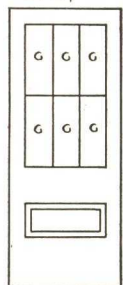
DESIGN
F-945†



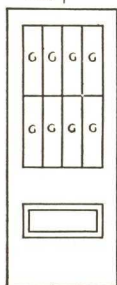
DESIGN
F-108†



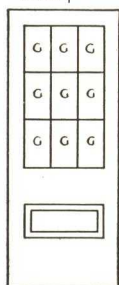
DESIGN
F-80†



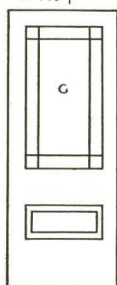
DESIGN
F-647†



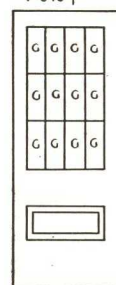
DESIGN
F-847†



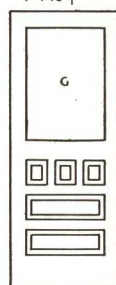
DESIGN
F-947†



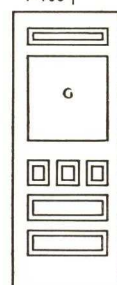
DESIGN
F-947-M†



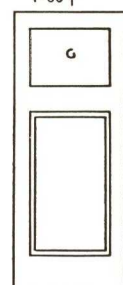
DESIGN
F-1247†



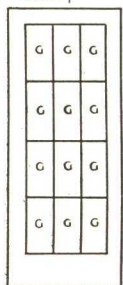
DESIGN
F-152*



DESIGN
F-154*



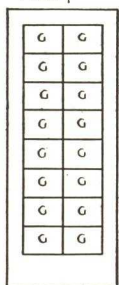
DESIGN
F-110†



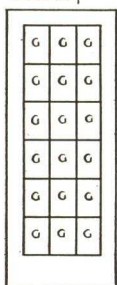
DESIGN
F-1235†



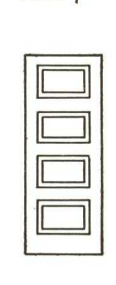
DESIGN
F-1535†



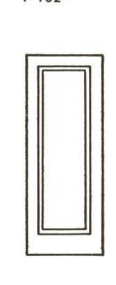
DESIGN
F-1635†



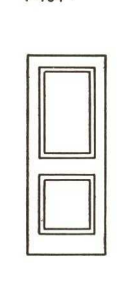
DESIGN
F-1835†



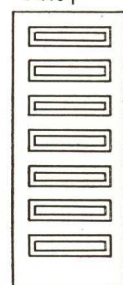
DESIGN
F-05*



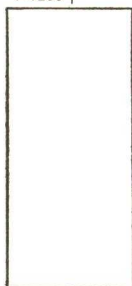
DESIGN
F-020*



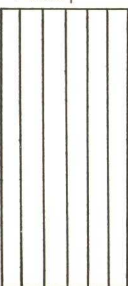
DESIGN
F-082*



DESIGN
FS-7*



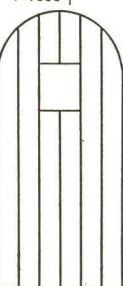
DESIGN
100§



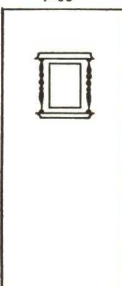
DESIGN
101§



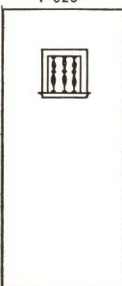
DESIGN
102§



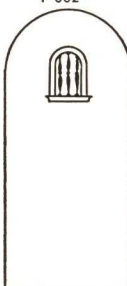
DESIGN
103§



DESIGN
104§



DESIGN
105§



DESIGN
106§



DESIGN
107§

SEE PAGE 12 FOR LAYOUTS

LAYOUTS AND CONSTRUCTION FEATURES of Wheeler Osgood Standard Doors

Layouts, listed in sequence to correspond with illustrations on pp. 9, 10, and 11. Layouts shown are over-all measurements which include sticking.

DESIGN NO.	F-1	F-2	F-3	F-13	F-5	F-66	Pilgrim Colonial	F-88	F-114	F-114-H	F-314	F-414	F-614	F-814	F-914	F-914-M	F-1214	F-415	F-416	F-117	F-117 1/2
STILES	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16
TOP RAIL	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16
INT'MD RLS.			2 1/4	2 1/4	4 1/2	4 1/2	4 1/2	2 7/8	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	3 3/8	3 3/8
LOCK RAIL						8	9 3/8	5	5	5	5	5	5	5	5	5	5	4 1/2	5 3/8	5 3/8	5 3/8
MULLION						4 1/2		2 7/8													
BARS																					
B'TW'N GLS.									1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1 1/16	1 1/16		
BOT. RAIL	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	7 15/16	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8
PANELS	F	F	F	F	For R*	For R*	For R*	For R*	For R*	For R*	For R*	For R*	For R*	For R*	For R*	For R*	For R*	For R*	For R*	For R*	For R*
STICKING	Ov	P & G	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C
GLASS SIZE				23 3/8					23 3/8	23 3/8	7 1/2	11 1/2	7 1/2	11 1/2	7 1/2		7 1/2	11	11	23 3/8	23 3/8
2'8" x 6'8"	x 34	x 34	x 34	x 16 3/4				x 11	x 24 3/8	x 26	x 8 3/8			x 18	x 12 3/8		x 9 1/8	x 19	x 16	x 26	x 24

DESIGN NO.	F-118	F-318	F-418	F-618	F-918-M	F-918	F-118 1/2	F-119	F-214	F-214-H	F-20	F-28	F-128	F-33	F-133	F-62	F-162	F-362	F-462	F-662	F-862
STILES	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16
TOP RAIL	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16	4 9/16
INT'MD RLS.	3 3/8	3 3/8	3 3/8	3 3/8	3 3/8	3 3/8	3 3/8	4 1/2	4 1/2	4 1/2					4 1/2						
LOCK RAIL	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	4 1/2	4 1/2	4 1/2		4 1/2	4 1/2			4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2
MULLION																4 1/2	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2
BARS																					
B'TW'N GLS.		1/2	1/2	1/2	1/2	1/2				1/2							1/2	1/2	1/2	1/2	1/2
BOT. RAIL	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8
PANELS	For R'	For R'	For R'	For R'	For R'	For R'	For R'	For R'	For R'	For R'	F	F	F	F	F	F	F	F	F	F	F
STICKING	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C
GLASS SIZE	23 3/8	7 1/2	5 1/2	7 1/2		7 1/2	23 3/8	23 3/8	23 3/8	23 3/8			23 3/8		23 3/8		23 3/8	7 1/2	5 3/8	7 1/2	5 3/8
2'8" x 6'8"	x 34	x 34	x 34	x 16 3/4		x 11	x 32	x 24 3/8	x 26	x 8 3/8			x 18		x 34		x 18	x 18	x 18	10 23/32	x 8 3/4

DESIGN NO.	F-63	F-163	F-44	F-144	F-444	F-644	F-944	F-45	F-145	F-445	F-645	F-945	F-108	F-80	F-82	F-182	F-382	F-682	F-882	F-982	F-1282
STILES	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆
TOP RAIL	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	5 ³ / ₈	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆
INT'MD RLS.								4 1 ¹ / ₂	4 1 ¹ / ₂	4 1 ¹ / ₂	4 1 ¹ / ₂	4 1 ¹ / ₂									
LOCK RAIL	4 1 ¹ / ₂	4 1 ¹ / ₂	8	8	8	8	8						5 3 ⁵ / ₈		8	8	8	8	8	8	8
MULLION	3 1 ¹ / ₄	3 1 ¹ / ₄	4 1 ¹ / ₂	4 1 ¹ / ₂	4 1 ¹ / ₂	4 1 ¹ / ₂	4 1 ¹ / ₂	4 1 ¹ / ₂	4 1 ¹ / ₂	4 1 ¹ / ₂	4 1 ¹ / ₂	4 1 ¹ / ₂		4 1 ¹ / ₂							
BARS																					
B'TW'N GLS.					1 ¹ / ₂	1 ¹ / ₂	1 ¹ / ₂			1 ¹ / ₂	1 ¹ / ₂	1 ¹ / ₂					1 ¹ / ₂	1 ¹ / ₂	1 ¹ / ₂	1 ¹ / ₂	1 ¹ / ₂
BOT. RAIL	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈	9 3 ⁵ / ₈
PANELS	F	F	F	F	F	F	F	For R*	For R*	For R*	For R*	For R*	F	F	F	F	F	F	F	F	F
STICKING	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C
GLASS SIZE		23 3 ⁵ / ₈		23 3 ⁵ / ₈	11 1 ¹ / ₂	11 1 ¹ / ₂	7 1 ¹ / ₂		23 3 ⁵ / ₈	11 1 ¹ / ₂	11 1 ¹ / ₂	7 1 ¹ / ₂	23 3 ⁵ / ₈			23 3 ⁵ / ₈	7 1 ¹ / ₂	11 1 ¹ / ₂	11 1 ¹ / ₂	7 1 ¹ / ₂	7 1 ¹ / ₂
2'8" x 6'8"	x 18	x 18	x 40	x 19 3 ⁴ / ₈	x 12 15 ⁵ / ₁₆	x 12 15 ⁵ / ₁₆	x 12 15 ⁵ / ₁₆		x 34	x 16 3 ⁴ / ₈	x 10 15 ⁵ / ₁₆	x 10 15 ⁵ / ₁₆	x 28			x 40	x 40	x 12 15 ⁵ / ₁₆	x 9 1 ¹ / ₈	x 13	x 9 1 ¹ / ₈

DESIGN NO.	F-147	F-647	F-847	F-947	F-947-M	F-1247	F-152	F-154	F-110	F-310	F-610	F-810	F-35	F-835	F-935	F-935-M	F-1035	F-1235	F-1535	F-1635	F-1835
STILES	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆
TOP RAIL	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	5 ³ / ₈	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆	4 ⁹ / ₁₆
INT'MD RLS.							3 ³ / ₈	3 ³ / ₈													
LOCK RAIL	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	5 ³ / ₈	5 ³ / ₈	8	8	8	8									
MULLION							3 ³ / ₈	3 ³ / ₈													
BARS B'TW'N GLS.		1 ² / ₂	1 ² / ₂	1 ² / ₂	1 ² / ₂	1 ² / ₂			1 ² / ₂	1 ² / ₂	1 ² / ₂	1 ² / ₂	1 ² / ₂	1 ² / ₂	1 ² / ₂	1 ² / ₂	1 ² / ₂	1 ² / ₂	1 ² / ₂	1 ² / ₂	1 ² / ₂
BOT. RAIL	11 ³ / ₈	11 ³ / ₈	11 ³ / ₈	11 ³ / ₈	11 ³ / ₈	11 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈	9 ³ / ₈
PANELS	For R'	For R'	For R'	For R'	For R'	For R'	For R'	For R'	F	F	F	F	F	F	F	F	F	F	F	F	F
STICKING	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C	B & C
GLASS SIZE	22	10 ¹¹ / ₁₆	10 ¹¹ / ₁₆	6 ³ / ₄		6 ³ / ₄	23 ³ / ₈	23 ³ / ₈	23 ³ / ₈	7 ¹ / ₂	7 ¹ / ₂	5 ¹ / ₂	23 ⁵ / ₈	23 ⁵ / ₈	7 ¹ / ₂		11 ¹ / ₂	7 ¹ / ₂	7 ¹ / ₂	11 ¹ / ₂	7 ¹ / ₂
2'8" x 6'8"	x 46	x 14 ¹⁵ / ₁₆	x 11 ¹ / ₁₆	x 14 ¹⁵ / ₁₆		x 11 ¹ / ₁₆	x 34	x 26	x 22	x 22	x 10 ³ / ₄	x 10 ³ / ₄	x 66 ³ / ₄	x 7 ⁷ / ₈	x 21 ³ / ₄		x 12 ³ / ₈	x 16 ¹ / ₄	x 12 ³ / ₈	x 7 ⁷ / ₈	x 10 ³ / ₄

DESIGN NO.	F-05	F-020	F-082	F-S-7	F-S-07	F-S-415	F-S-416	F-S-162	F-S-662	F-035	F-0535	F-0635	100♦	101♦	102♦	103♦	104♦	105♦	106♦	107♦
STILES	2¾	2¾	2¾	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞	2⅜	2⅜	2⅜								
TOP RAIL	2¾	2¾	2¾	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞	4⅞								
INT'MD RLS.	2¾		3½	4½	4½															
LOCK RAIL						4½	5⅜	4½	4½											
MULLION						2⅞	2⅞	4½	4½											
BARS																				
B'TW'N GLS.						1⅞	1⅞		½		½	½								
BOT. RAIL	4½	4½	4½	9⅜	9⅜	9⅜	9⅜	9⅜	9⅜	9⅜	9⅜	9⅜								
PANELS	For R*	F	F	For R*	For R*	For R*	For R*	F	F											
STICKING				B & C	B & C	B & C	B & C	B & C	B & C											
GLASS SIZE					2'8½"x6'9"	11¼	11⅝	24⅜	7⅞											
2'8" x 6'8"					24x16¾	x 19½	x 16⅞	x 19	x 11⅝											

SLAB DOORS

♦ Available in either Los Angeles or Eastwood construction.

Glass size varies with size of door. Glass size shown applies to 2'8" x 6'8" doors. For each 2" reduction in size of door—make corresponding reduction in glass size provided there is no change in layout. For each 2" increase in size of door make corresponding addition to glass size. Layouts other than those shown are available for many of the designs listed above.

*F or R indicates Flat or Raised Panels.

SLAB DOORS

♦ Available in either Los Angeles or Eastwood construction.

Glass size varies with size of door. Glass size shown applies to 2'8" x 6'8" doors. For each 2" reduction in size of door—make corresponding reduction in glass size provided there is no change in layout. For each 2" increase in size of door make corresponding addition to glass size. Layouts other than those shown are available for many of the designs listed above.

WOCO AND LAMINEX ENGINEERED DOORS

Scientifically designed, Laminex and Woco Doors, are built to give long trouble-free service. They offer 10-points of superiority in design and construction. Only the choicest and most carefully selected lumber is used. Lumber stocks are scientifically dried to uniform moisture content, providing maximum protection against warping. "Laminex veneered stile and rail construction results in the elimination of loose veneers, sunken cores, warping, twisting and rough sticking." Dowel construction offers maximum protection against opening of joints.

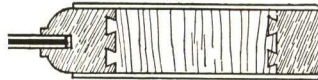
Laminex water-resistant cement is protection against warping. The finest sanding equipment provides a smooth, polished finish. Double inspection assures maintenance of highest quality standards.

Laminex Doors were tested by Professor Bror L. Grondal, School of Forestry, University of Washington, Seattle, and show extreme resistance to the usual tendencies to shrink, swell, warp and come apart. The Laminex water test has been conducted throughout the country, where Laminex Fir Doors were immersed in water for days and failed to show injury.

Today, over twenty-seven million Laminex and Woco "10-Point" Doors in service offer practical proof of their unusual ability to stand up under years of use. Laminex Doors enjoy the confidence of architects and builders.

TYPICAL CROSS-SECTION THROUGH THE STILE OR RAIL OF A LAMINEX DOOR

Note the solidity of "built-up" rail construction. Resistance to shrinkage, swelling, or coming apart is assured.



TYPICAL CROSS-SECTION THROUGH THE STILE AND RAIL OF A WOCO DOOR

The stiles and rails of WOCO Doors are solid. Extra size dowels, careful selection and scientifically controlled kiln drying of wood assure freedom from door troubles.



STANDARD SPECIFICATIONS FOR LAMINEX DOORS

All doors throughout shall be (Laminex Fir, Philippine Mahogany and other hardwoods) manufactured by WHEELER OSGOOD SALES CORPORATION, Tacoma, Wash.

Stiles and rails shall be built up (Laminex processed.)

In Laminex Douglas Fir, face veneers shall be either flat or vertical grain cemented to cores with Laminex water-resistant cement.

In Philippine Mahogany, face veneers shall be ribbon grain cemented to cores with Laminex water-resistant cement.

Door panels shall be Laminex 3-ply, made up with Laminex water-resistant cement.

Doors, when delivered, shall bear the Laminex guarantee label and trade-mark.

STANDARD SPECIFICATIONS FOR WOCO (SOLID) DOORS

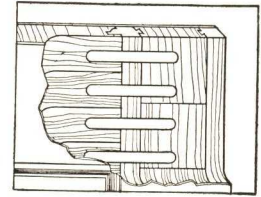
All doors throughout shall be (Woco Fir) manufactured by WHEELER OSGOOD SALES CORPORATION, Tacoma, Wash.

Stiles and rails shall be solid. Door panels shall be Laminex 3-ply, cemented together with Laminex water-resistant cement.

The doors, when delivered to the job, shall bear the WOCO guarantee label and trade-mark.

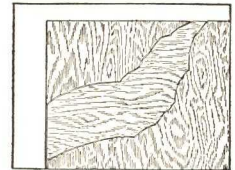
DOWEL CONSTRUCTION IN ALL WHEELER OSGOOD DOORS

Four wooden dowels are used in the construction of bottom rail joints and two in top rail and lock rail joints. All dowels are $\frac{5}{8}$ in. in diameter and 5 in. long. They give over 50% greater strength and 30% more glue contact area than doors with only half-inch dowels. Special equipment sprays glue to entire surface of dowel hole and also carries glue to mouldings at top of rail and bottom of rail.



PANEL CONSTRUCTION OF LAMINEX AND WOCO DOORS

Clear, 3-ply Flat Grain Fir panels with grain crossed. Panels are welded together with Laminex water-resistant cement, forming a bond stronger than the wood itself.



LAMINEX CONSTRUCTION

"LAMINEX" doors are built up by our special process of construction—one embodying the principle of lamination. The grain of the adjoining sections is so "crossed" that it equalizes all expansion and contraction, and holds the whole in check, for wood cannot shrink in length and the "LAMINEX" cement is stronger than the wood. "LAMINEX" doors are furnished in both vertical and flat grain stiles and rails.



CONSTRUCTION OF EASTWOOD AND LOS ANGELES DOORS

Core consists of two stiles, wide top, bottom and cross rails joined together, making a flush solid, built-up core. Any type of light may be cut in. All Eastwood doors are 3-ply construction; all Los Angeles doors are 5-ply construction including face veneers.

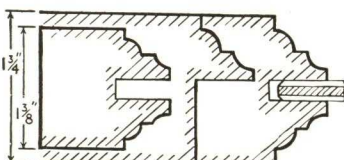
WOCO AND LAMINEX DOORS OF DOUGLAS FIR

Laminex Doors are constructed of clear, selected old growth Douglas Fir, particularly suited for door construction. It is remarkably free from pitch, easily worked. Durability rating of Douglas Fir is 60% higher than California Sugar Pine, 88% higher than Western Yellow Pine, according to the U. S. Department of Agriculture. Laminex Doors of Douglas Fir come in both the flat and vertical grain. The flat grain takes stain or wax perfectly. The vertical grain is particularly suited for fine enamel work.

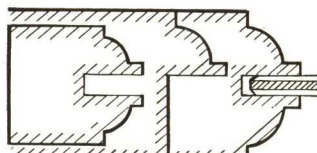
LAMINEX DOORS OF PHILIPPINE MAHOGANY

Philippine Mahogany Laminex offers a line of doors with unusual beauty and distinction of designs, at a surprisingly moderate cost. Philippine Mahogany can be finished in all shades from dark red mahogany to light walnut, or in the beautiful natural finishes. By proper staining and finishing, the various tones of these colors, also dull antique, are obtained.

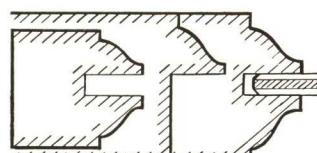
The close-grained, ribbon effect of Philippine Mahogany is unexcelled for doors and trim. Modern effects and diamond matchings are frequently used. Wheeler Osgood method of preparation brings out the beauty of this wood. Careful and thorough sanding, resanding, hand smoothing, result in a door that is equal to the finest custom-built product.



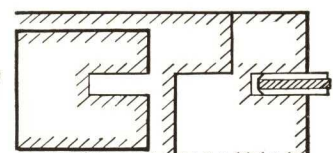
BEAD & COVE STICKING



OVOLO STICKING



SUNK OGEE STICKING



SQUARE STICKING

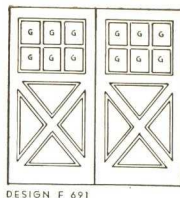
WHEELER OSGOOD *Garage Doors* IN PAIRS AND SETS

STANDARD LINE Garage Doors
Furnished in designs to meet the requirements of period or modern treatment are included in the complete line of WOCO garage doors. Constructed of durable Douglas Fir, with 1 3/4 in. stiles and rails, they conform to the high standards of quality and workmanship maintained by Wheeler Osgood. Available in designs shown at right and many others.

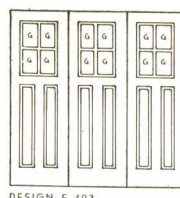
ONE-THIRTY-EIGHT LINE Garage Doors

Fully tested in the laboratory and in actual use, the new "One-Thirty-Eight" line of WOCO garage doors provides the many advantages of reduced weight, at no loss of strength. "Square Back" construction permits the use of 1 1/8 in. stiles and rails, instead of the 1 3/4 in. stiles and rails used in the old type, conventional garage doors. Excess weight is reduced by an average of 20% per door without sacrificing strength. A sag-proof, economical door is provided, which is easier to operate. Maintenance is eliminated. Available in designs shown at right, except Nos. 190 and 290.

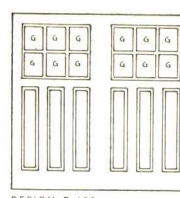
"Square Back" construction, the result of years of experimentation. It involves an improved form of sticking, in which a modified quarter-round (ovolo) is used. The panels are back of the center position. Straight sticking is used on the inner face, making it possible to give the door a deeper sticking on the outer face side or the appearance of a 1 3/4 in. door. A greatly increased bearing surface is secured, materially strengthening the joints. Added protection against the weather is provided. And in addition, the doors exhibit an exceptionally attractive appearance.



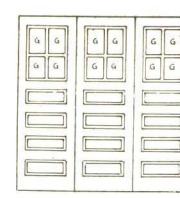
DESIGN F 691



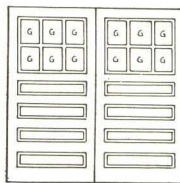
DESIGN F 493



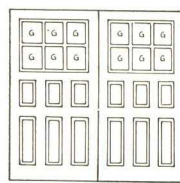
DESIGN F 693



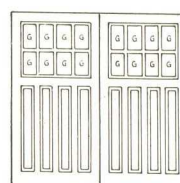
DESIGN F 495



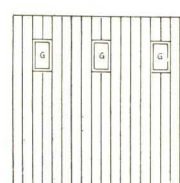
DESIGN F 695



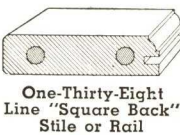
DESIGN F 696



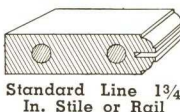
DESIGN F 894



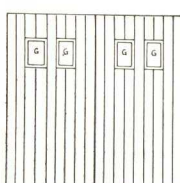
DESIGN F 190



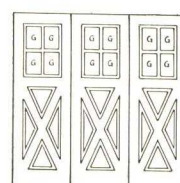
One-Thirty-Eight Line "Square Back" Stile or Rail



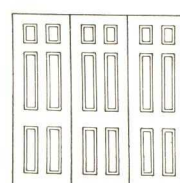
Standard Line 1 3/4 In. Stile or Rail



DESIGN F 290



DESIGN F 491



DESIGN 6-PANEL COLONIAL

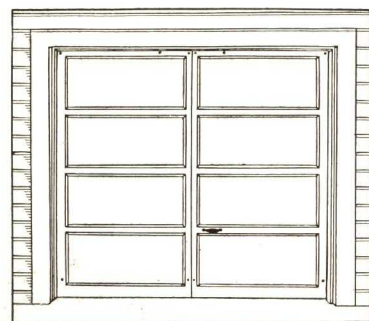
1 3/4 in. Standard Construction—1 1/8 in. Square Back Construction

Design No.	F691	493	693	495	695	696	894	190	290	491	6-panel Colonial
Stiles	5 3/8	4 1/16	5 3/8	4 3/16	5 3/8	5 3/8	5 3/8	5 3/8	4 3/16	4 3/16	4 3/16
Top rail	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8
Intermediate Rail	.....	.....	.....	4 1/2	4 1/2	4 1/2	.....	.....	.....	4 1/4	4 1/4
Lock Rail	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	5 3/8	8 3/4
Mullion	.....	4 1/2	4 1/2	.....	4 1/2	3 1/4	.....	.....	.....	.....	.....
Bars Between Glass	1"	5/8"	1"	5/8"	1"	1"	5/8"	.....	.....	.....	.....
Bottom Rail	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	7 7/16	7 7/16
Panels	CLG	F or R*	F or R*	F or R*	F or R*	F or R*	F or R*	.....	.....	.....	.....
Glass Opening 7° Door	12x13	11 1/4x13	12x13	11 1/4x13	12x13	12x13	9x13	.....	.....	11 1/4x13	.....

*Flat or Raised. CLG—Ceiling.

WOCO *Craw-Fir-Dor* SELF ENERGIZING-ONE PIECE-UPWARD ACTING

THE IMPROVED *Overhead Type* GARAGE DOOR



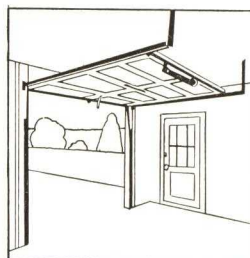
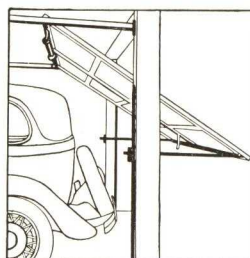
SELF-ENERGIZING UPWARD ACTING

The WOCO Craw-Fir-Dor is equipped with a new, improved mechanism which is foolproof. A square wire torsion spring constitutes the power unit. It is silent, inconspicuous and, being mounted on the door itself, eliminates the necessity for head room—no waste clearance space is necessary. Precision roller bearings on which the grooved cast iron drum is mounted eliminates cable wear. Rollers are Bakelite impregnated with 20% graphite, reinforced with a steel insert to prevent breakage. Even a child can operate it.



ONE-UNIT CONSTRUCTION

The construction of this overhead garage door, eliminates the disadvantages of many of the ordinary doors of this type. The doors are assembled as one movable unit—there are no sections to impair the proper functioning of the entire door—no elaborate machinery to demand frequent servicing—no obstructions in the opening. WOCO Craw-Fir-Dors are weather-stripped to prevent rattling, warping and sagging.



The WOCO Craw-Fir-Dor affords one of the most practical answers to the modern garage door problem. It provides a perfect, economical closing member for garage entrances—easy to install—simple, easy to operate—durable, trouble-free service—attractive appearance.

WOCO 1 3/8 IN. CONSTRUCTION

The stiles and rails of the WOCO Craw-Fir-Dor are 1 3/8 in. in thickness.

1 3/8 in. standard WOCO stile or rail



Durability, troubleproof service and absolute satisfaction are assured by WOCO construction.

STANDARD SPECIFICATIONS

Garage Doors shall be WOCO Craw-Fir-Dors manufactured by WHEELER OSGOOD SALES CORPORATION, Tacoma, Wash.

Stiles and rails shall be solid. Door panels shall be Laminex 3-ply, cemented together with Laminex water-resistant cement—surfaces and edges resin sealed.

SIZE: The WOCO Craw-Fir-Dor is available in one standard garage door opening dimension only—8 ft. wide x 7 ft. high. It is furnished as one unit—complete with WOCO doors and all necessary hardware for complete installation.

Where existing openings are larger than 8 x 7 ft.—slight additional framing will adjust opening to proper size.

Easy, Quick Installation

Installation of WOCO Craw-Fir-Dors may be easily and quickly accomplished. No cutting or trimming for installation is necessary since doors are prefitted and predrilled. Complete, simple instructions are furnished with the hardware—no fine adjustments to make—anyone can install them.

Typical Finish Treatment

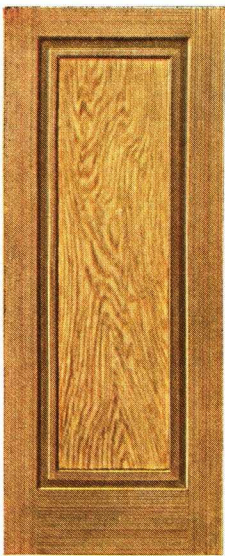
The color swatches below show only a few of the many attractive finish treatments which may be applied to Wheeler Osgood Doors. Because of the glass-smooth results of the factory's sanding process, the stains, enamels, paints, etc., may be applied successfully by any competent workman.

DOUGLAS FIR

The Rotary Cut Douglas Fir, with its popular grain effects, provides unusually attractive appearance when waxed or stained. The fine texture of the vertical-grain, selected old growth Douglas Fir is well suited for smooth, even painted or enameled surfaces. Any desired color scheme or tone effect can be obtained.

PHILIPPINE MAHOGANY

Philippine Mahogany may be finished in all shades from light or blonde mahogany to the rich, deep reds. Light walnut or the beautiful "natural" are among the many other finishes which may be obtained. Proper staining and finishing permit close matching and will produce practically any desired tone effect.



Grain structure of **Rotary Cut Douglas Fir** (one-half actual size). A few typical finish treatments are shown in the first column below.



Grain structure of **Vertical Grain Douglas Fir** (one-half actual size). A few typical finish treatments are shown in the second column below.



Belle Port Door of Douglas Fir, showing overall effect—panel, rotary cut Douglas Fir, stiles and rails, vertical grain Douglas Fir.



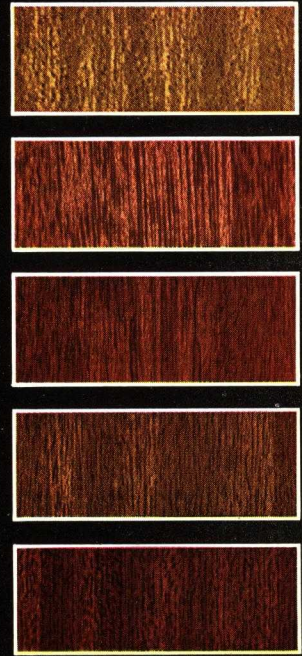
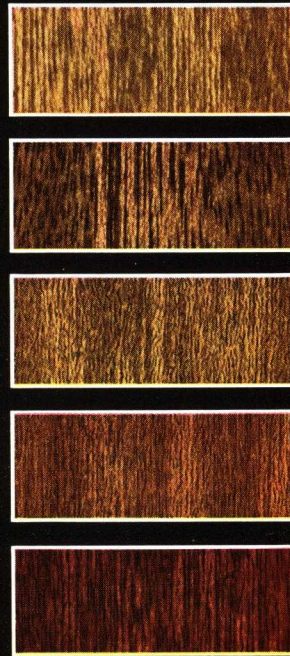
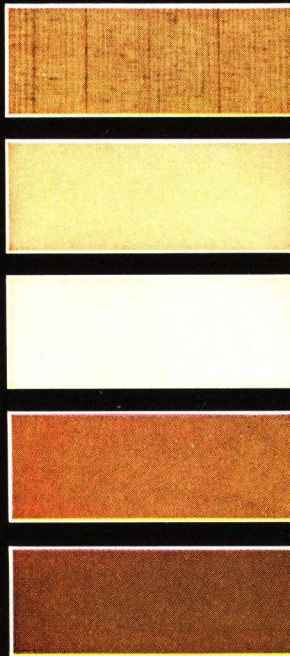
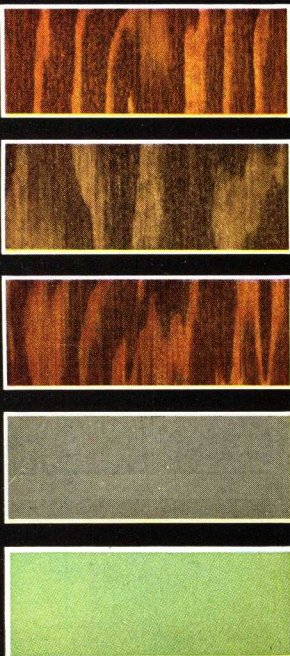
Grain structure of **light red, ribbon grain Philippine Mahogany** (one-half actual size). A few typical finish treatments are shown in the third column below.

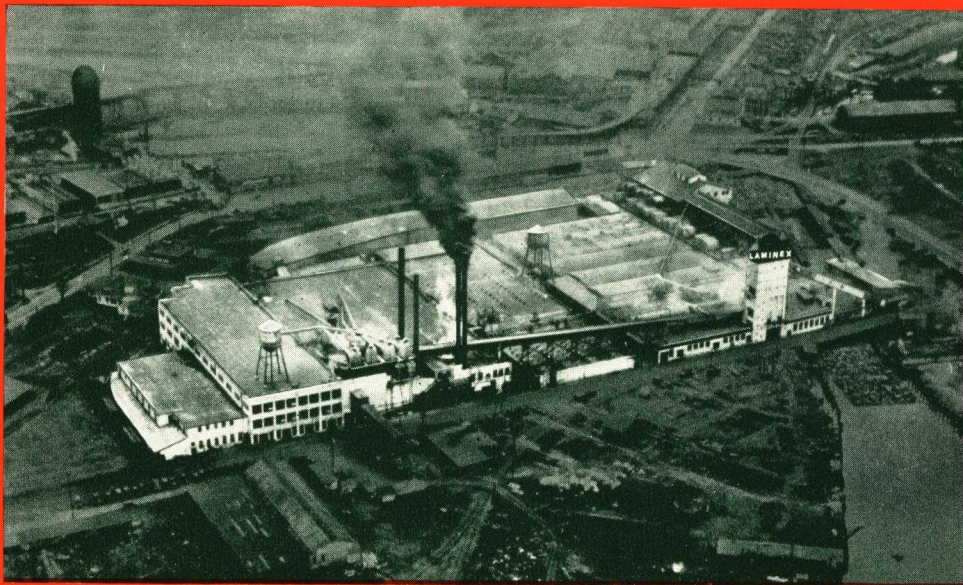


Grain structure of **dark red ribbon grain Philippine Mahogany** (one-half actual size). A few typical finish treatments are shown in the fourth column below.



Belle Port Door of **Philippine Mahogany** showing the overall beauty provided by the ribbon grain in panel, stile and rail.





WHEELER OSGOOD SALES CORPORATION

Factory: Tacoma, Washington

General Sales Offices: 122 South Michigan Avenue, Chicago, Illinois

Branch Offices: New York San Francisco Los Angeles

Dallas Wichita Tacoma

Stocks Carried in Principal Cities

WINDOWS 15

- SECTION -

Section Number \rightarrow 1 / 5 \leftarrow Catalog Number

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Windows

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See Sash

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See Windows—Balanced—Pivoted

WINDOW

- Frames—Wood**
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Alumex 15/12
Bayley, William, Co. 15/4
Browne 15/19
Crittall-Federal, Inc. 15/7
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Croft Steel Windows, Inc. 15/8
Detroit Steel Products Co. 15/9
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Fenestra 15/9
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Polachek 15/13
Pomeroy, S. H. Co., Inc. 15/18
Richey, Browne & Donald, Inc. 15/19
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- Detroit Steel Products Co. 15/9
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- Ceco Steel Products Corp. 15/6
- Cotswold 15/14
- Crittall-Federal, Inc. 15/7
- Croft-Lemco 15/8
- Croft Steel Windows, Inc. 15/8
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Friedrich, E. H., Co.	14/7
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Security Products Co.	15/20
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Guildhall	15/17
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Hope's Windows Inc.	15/14
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Norman	15/7
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Richey, Browne & Donald, Inc.	15/19
Security Products Co.	15/20
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Sterling Windows, Inc.	15/21
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Hung

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Pella	16/58
Permatol	15/33
Pine Craft	15/33
Qualitybilt	15/29
Rolscreen Co.	16/58
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Mesker Bros. Iron Co.	15/17
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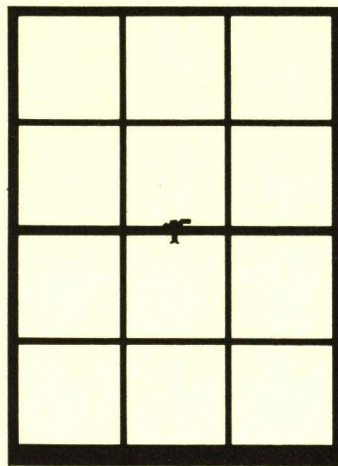
X-Ray Protective

See Windows—X-Ray Protective 10

ADLAKE WINDOWS

of

ALUMINUM
and **B**RONZE



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The ADAMS & WESTLAKE COMPANY.

General Offices and Factories Elkhart, Indiana, U.S.A.

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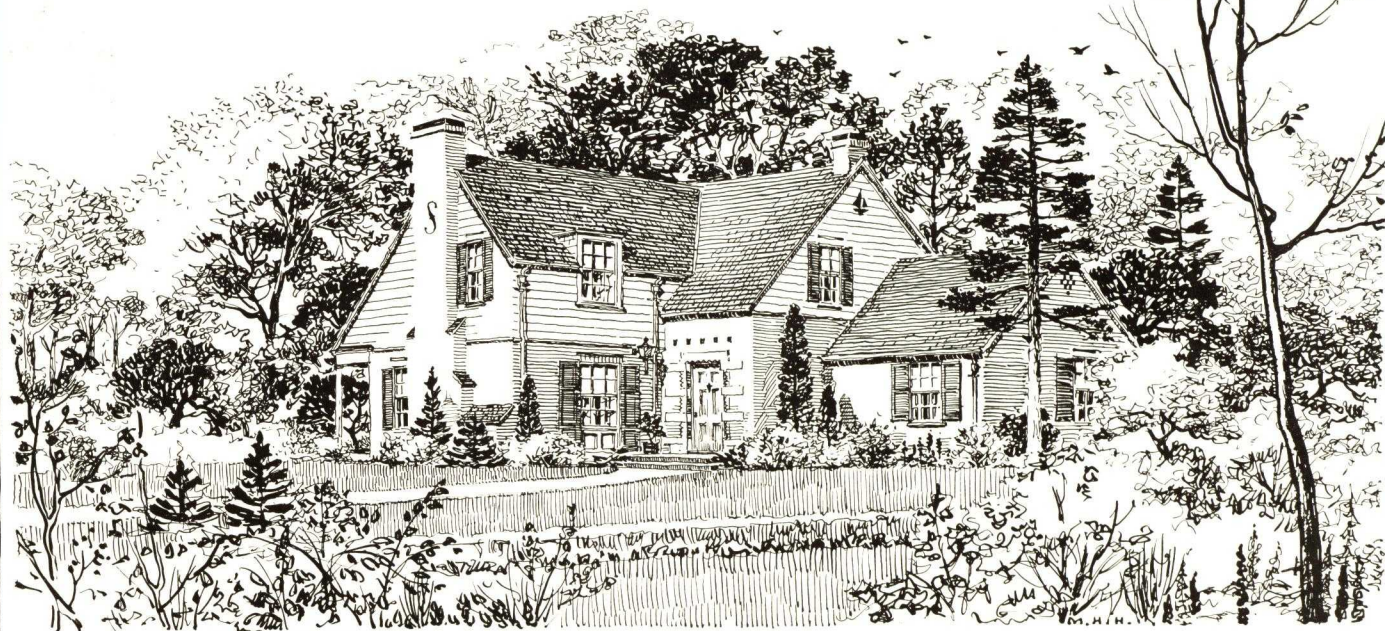
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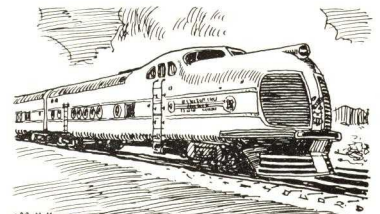
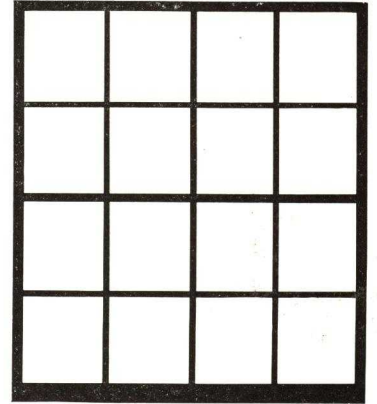


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ADLAKE STAINLESS STEEL WINDOWS



ADLAKE CHROME PLATED WINDOWS

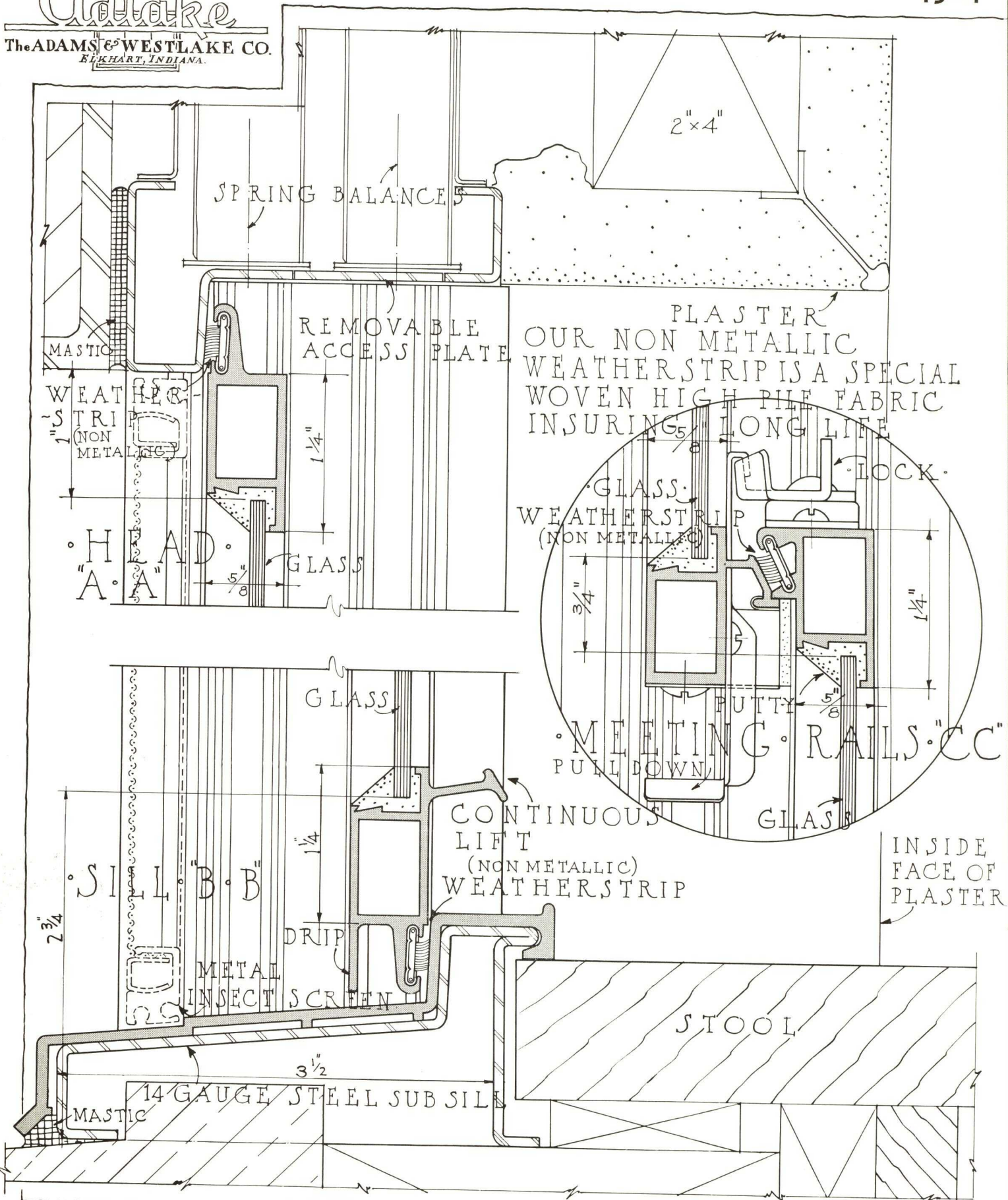


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The ADAMS & WESTLAKE CO.

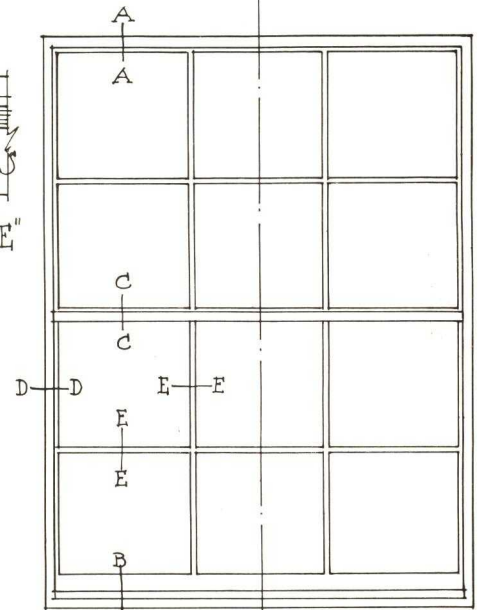
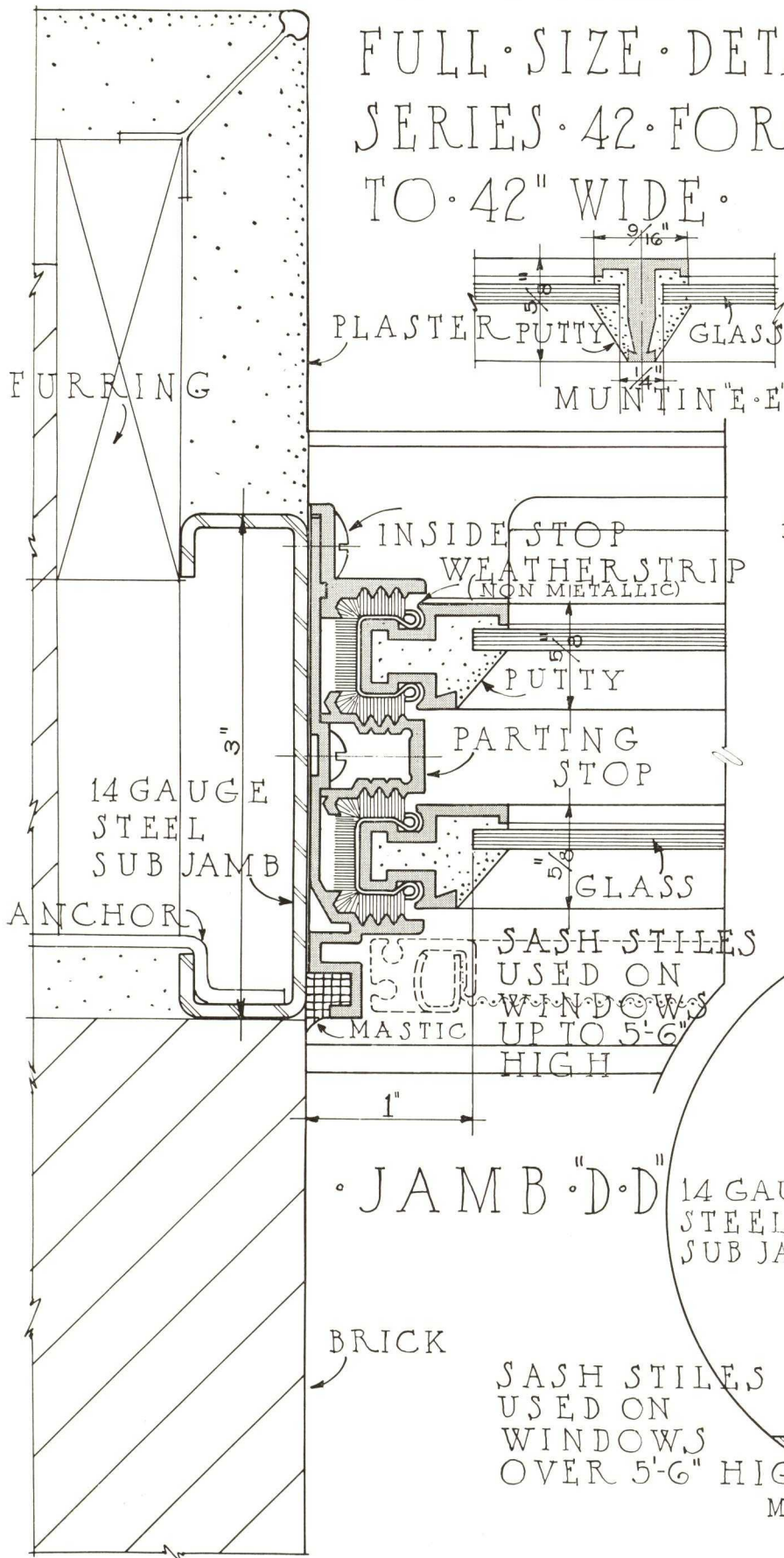
Wilson A. Smith

Wilson A. Smith
President.

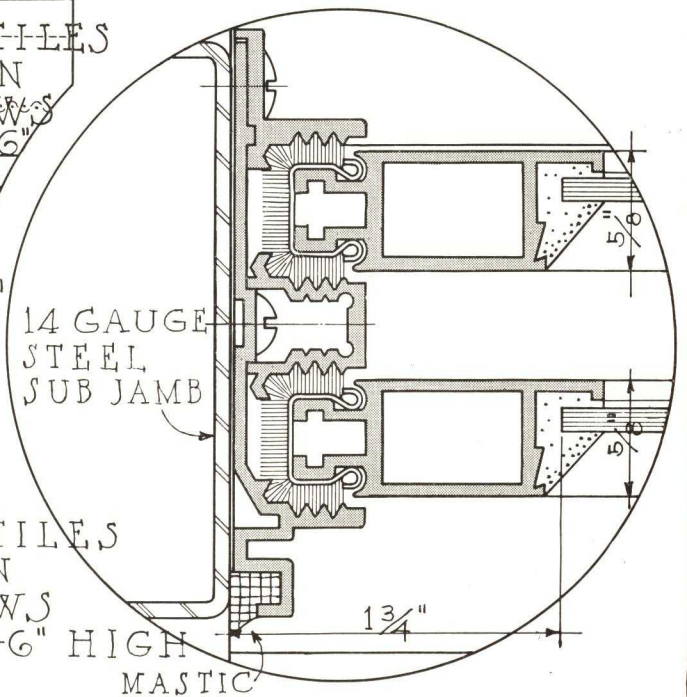


SERIES 42 DOUBLE HUNG

FULL · SIZE · DETAILS of "BULTIN" SERIES · 42 · FOR · WINDOWS · UP · TO · 42" WIDE ·



EXTERIOR · ELEVATION ·
SCALE $\frac{3}{4}"$ EQUALS 1 FOOT



SPECIFICATIONS

NOTE: For public projects refer to home office.

GENERAL: All windows shall be of the type and kind indicated on the plans and as called for in these specifications, and shall be constructed of materials as hereinafter specified.

SCOPE OF THE WORK: This contractor shall include in his work the furnishing of all (Specify Type) double-hung windows required for the building, with all necessary hardware, anchors, and miscellaneous equipment as hereinafter specified for these windows. All sub-frames shall be furnished and delivered to the site, to be built in by others. All aluminum or bronze facia members shall be shipped with protective crating to insure satisfactory delivery. *Glass, glazing, putty, field painting, and caulking are not included as a part of this specification.* All field work is to be done by others.

MATERIALS: All materials used in the manufacture of these windows shall be the best suitable for the purpose intended. These materials shall meet Federal specifications for their respective kinds where Federal specifications have been written regarding materials applicable to windows of these sizes, types, and design.

CONSTRUCTION: Sub-frames: Head, sill and jamb members shall be steel, formed to the profile shown in the drawings and shall be accurately coped or mitered at abutting intersections and shall be welded. These sub-frames shall be primed at the factory and coated with bitumastic paint where covered by aluminum facia members. Sub-frames are to be built in by others.

FACIA MEMBERS: All head, sill, and jamb facia members shall be aluminum (or bronze)* machined at the factory to insure a neat installation when applied in the field. All members shall be the manufacturer's standard as indicated on the drawings.

SASH MEMBERS: Rails, stiles, and muntins shall be aluminum (or bronze)* and shall be the manufacturer's standard as indicated on the drawings. All prepared for outside putty glazing. (Bead glazing furnished on Type 60 when specified.) These sash shall be shipped to the job and glazed by others before being installed. All hollow rails and stiles shall have sufficient strength to insure satisfactory members for their respective uses. All sash shall be securely joined. Muntin joints shall be interlocked with flush joints and in the same plane as the sash rails and stiles.

WEATHERSTRIPPING: Non-metallic jamb weatherstrip shall be secured to the upper and lower sash rails. This weatherstrip shall be a special tightly woven fabric with a high pile, woven on a firm, tough backing. This in turn shall be formed around a non-ferrous metal channel, the edges of which shall securely hold the fabric to insure its long wear. The non-metallic weatherstrip used at the head, meeting rails, and sill shall be fabricated of the same type of material bound in a flat type retainer which shall be inserted in the grooves in the sash rails.

WEATHERSTRIPPING TESTS: Windows from regular production shall be subject to infiltration tests before or after shipment. The weatherstrip shall be guaranteed to stand Federal Air Infiltration Test standards after the window has been opened and closed mechanically *one hundred thousand times*.

HARDWARE: Sash shall be hung on removable type balances. These balances shall be provided with connecting links which will provide secure attachment to sash. (For Type 42 and 42A, a continuous sash lift shall be formed as an integral part of the lower sash bottom rail.) Stainless steel sash locks are to be furnished attached to the upper rail of the lower sash and shall securely lock the window in a closed position.

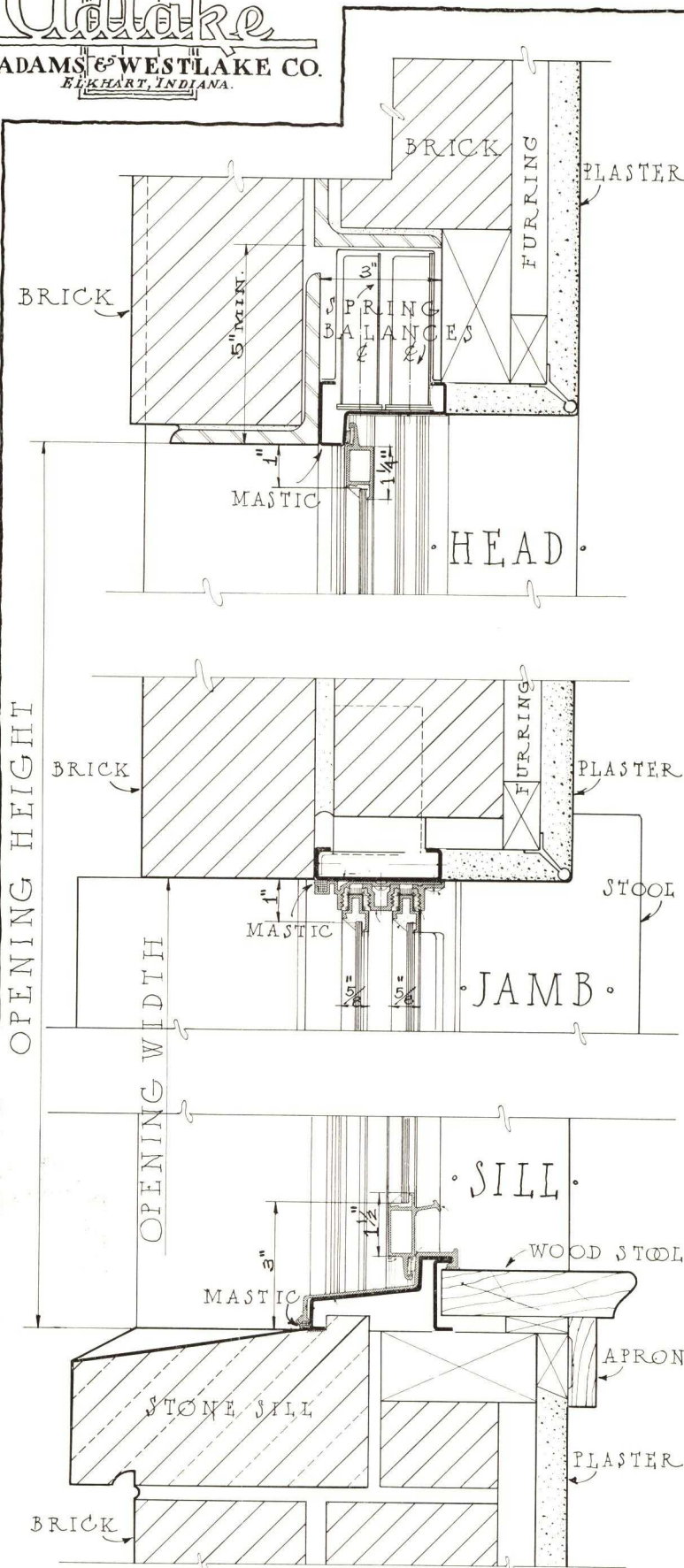
FINISH: All aluminum shall be wheel cleaned before assembly to bring the color of the finished surfaces reasonably uniform and free from scratches and other serious surface blemishes.

GLAZING PROVISION: All sash shall be prepared for putty glazing. Spring wire clips shall be furnished by the window manufacturer. Glass, glazing, and putty to be furnished by others.

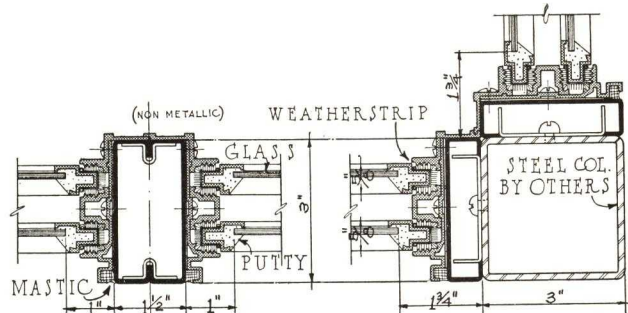
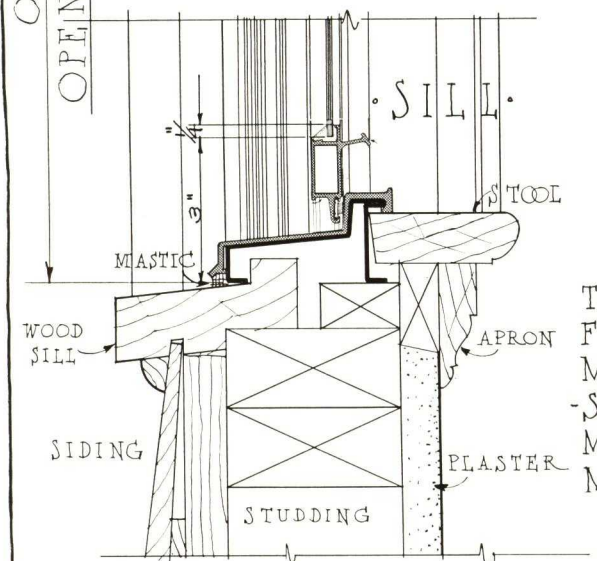
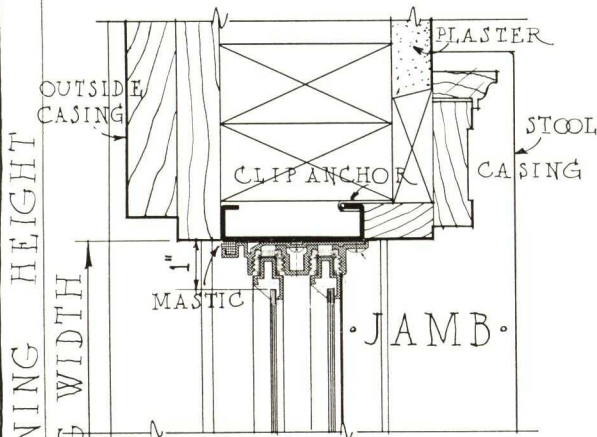
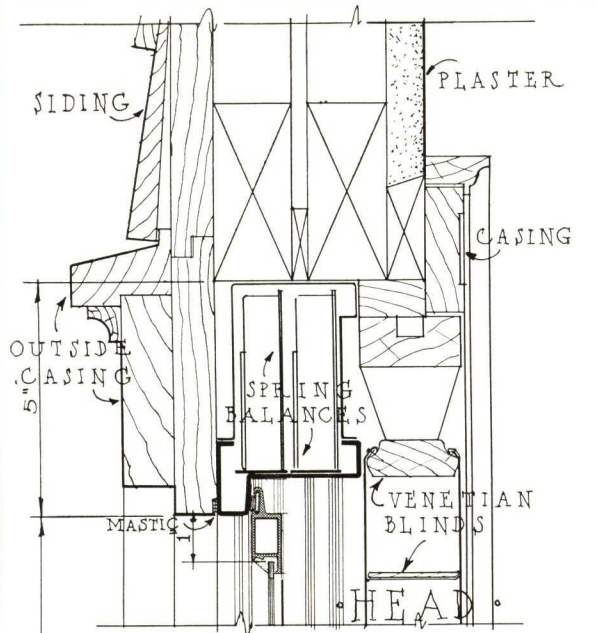
SCREENS shall be half sliding (or full)* and shall be furnished complete with aluminum (bronze, or steel)* frames, to be wired with aluminum (or bronze)* wire cloth. All attaching hardware shall be furnished.

STORM SASH: The window manufacturer shall furnish aluminum frames for storm sash for all windows which are indicated to be equipped with storm sash. The corners of these frames shall be joined and screwed together and shall allow easy glazing with rubber splines. These frames shall have one horizontal muntin in all cases where the glass height exceeds 3' 6". Glazing of storm sash is to be by others unless otherwise specified.

* State which.

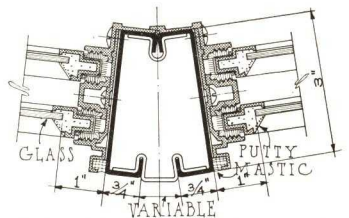


SERIES 42 SET IN SOLID
MASONRY WALL SCALE 3"
EQUAL 1'-0"



SERIES 42 MULLION & CORNER DETAILS.

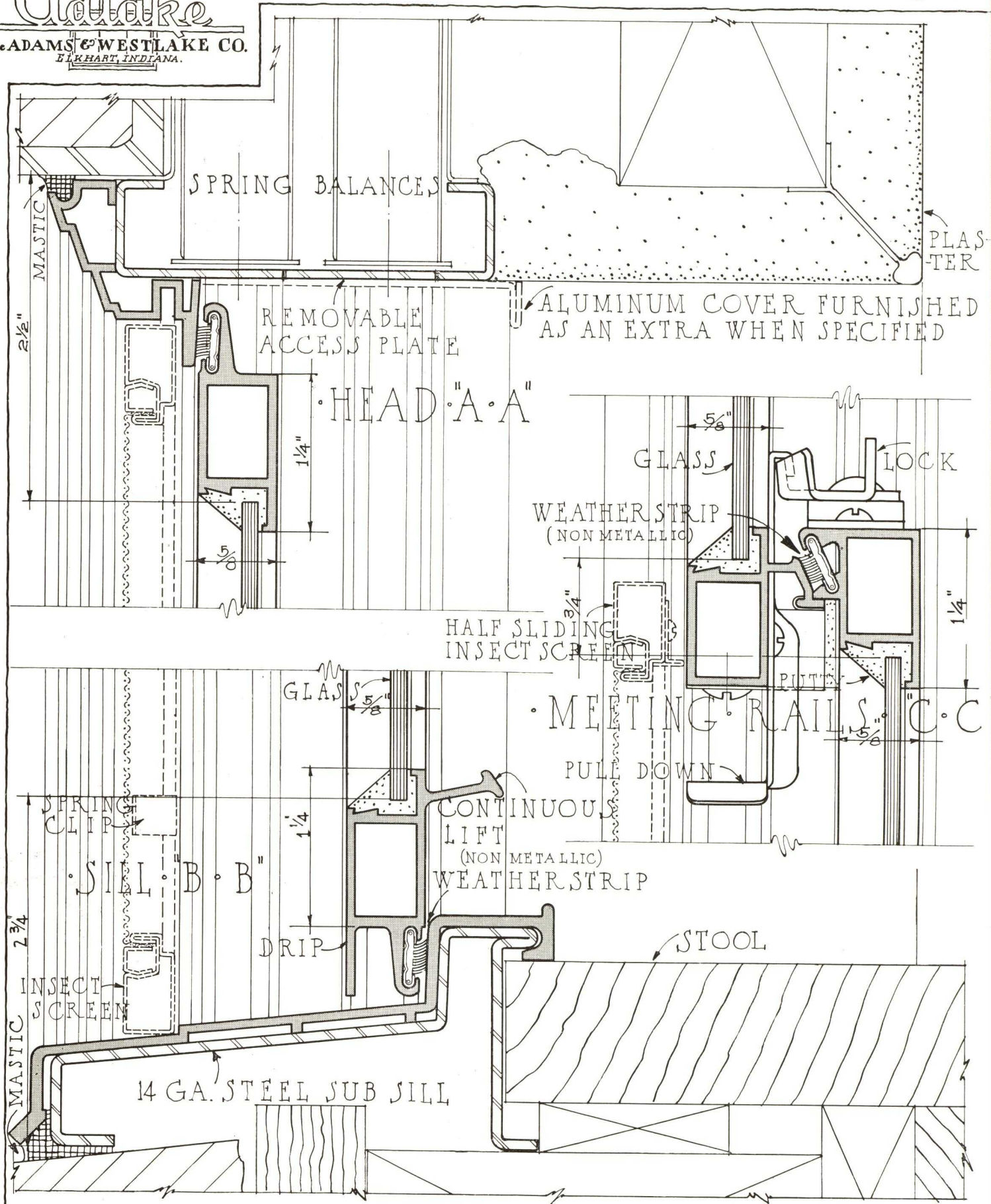
NOTE: ADD $1\frac{1}{2}$
TO WINDOW SIZE
FOR STANDARD
MULLION DIMEN-
SIONS. CORNER
MULLIONS and SPAYED
MULLIONS ARE VARIABLE.



SERIES 42 SET IN FRAME
WALLS.

SCALE 3 INCHES
EQUAL 1 FOOT.

FULL SIZE MULLION DETAILS
FURNISHED ON REQUEST



SERIES S-42A DOUBLE HUNG

FULL · SIZE · DETAILS of "BUILTIN" · SERIES · 42 · A · FOR · WINDOWS · UP · TO · 42" · WIDE ·

NOTE:

FULL SCREENS ARE FURNISHED WITH EXTRUDED
OR TUBULAR FRAMES. HALF SCREENS
ARE TUBULAR FRAMES, VERTICAL SLIDING
FOR CLEANING OF SASH

PLASTER

INSIDE STOP
WEATHER STRIP
(NON METALLIC)

PUTTY

PARTING STOP

GLASS

CONT. FIN
ANCHOR

SPRING

MASTIC

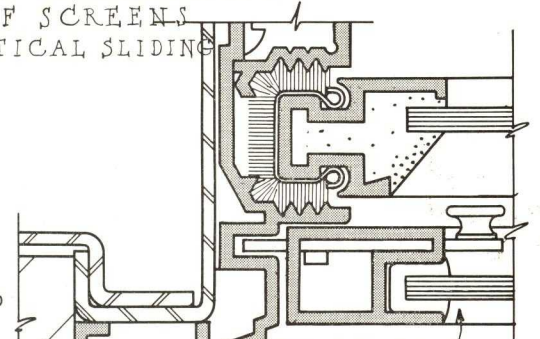
INSECT SCREEN
ALUMINUM · BRONZE · OR
PAINTED STEEL

1 3/4"

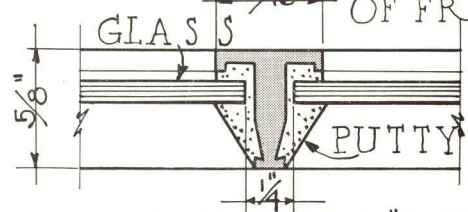
JAMB · "D · D" ·

BRICK

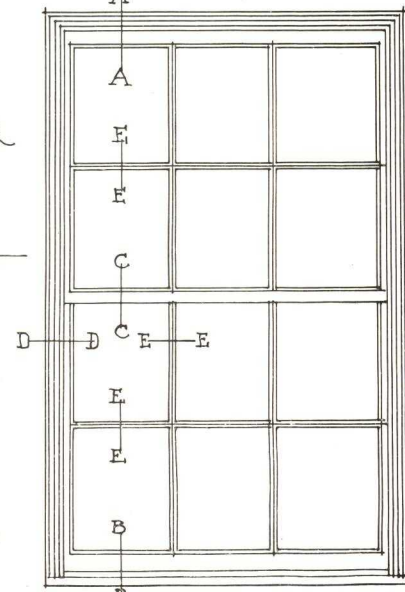
OUR NON METALLIC
WEATHERSTRIP IS A SPECIAL
WOVEN HIGH PILE FABRIC
INSURING LONG LIFE



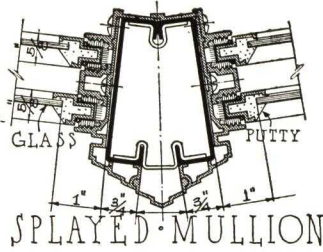
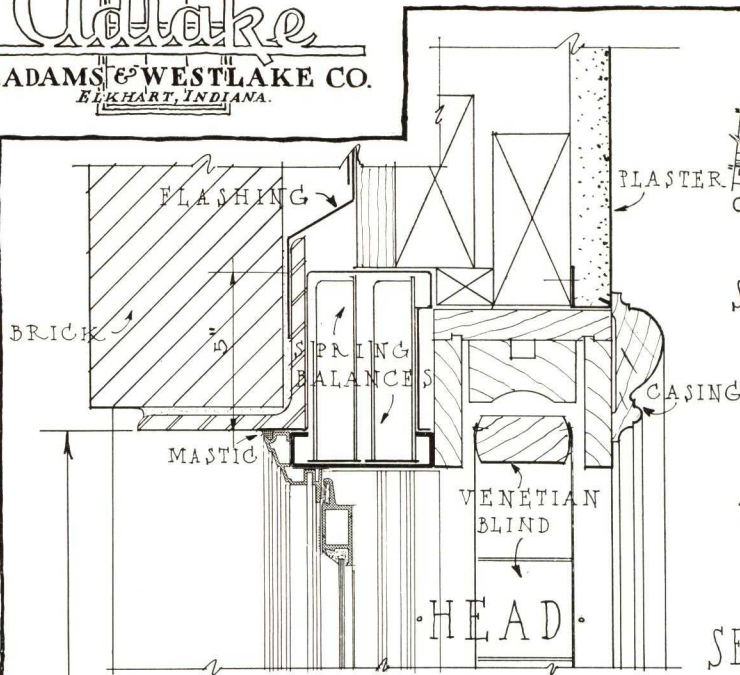
STORM
SASH ARE FURN-
ISHED ONLY WHEN
SPECIFIED AND ARE
APPLIED TO OUTSIDE
OF FRAME



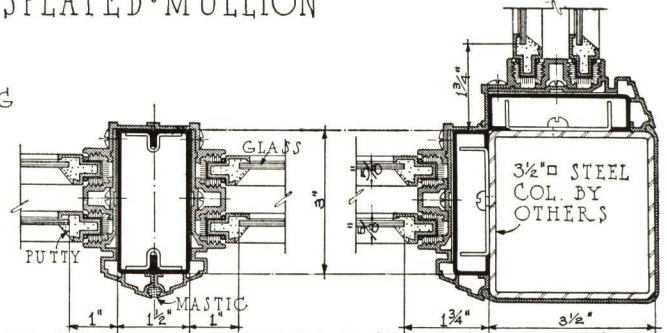
MUNTIN · "E · E" ·



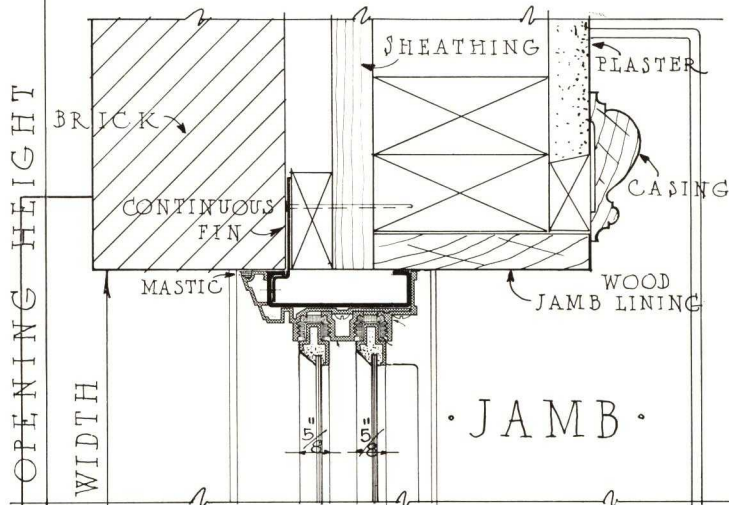
EXTERIOR · ELEVATION
SCALE 3/4" EQUALS 1'-0"



FULL SIZE
MULLION
DETAILS
FURNISHED
ON REQUEST



SERIES 42A MULLION & CORNER



IN the search for efficiency plus economy, architectural merit has not been sacrificed. Sturdy construction and the enduring qualities of aluminum and bronze meet every requirement for strength; yet slender meeting rails and unobtrusive head, sill, and jamb members make artistic appeal to the modern architect.

BUILT-IN subframes insure BUILT-IN efficiency and economy. The rigidly braced, all welded, steel subframe simplifies setting into masonry or wood construction. The sash clearances have been predetermined. Neither planing nor fitting is necessary. All fastening holes are provided and the sash are weatherstripped at the factory.

Glazing can be done before sash are hung in place. A screw driver is the only tool required for complete installation. The non-metallic weatherstripping is shipped attached to the sash. This specially woven fabric of selected wool, woven in high pile, insures long life.

Our research and tests show that these windows can be opened and closed 200,000 times and yet no appreciable wear on the weatherstrip.

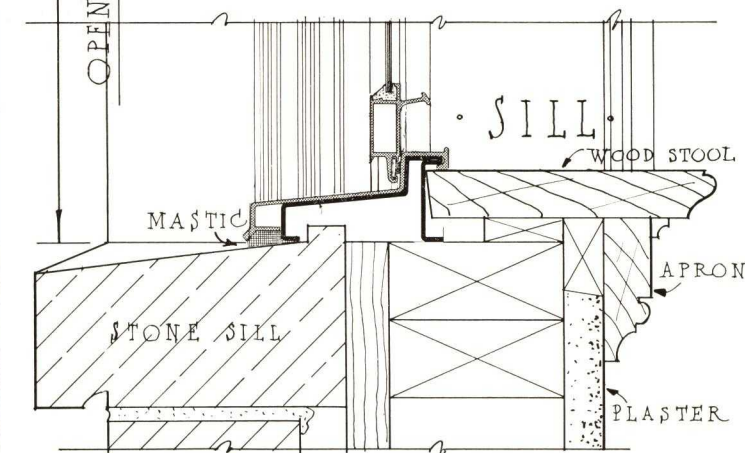
In buildings where double-hung windows might be employed, the use of Adlake Bronze or Aluminum windows will INSURE beauty, convenience, and durability.

The Series 42, for windows up to 42" wide, is recommended for residences, apartment houses, and hotels.

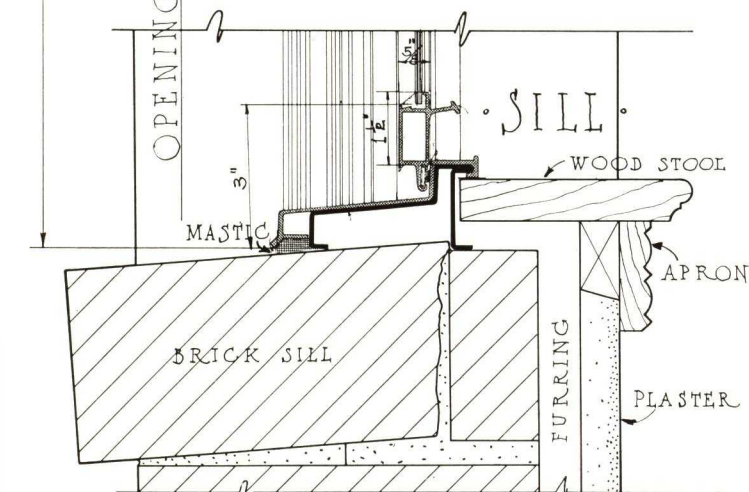
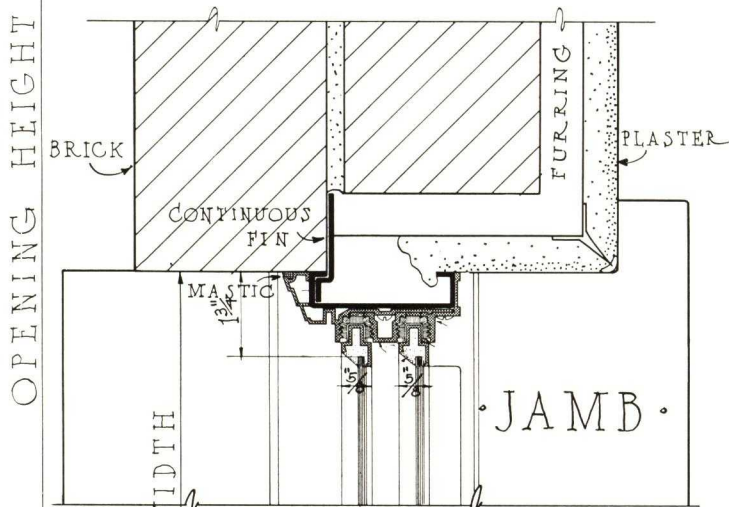
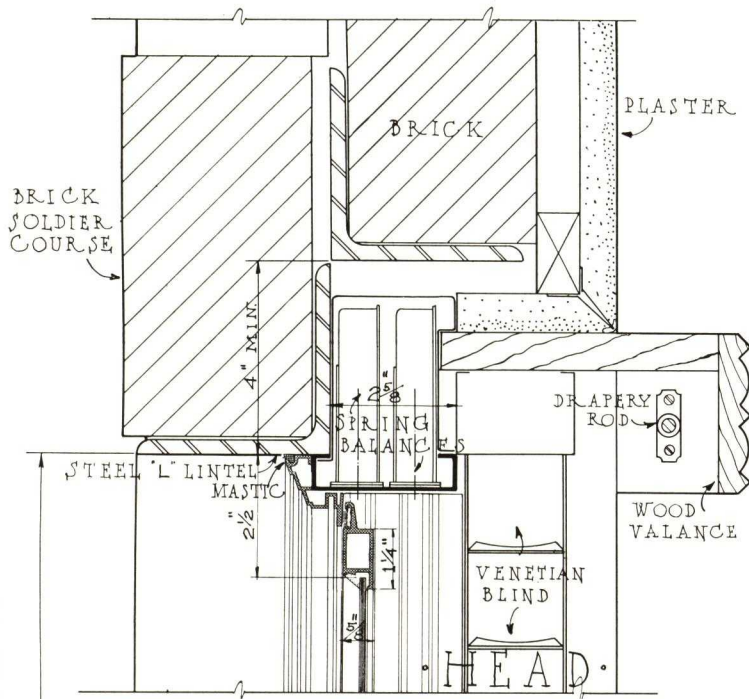
The Series 60, for windows up to 60" wide, is recommended for schools, offices, and other types of public buildings.

These two new windows are produced in the shops of the ADAMS & WESTLAKE COMPANY by fine craftsmen who have at their disposal the latest and best equipment obtainable.

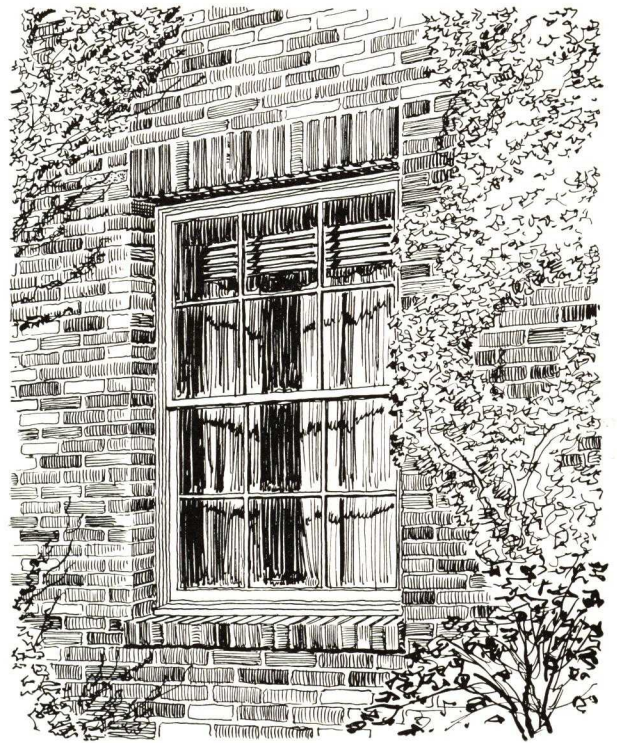
To the architect, builder, and owner, who necessarily think in terms of the life of a building, the foregoing facts all combine to mean permanence. The new Adlake double-hung window offers BUILT-IN PERMANENCE, which is ultimately, BUILT-IN ECONOMY.



SERIES 42A SET IN
BRICK VENEER WALL
SCALE THREE INCHES EQUAL ONE FOOT.



• SERIES 42A • SET IN • SOLID • MASONRY • WALL •
SCALE • THREE INCHES EQUAL ONE FOOT •



ADLAKE WINDOWS are *patented* and offer exclusive features found in no other window.

NON-METALLIC WEATHERSTRIP, insuring dust proof, smooth operating windows.

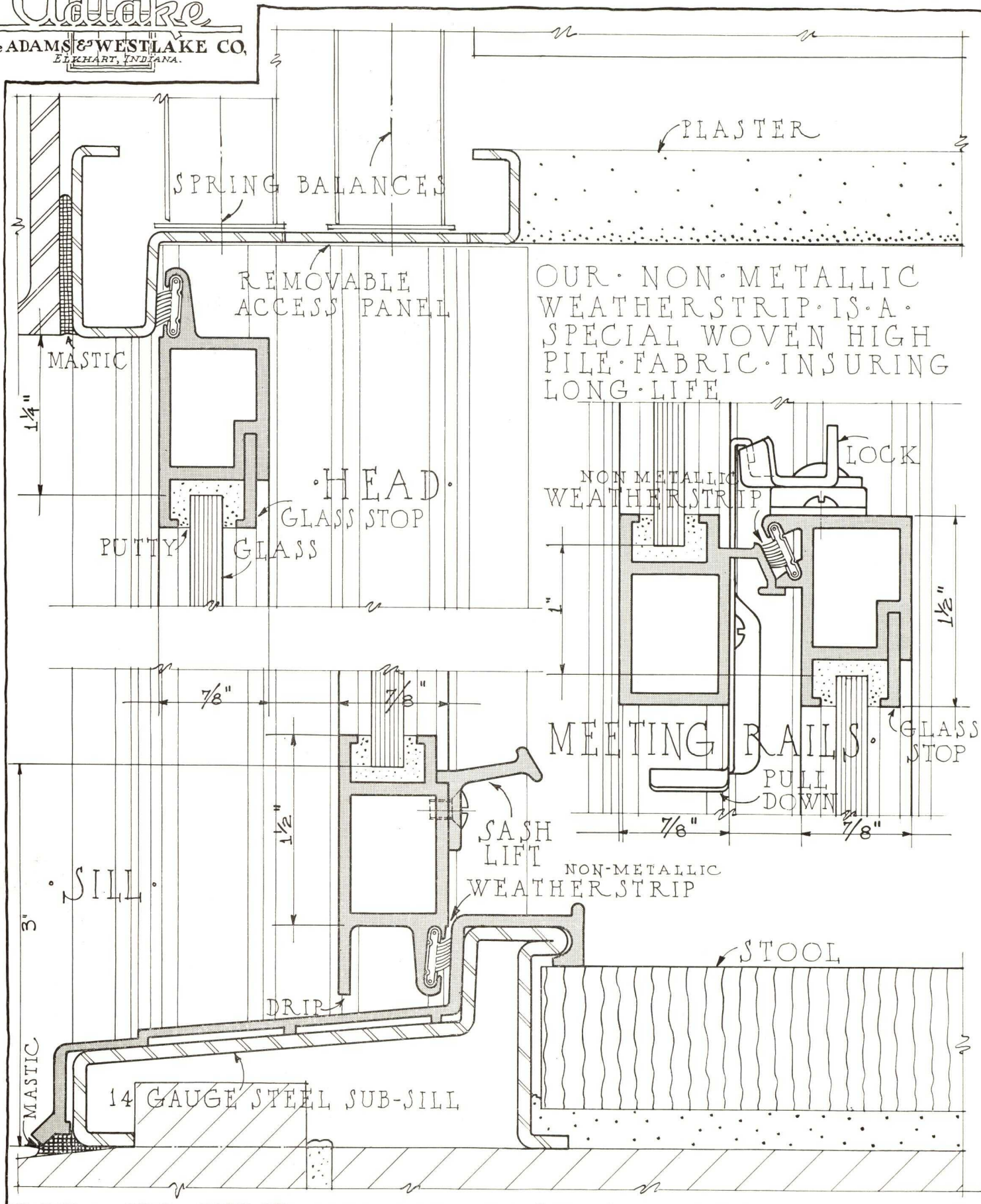
BUILTIN SUBFRAMES, insuring built-in economy, providing for installation of aluminum or bronze after the rough work has been completed.

TRIM MOULDINGS, combining economy with architectural merit, available to meet the requirements of modern and classical designs.

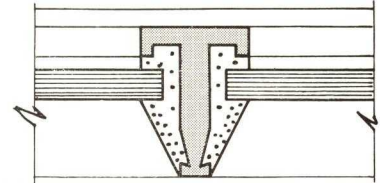
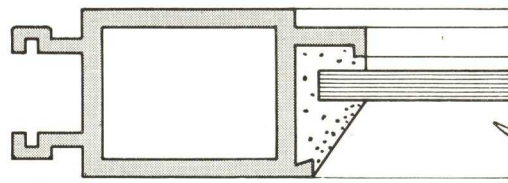
PLASTER GROUNDS to establish true openings.

UNIVERSAL ADAPTABILITY to all types of construction, yet providing the maximum glass area within the window opening.

GRACEFUL LINES, together with slender mullions, achieve beauty and enhance the value of good design.

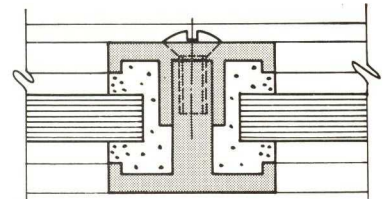
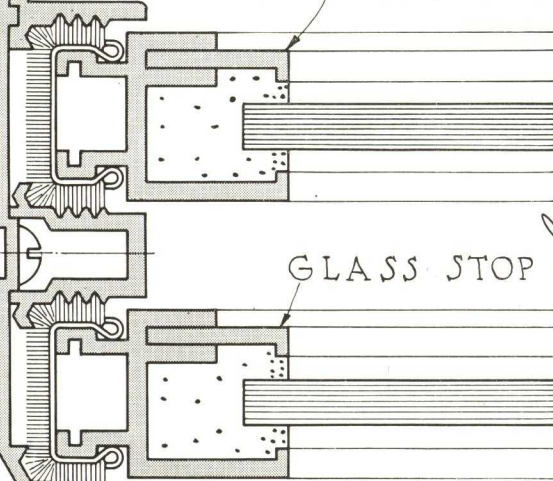


FULL·SIZE·DETAILS·of·SERIES·60 FOR·WINDOWS·UP·TO·60" WIDE·



HOLLOW STILES CAN BE FURNISHED PUTTY GLAZED
OR WITH GLASS STOPS "MUNTIN"

(NON-METALLIC)
WEATHER STRIP
GLASS STOP



MUNTIN WITH
GLASS·STOP

14 GAUGE
STEEL SUB-
FRAMES ON ALL
TYPE 60 and 60-A
WINDOWS.

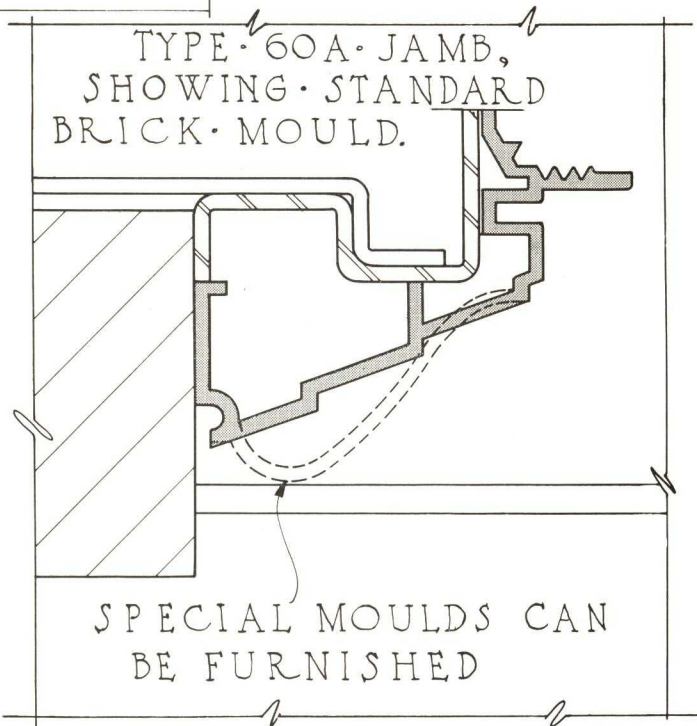
ANCHOR

MASTIC

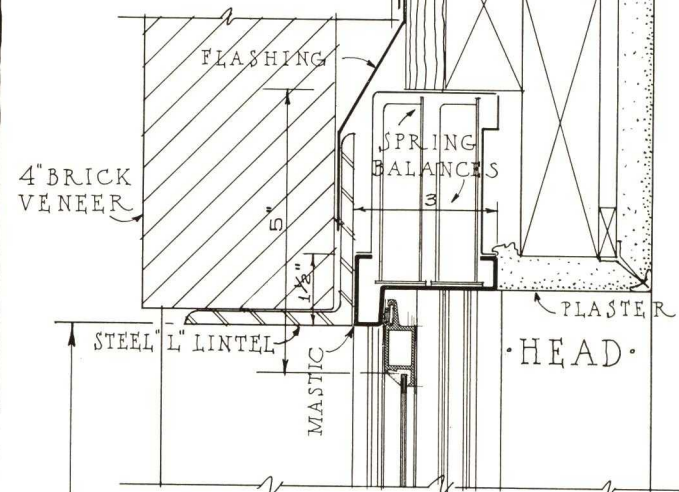
JAMB·

BRICK

TYPE·60A·JAMB,
SHOWING·STANDARD
BRICK·MOULD.

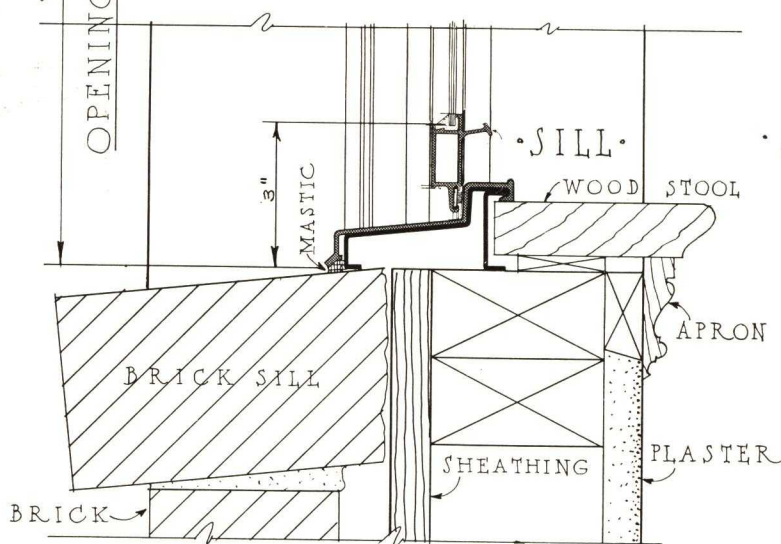


SPECIAL MOULDS CAN
BE FURNISHED



OPENING HEIGHT.

OPENING WIDTH



• TYPES AND SIZES •

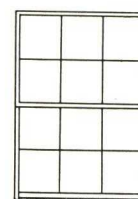
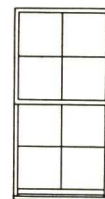
SERIES 42 ADD 1½" FOR SERIES 42-A

• WIDTHS • 2'-0" 2'-6" 3'-0" 3'-6" 4'-0" 4'-6" 5'-0"

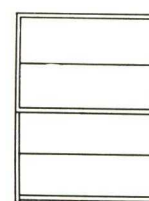
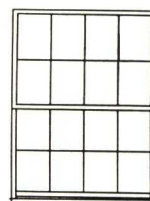
SERIES 60

• HEIGHTS •

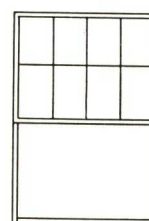
STANDARD STILES
3'-0"
3'-6"
4'-0"
4'-6"
5'-0"
5'-6"
HOLLOW STILES
6'-0"
6'-6"
7'-0"
7'-6"
8'-0"



TYPICAL

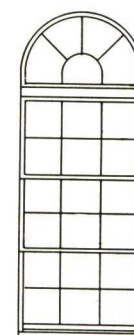
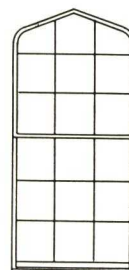


MUNTIN



ARRANGEMENT

• SPECIALS • CUSTOM BUILT •
SHAPED HEADS and TRIPLE HUNG



• SERIES 42 SET IN BRICK •
• VENEER WALL •

SCALE 3 INCHES
EQUAL 1 FOOT

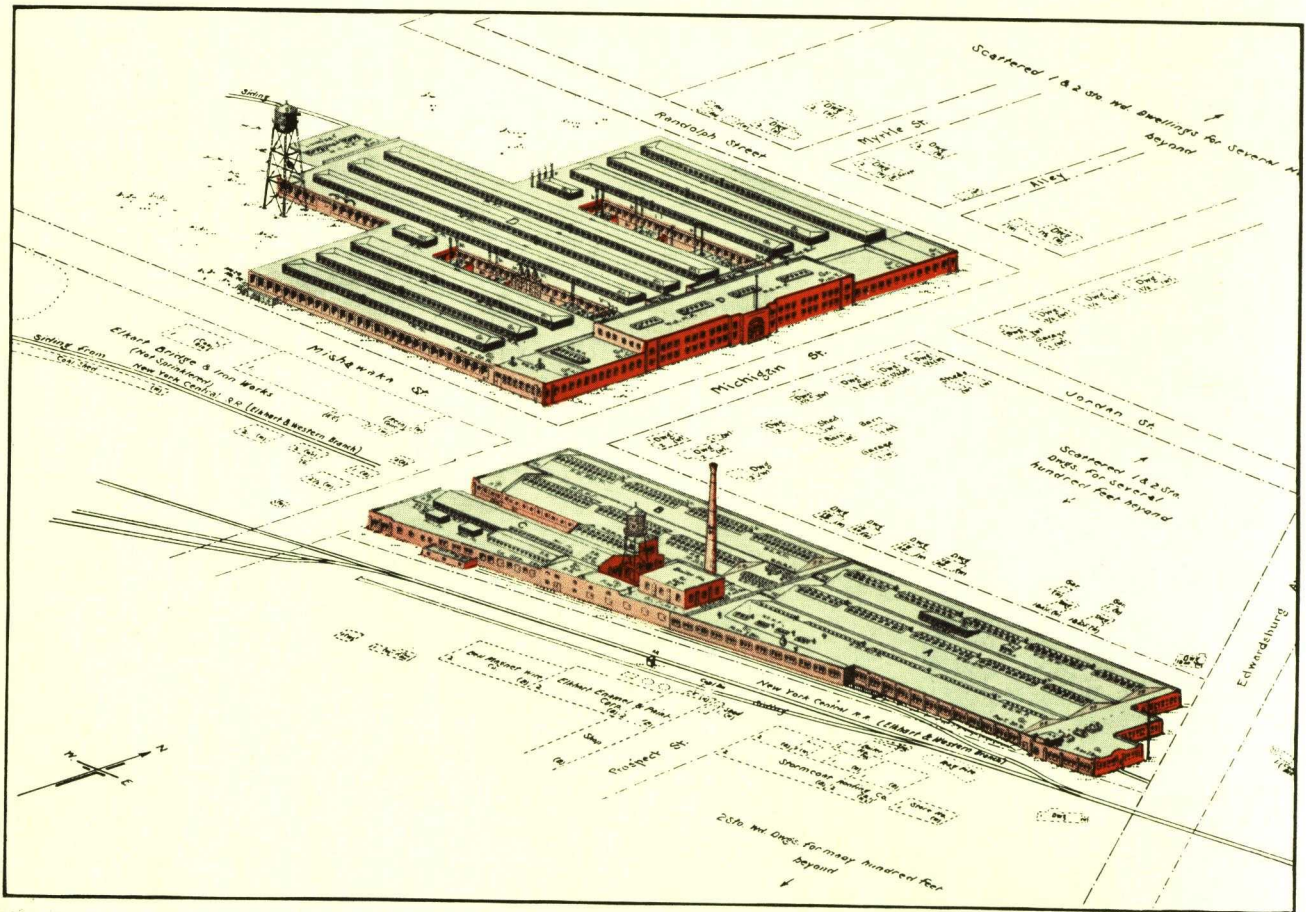
SPECIAL SIZES, TRANSOMS
AND FIXED SASH
FABRICATED TO ORDER



INTERIOR
VIEW OF
SERIES 60
WINDOW.



ADLAKE WINDOWS



for the
**BUILDING
INDUSTRY**

The ADAMS & WESTLAKE COMPANY.
General Offices and Factories Elkhart, Indiana, U.S.A.

REPRESENTATIVES IN PRINCIPAL CITIES.

ALUMINUM COMPANY OF AMERICA

Member of The Producers' Council, Inc.

Manufacturers of Alcoa Aluminum and Its Alloys

1844 Gulf Building, PITTSBURGH, PA.

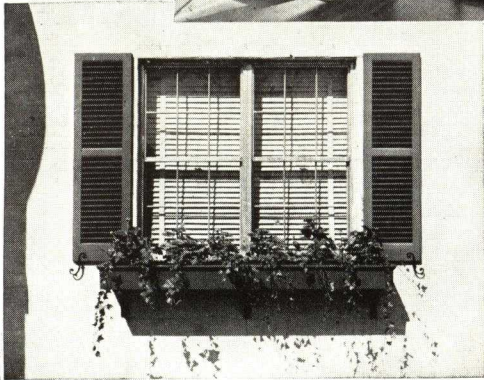
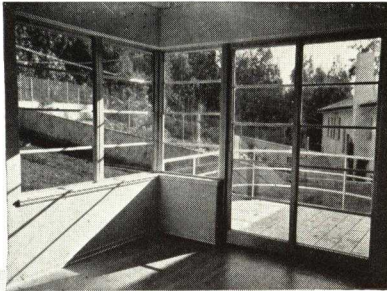
For Sales Offices, see Metals Section

For other pages on Aluminum, Its Alloys and Uses, see File Index

ALCOA ALUMINUM FOR WINDOWS



Aluminum windows were first used in monumental structures. Now, however, complete lines of windows are available for residences.



Aluminum windows are attractive, permanent, and economical

Aluminum windows make possible economies both in construction and maintenance, no matter what the type—double hung, casement, or industrial.

The precise dimensions and advanced designs of extruded shapes of Alcoa Aluminum combine to produce windows light in weight and easy to operate. The small strong sections increase effective glass area.

Aluminum windows cannot rust, shrink, warp or swell. They never need painting and they cannot streak or stain adjoining surfaces.

The manufacturers who regularly fabricate and stock aluminum windows are listed below. There are many other fabricators who will make aluminum windows upon request to your specification.

Adams & Westlake Company, Elkhart, Ind.

Sterling Windows, Inc., Washington, D. C.

Flour City Ornamental Iron Company, Minneapolis, Minn.

General Bronze Corporation, Long Island City, N. Y.

Herrmann & Grace Company, Brooklyn, N. Y.

Kawneer Company, Niles, Mich.

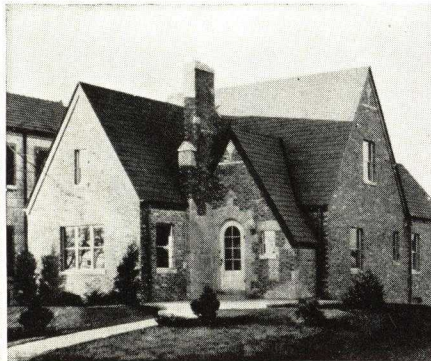
Universal Building Products Company, Dallas, Tex.

Richey, Browne & Donald, Inc., Maspeth, N. Y.

FOR COMPLETE DETAILS

Some of the above manufacturers show their complete line in Sweets.

Complete details may be obtained from the book "Windows of Alcoa Aluminum" which has 30 pages of assembly drawings and sizes offered by all these manufacturers. It also has 22 pages of description which tell about all the advantages of aluminum for windows. This book can be obtained immediately upon request to any of our offices.



No matter what the type of house, aluminum windows will fit the architect's needs

ALCOA ALUMINUM EXTRUSIONS

The low cost of aluminum windows and sills is accounted for by the availability of Alcoa Aluminum Extruded Shapes. The reason for this fact is the flexibility of the extrusion process itself and aluminum's ability to be readily extruded.

In the extrusion process, aluminum is heated to a sufficiently plastic state, then forced by hydraulic pressure through a die having an aperture of the desired contour. Because of the workability and other favorable qualities of aluminum, it is feasible to extrude shapes in larger sizes than is practicable with other metals. For the same reasons the variety of profile possible in aluminum is very extensive.

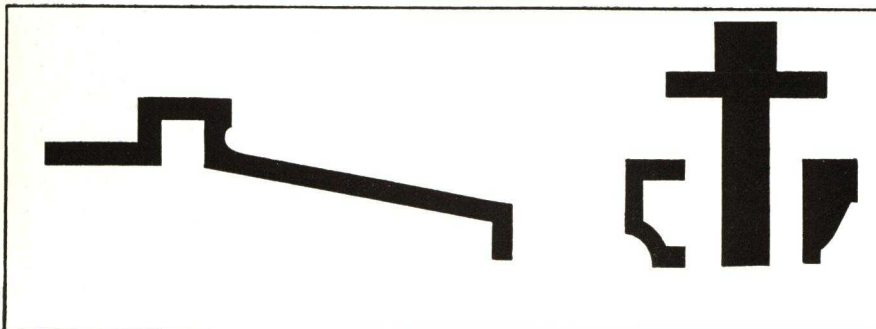
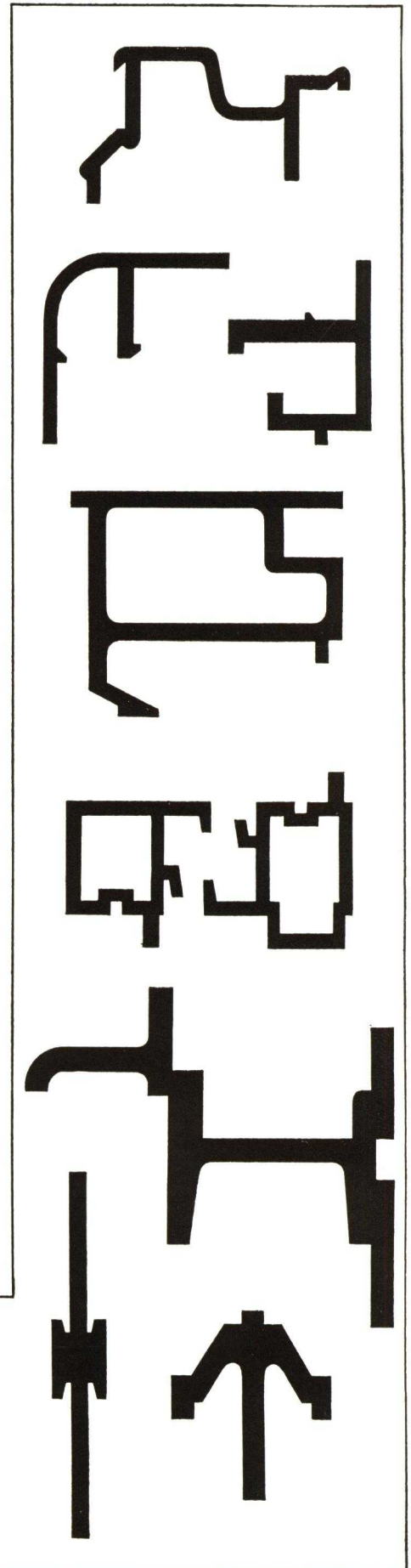
The extrusion process, like any manufacturing process, has limitations. It is necessary, therefore, when designing sections not already available, to take into consideration these limitations:

Size—The size of sections available commercially are those which can be enclosed by an 8-in. diameter circle. Shapes up to 12-in. have been produced, but should be designed only with our advice.

Thickness—The ease of extrusion decreases as section thicknesses decrease. Thus a lower limit of thickness is reached beyond which it is impractical to extrude. This limit varies with the size and shape of the section and with the alloy.

ARCHITECTURAL EXTRUDED SHAPES

A 288-page book shows in full size all of the aluminum extruded shapes applicable to architectural work and is available upon request to our nearest Sales Office. Many assembly details for store fronts, copings, windows, doors, etc., are also shown.



ALCOA ALUMINUM FOR WINDOW SILLS

Economical, easy to install and permanently water tight, Alcoa Aluminum Window Sills meet all the requirements for exacting performance. Produced by the extrusion process, aluminum sills, thin in section, yet maintaining adequate strength, combine natural light weight with designed lightness. The weight of an average width aluminum sill is approximately 1 lb. per foot of length. Thus, it is easy for one man to handle sills of any length which a job might require.

Because aluminum cannot rust, there is no metallic stain from the sills to streak adjoining surfaces. Accordingly they never need painting to prevent deterioration, and the evenness with which they weather keeps them always attractive looking. Further, aluminum sills are designed and produced with an ample projecting drip ledge which helps to minimize drip stain from other causes.



Aluminum sills are adapted to both simple and intricate construction as shown by this Housing Project job

Since aluminum sill sections are thin and do not exceed the width of masonry joints, the body of the sill may be extended at either end into the masonry to provide an extremely weatherproof joint. If it is not possible to embed the sill in the masonry, the sill may be cut to the window width and caulked at the jamb to obtain a proper joint. Aluminum sills are available in any length which is practical for the job itself, although they are stocked by conveniently located warehouses in 21-ft. lengths which may be cut to size. In the standard stocked designs there are a variety of widths from which to choose.

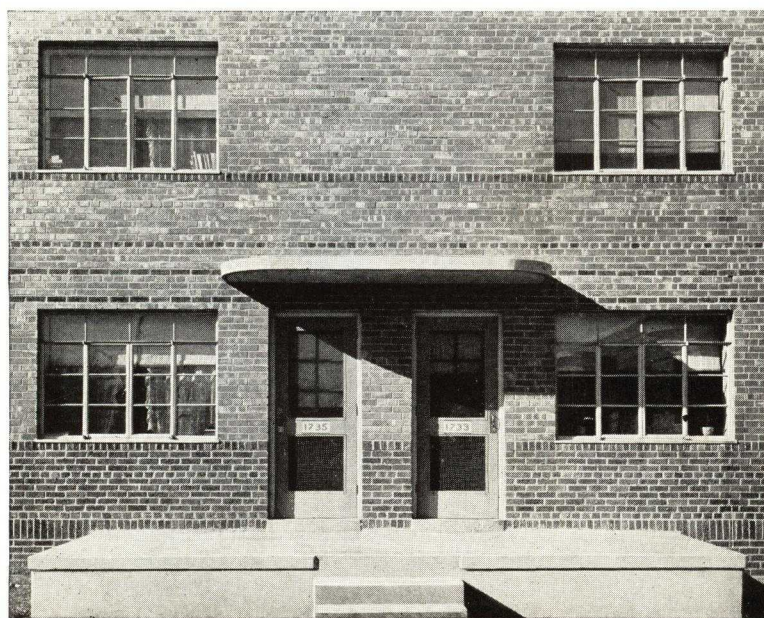
Thus aluminum sills can be made to fit from jamb to jamb eliminating troublesome intermediate joints. Again this is another feature which helps to attain maximum weather-tightness. Also, since but few joints are necessary, installation time is reduced and erection cost lowered. Because aluminum is readily worked it is possible to make neat fits with aluminum sills against adjoining construction. The sill may be made to fit around obstruction, such as posts or mullions by simply cutting notches or mitering as required, with a hacksaw.

Finally, with all of the advantages of design and ease of installation, the price of aluminum sills is generally lower than sills of other suitable permanent materials offered to the building industry. On the following pages are shown two different types of standard sills, of which Type A is stocked in warehouses. In addition, there are available a number of miscellaneous sills for which extrusion dies are available and which can be ordered from our mill in any desired quantity.

The booklet "Window Sills and Copings of Alcoa Aluminum" shows the full sized miscellaneous sills, with complete detailed drawings, and gives installation procedure. A copy is available from any of our Sales Offices.

*Left:
Note how this one-piece aluminum sill fits conveniently into the mortar joint to make a permanently weather-tight job*

*Below:
Painting of sills was eliminated on this building by using extruded aluminum*



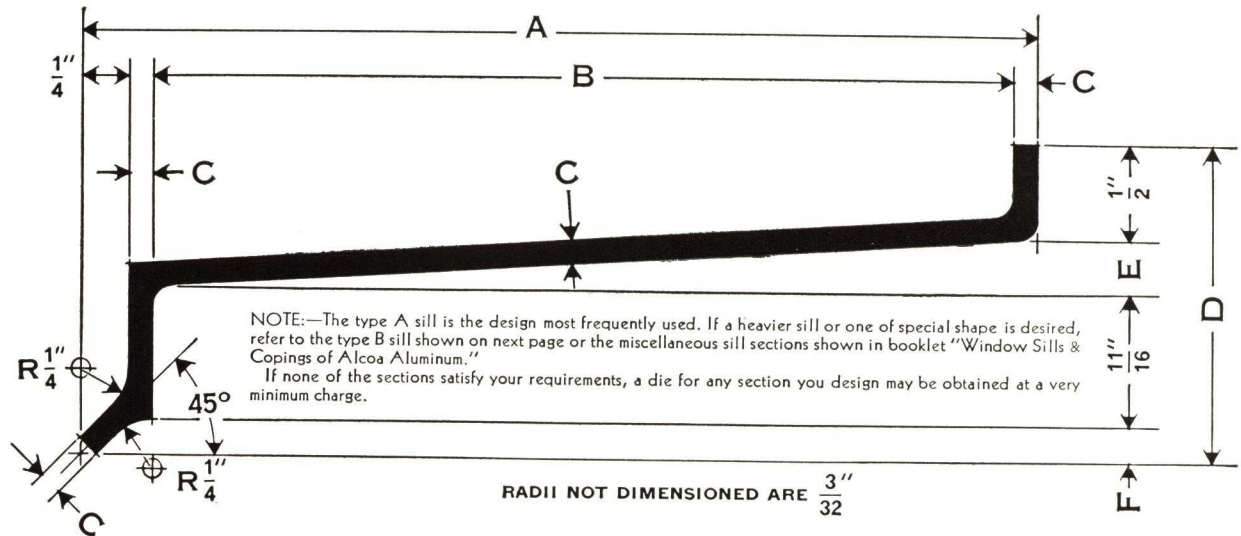
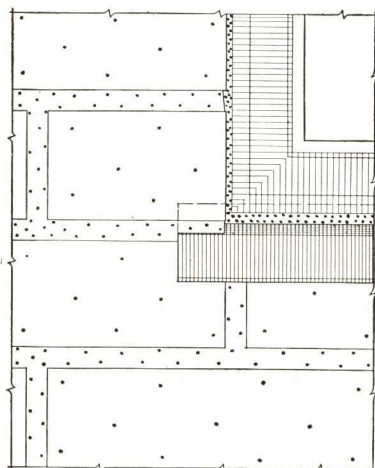


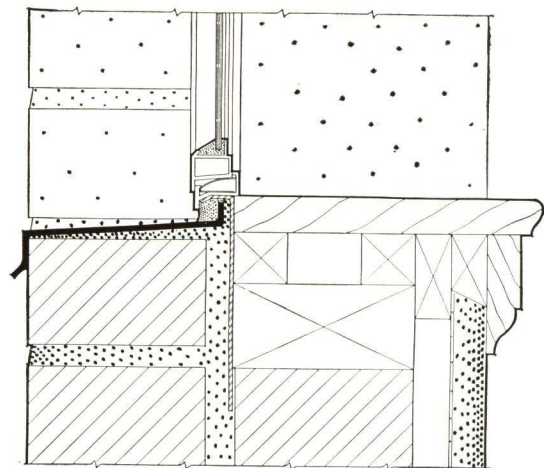
TABLE NO. 1—Dimensions of Extruded Sills
A. C. O. A. STANDARD — TYPE "A"—Dimensions in Inches

Die Number	A	B	C	D	E	F	Wt. Per Foot	Die Number	A	B	C	D	E	F	Wt. Per Foot
*18053	$3\frac{1}{2}$	3	$\frac{1}{8}$	$1\frac{9}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	.692	†	$6\frac{9}{16}$	6	$\frac{5}{32}$	$1\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{16}$	1.435
*18054	4	$3\frac{1}{2}$	$\frac{1}{8}$	$1\frac{19}{32}$	$\frac{7}{32}$	$\frac{3}{16}$	.768	†	$7\frac{1}{16}$	$6\frac{1}{2}$	$\frac{5}{32}$	$1\frac{25}{32}$	$\frac{13}{32}$	$\frac{3}{16}$	1.529
*16754	$4\frac{1}{2}$	4	$\frac{1}{8}$	$1\frac{5}{8}$	$\frac{1}{4}$	$\frac{3}{16}$	.844	†	$7\frac{9}{16}$	7	$\frac{5}{32}$	$1\frac{13}{16}$	$\frac{7}{16}$	$\frac{3}{16}$	1.622
*18971	5	$4\frac{1}{2}$	$\frac{1}{8}$	$1\frac{21}{32}$	$\frac{9}{32}$	$\frac{3}{16}$	.919	†	$8\frac{1}{8}$	$7\frac{1}{2}$	$\frac{3}{16}$	$1\frac{29}{32}$	$\frac{15}{32}$	$\frac{1}{4}$	2.076
*18055	$5\frac{1}{2}$	5	$\frac{1}{8}$	$1\frac{11}{16}$	$\frac{5}{16}$	$\frac{3}{16}$	.992	†	$8\frac{5}{8}$	8	$\frac{3}{16}$	$1\frac{15}{16}$	$\frac{1}{2}$	$\frac{1}{4}$	2.189
*18972	6	$5\frac{1}{2}$	$\frac{1}{8}$	$1\frac{23}{32}$	$\frac{11}{32}$	$\frac{3}{16}$	1.067	†	$9\frac{1}{8}$	$8\frac{1}{2}$	$\frac{3}{16}$	$1\frac{31}{32}$	$\frac{17}{32}$	$\frac{1}{4}$	2.302

*These sills stocked in 21-foot lengths which may be cut to the size desired. Lengths greater than 21 feet may be obtained from the mill.
†Dies for these sizes will be constructed as conditions warrant.



CORNER ELEVATION



TYPICAL SECTION

TYPE "A" SILL used with tubular casement sash and brick wall construction. The ends of the sill have been extended into the brick joints at the window jamb:—see corner elevation.

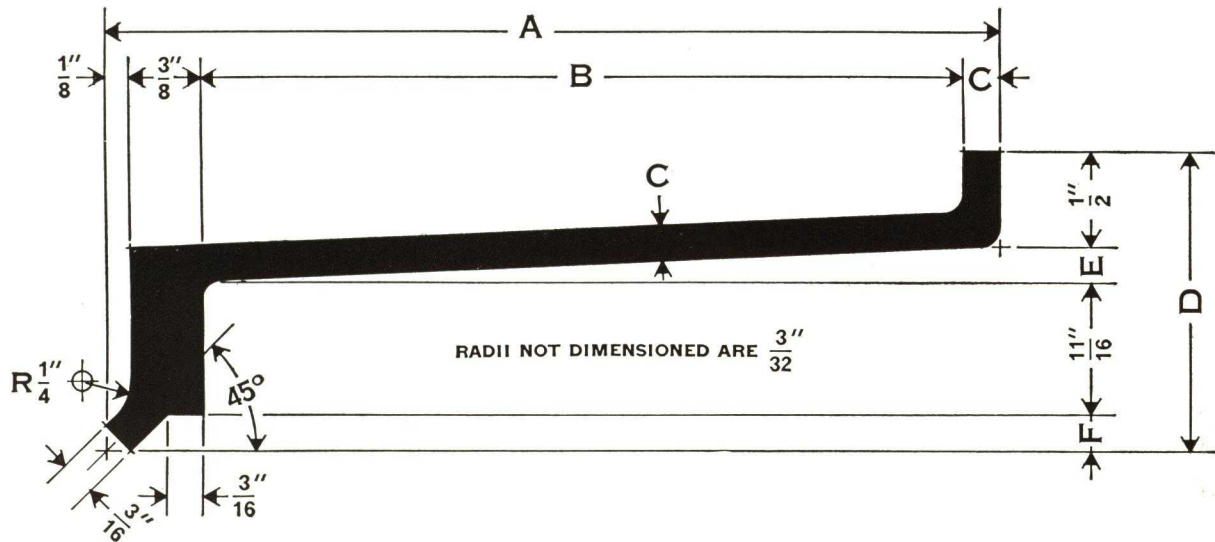
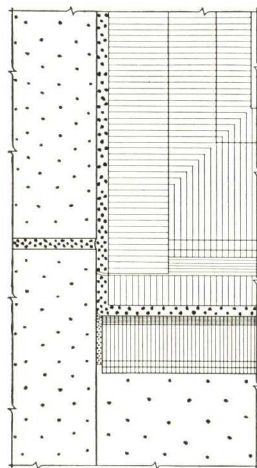


TABLE NO. 2—Dimensions of Extruded Sills

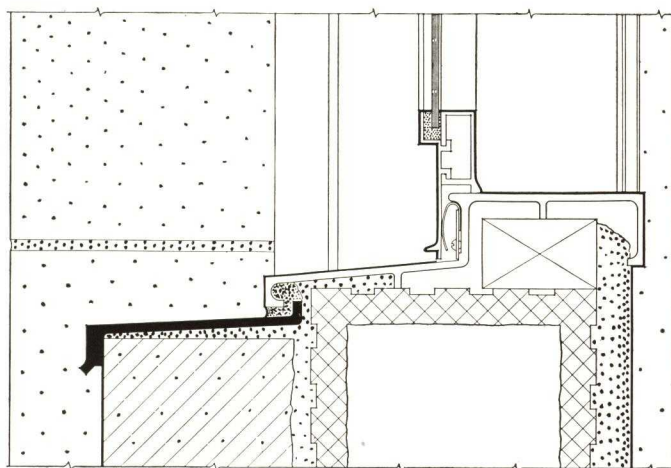
A. C. O. A. STANDARD — TYPE "B" — Dimensions in Inches

Die Number	A	B	C	D	E	F	Wt. Per Foot	Die Number	A	B	C	D	E	F	Wt. Per Foot
2013	$3 \frac{5}{8}$	$2 \frac{15}{16}$	$\frac{3}{16}$	$1 \frac{9}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	1.200	5457	$5 \frac{7}{8}$	$5 \frac{3}{16}$	$\frac{3}{16}$	$1 \frac{9}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	1.780
6883	$4 \frac{3}{8}$	$3 \frac{11}{16}$	$\frac{3}{16}$	$1 \frac{11}{16}$	$\frac{5}{16}$	$\frac{3}{16}$	1.384	6881	$6 \frac{3}{4}$	$6 \frac{1}{16}$	$\frac{3}{16}$	$1 \frac{11}{16}$	$\frac{5}{16}$	$\frac{3}{16}$	1.932
1538	$4 \frac{11}{16}$	4	$\frac{3}{16}$	$1 \frac{9}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	1.403	6882	$7 \frac{3}{16}$	$6 \frac{1}{2}$	$\frac{3}{16}$	$1 \frac{11}{16}$	$\frac{5}{16}$	$\frac{3}{16}$	2.022
2826	$5 \frac{1}{8}$	$4 \frac{7}{16}$	$\frac{3}{16}$	$1 \frac{11}{16}$	$\frac{5}{16}$	$\frac{3}{16}$	1.540	8030	$9 \frac{5}{8}$	$8 \frac{15}{16}$	$\frac{3}{16}$	$1 \frac{9}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	2.554
2231	$5 \frac{3}{4}$	$5 \frac{1}{16}$	$\frac{3}{16}$	$1 \frac{9}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	1.750	8029	$10 \frac{3}{8}$	$9 \frac{11}{16}$	$\frac{3}{16}$	$1 \frac{9}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	2.719

NOTE: — These sills not carried in stock.



CORNER ELEVATION



TYPICAL SECTION

TYPE "B" SILL used with a heavy section double-hung window and monumental masonry walls. The ends of the sill do not extend into the masonry but are caulked water-tight against the jambs.

BLISS STEEL PRODUCTS CORPORATION

Manufacturers of Solid Section Steel Windows

EAST SYRACUSE, N. Y.

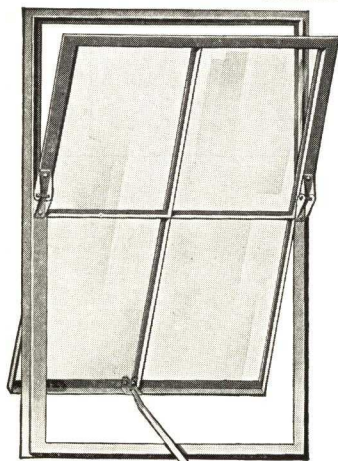
Member of Solid Section Steel Window Industry

BLISS PRODUCTS

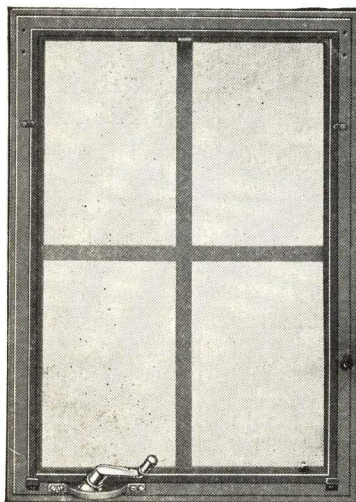
PIVOTED WINDOWS
PROJECTED WINDOWS
RESIDENCE CASEMENTS

BASEMENT WINDOWS
UTILITY WINDOWS
CONTINUOUS WINDOWS

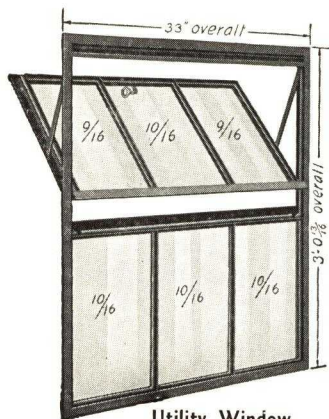
STEEL TUBE DOORS



Pivoted Window



Residence Casement



Utility Window

Pivoted Windows

A window of guaranteed quality. Welded throughout, weather durable and made to withstand hard usage. Furnished with strong adjustable hinges allowing ventilator to open 90°. Cam and stay-bar hardware is standard but spring catch and chain may be furnished.

Architectural Projected Windows

An attractive and well-proportioned window welded throughout—all welds ground. It is designed with the utmost care for appearance, ventilation and screening. This window is ideal for office buildings, etc. (illustration at right).

Operation of ventilators and tightness guaranteed. Inside putty glazed for easy replacement of glass.

Commercial Projected Windows

These windows are fabricated from the same sections as pivoted windows with a slight difference in the operation of ventilators.

While slightly higher in cost than the unscreened pivoted type, if screening is necessary, the total cost of projected windows and screens is lower.

Residence Casements

Casements of artistic appearance combined with durability. These windows will add to the pride of ownership in any home. They are welded throughout and weathertight.

Basement Windows

The "Mostlite" Puttyless Basement Window (illustrated) includes many features: ventilator stays open in any position and can be instantly removed, glazed on cork, weathertight, welded and riveted throughout.

"Mostlite" Windows are made in sizes to fit cement or cinder blocks.

A fine window at a very reasonable price.

Heavy type basement windows can also be furnished. They are double weathered, top projecting and supported by spring steel arms.

Utility Windows

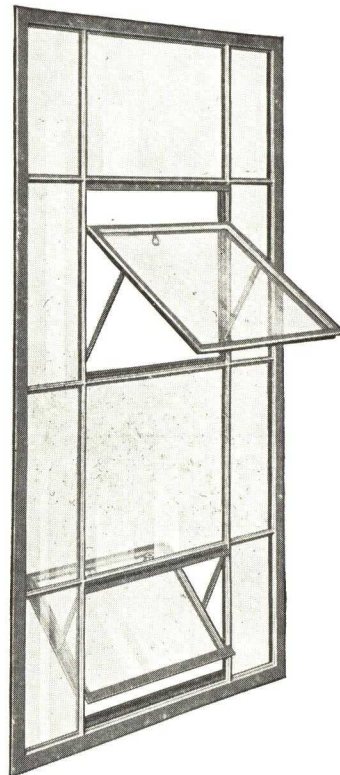
The "Manifold" is a fine utility steel window of good design, welded or riveted throughout. This window is very popular for private garages, pent-houses, and small stores. A window that operates very easily and will give a lifetime of continuous service.

Continuous Windows

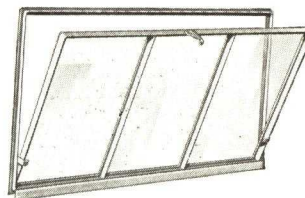
We have furnished this type of window for some of the country's largest manufacturers. These windows are welded throughout, and of rigid construction that will last. Furnished with mechanical operators of continuous chain type.

Steel Tube Doors

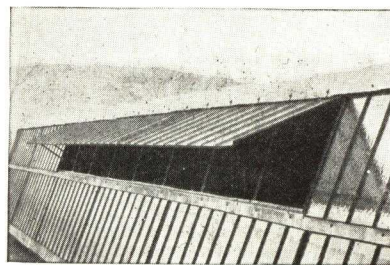
Doors of any type carefully constructed of steel tube, welded and ground throughout.



Projected Window

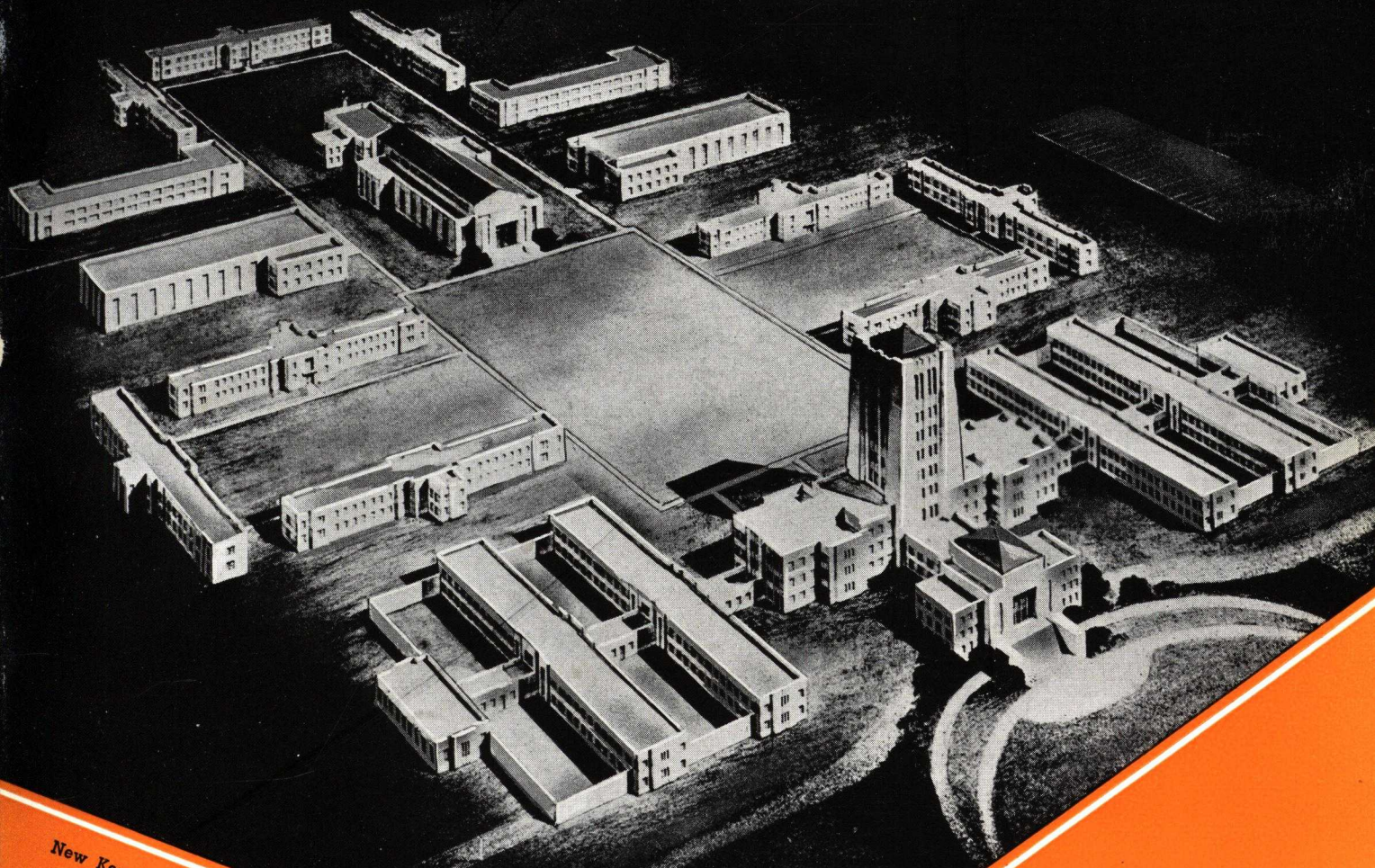


Basement Window



Continuous Windows

BAYLEY



New Kentucky State Prison, Oldham County, Kentucky

**STEEL WINDOWS • STEEL DOORS
AND OPERATORS**

THE WILLIAM BAYLEY COMPANY

FOUNDED 1881

FOR fifty-seven years the William Bayley Company has enjoyed the reputation of producing the finest types of metal products. Those years of experience and that reputation provide the strongest possible incentive to the men and management of the modern Bayley organization to maintain the highest standards and produce the best possible windows, doors and operators. A continuous flow of Bayley patents throughout these years indicates the progressiveness of the Bayley Company and forecasts continual leadership.

The features of Bayley Products are built around fundamentals that prompt the most advanced methods of mechanical jointing, riveting, welding, pressing and finishing. Steel, wrought iron, bronze and aluminum are used extensively and all materials, design, workmanship and finish are those best suited to the service requirements of the product.

Bayley engineers will welcome an opportunity to co-operate with architects, engineers and contractors in designing, selecting and specifying windows, doors and operators. The table below indicates the scope of Bayley Products and serves as a guide to the recommended uses of each.

BAYLEY PRODUCTS

PRODUCT	RECOMMENDED USES	PAGES
PIVOTED WINDOWS	Sidewalls of factories, warehouses, garages, lofts and industrial buildings. Sides of monitors and vertical sawtooth construction. Available in steel, wrought iron and aluminum.	3 to 7
PIVOTED WINDOWS— Screened	Same uses as above and elsewhere, when conditions demand insect protection as in bakeries, packing plants, laboratories, printing plants, power houses. Steel or wrought iron.	8-9 (5, 6 and 7)
PROJECTED WINDOWS COMMERCIAL — Screened	For garages, lofts, storage and industrial buildings. Steel, wrought iron or aluminum.	10-11 (5 and 7)
PROJECTED WINDOWS ARCHITECTURAL — Screened	For schools, clubs, offices, public and monumental buildings. Steel or steel hot dip galvanized.	12-13
DETENTION AND PRO- TECTION WINDOWS	Originated by Bayley. Six types to meet all conditions. For complete description of each type refer to Pgs.	14 to 18
CASEMENTS — Series 30 Inswing, Outswing, Pro- jected and Combination Types	For residences, offices and monumental buildings. Various combinations to meet specific requirements. Steel, bronze or aluminum.	26 to 29
UTILITY WINDOWS	Companion product to Pivoted and Projected Windows. Used on lot lines. May be screened, steel or wrought iron.	19
BASEMENT WINDOWS	Residences and all places where a small economical steel window is needed.	19
ECONOMY INSERTS	Used in concrete construction. Provide mastic sealed recesses for steel windows.	19
CONTINUOUS WIN- DOWS AND OPER- ATORS	For monitors and sawtooth roof construction. Steel in 3, 4, 5, 6 foot heights.	24-25
MECHANICAL OPERATORS	For sidewall and continuous windows. Formerly made by the Metallic Sash Operator Co. of St. Louis, acquired outright by Bayley, now manufactured at Springfield, Ohio, offered with or without window products.	25
DOORS, Industrial Tubular, Structural Airplane Hangar	For all purposes. Hinged, sliding, rolling, folding, canopy, bifold, vertical lift and overhead. In tubular or structural steel. Complete with Bayley hardware. Airplane Hangar door shown in separate catalog.	20-23
UNDERWRITERS' LABELS	Available with pivoted, pivoted windows screened, projected commercial and architectural, protection, and security windows.	19

DESIGNED primarily for use in the sidewalls of factories, warehouses, garages, lofts, power houses and similar types of industrial buildings Bayley Pivoted Windows may also be advantageously used in the sides of monitors and in vertical sawtooth construction.

Materials and Features

PIVOTED WINDOWS are of new billet mild steel, wrought iron, or aluminum sections designed for permanence, low cost maintenance and easy fabrication. Their flat surfaces are easily painted and have no sharp edges to encourage corrosion. The deep angle frame is of a size sufficient to provide $\frac{1}{2}$ " engagement at head, jambs and sill in all wall constructions. Basic glass size is 12 x 18" and 14 x 20". Glass in ventilator is trimmed 1" at perimeter.

INTERIOR BAR IS T SHAPED, a characteristic Bayley section, and has a flange containing no greater amount of metal than its web and a depth of $1\frac{1}{2}$ ". This dimension in Bayley windows is the basis of exclusive features such as screening, double glazing, hardware, etc. It provides for a tenon of extra size which makes a tight and permanent joint. It allows space for bed and face putty and either $\frac{1}{8}$ " or $\frac{1}{4}$ " glass.

INTERSECTION OF INTERIOR bars is accomplished by threading the vertical through horizontal bar. Horizontal bar is punched in web. Vertical bar is punched in flange. After assembly, a wedge is driven at intersection, making entire construction rigid. Bars are not bent or manipulated in assembly. This construction provides strength almost equal to the original bar. Disinterested, exhaustive laboratory and usage tests prove this construction withstands high wind pressure without permanent deflection.

WEATHERING AT HINGE is provided by lapping upper weathering on ventilator over lower weathering on fixed portion of window. Ventilator contacts are close fitting. Vertical contacts are cold rolled. Horizontal contacts are one-piece rolled sections integral to ventilator and unit and are $1\frac{5}{8}$ " deep.

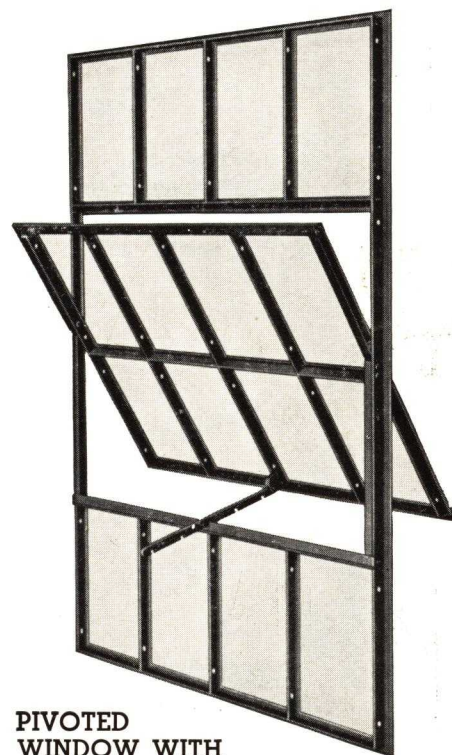
HINGE PIVOT is 3" above center of ventilator. It is contained within contact members and does not project beyond faces of window, a protection against damage in shipment. Hinge may be adjusted by regulating two substantial bolts.

Use wrought iron or hot dip galvanized on steel, or even hot dip galvanized on wrought iron where excessive corrosion hazards exist. Much of the above directly refers to horizontal pivoted windows. Slight modifications cover other methods of ventilating, including vertically center pivoted, bottom and top pivoted, and camber and semi-circular units. Double glazing, underwriters labelled units, and vertical and horizontal mullions apply alike to all windows mentioned in this paragraph.

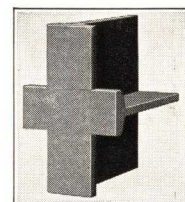
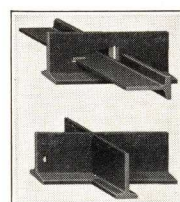
For Underwriters and Double Glazed Pivoted Windows See Page 19

HARDWARE

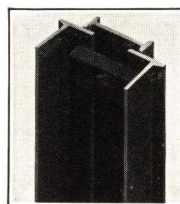
For industrial windows is Bayley design and manufacture. Heavy pressed steel and Malleable iron is generally used. Cams are cast malleable. Center pivoted ventilators may have lock bars, catch and chain, corner cams with push bar, or chain cams.



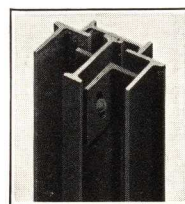
PIVOTED WINDOW WITH LOCK BAR



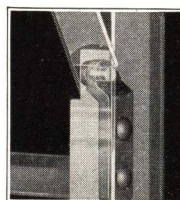
INTERSECTION OF INTERIOR BARS



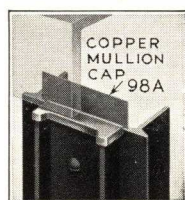
M MULLION



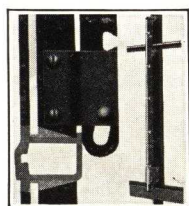
T MULLION



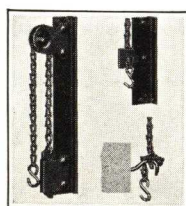
CONCEALED HINGE



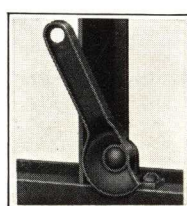
MULLION CAP 98A



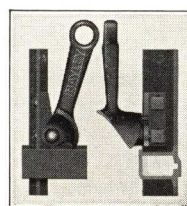
LOCK BAR F



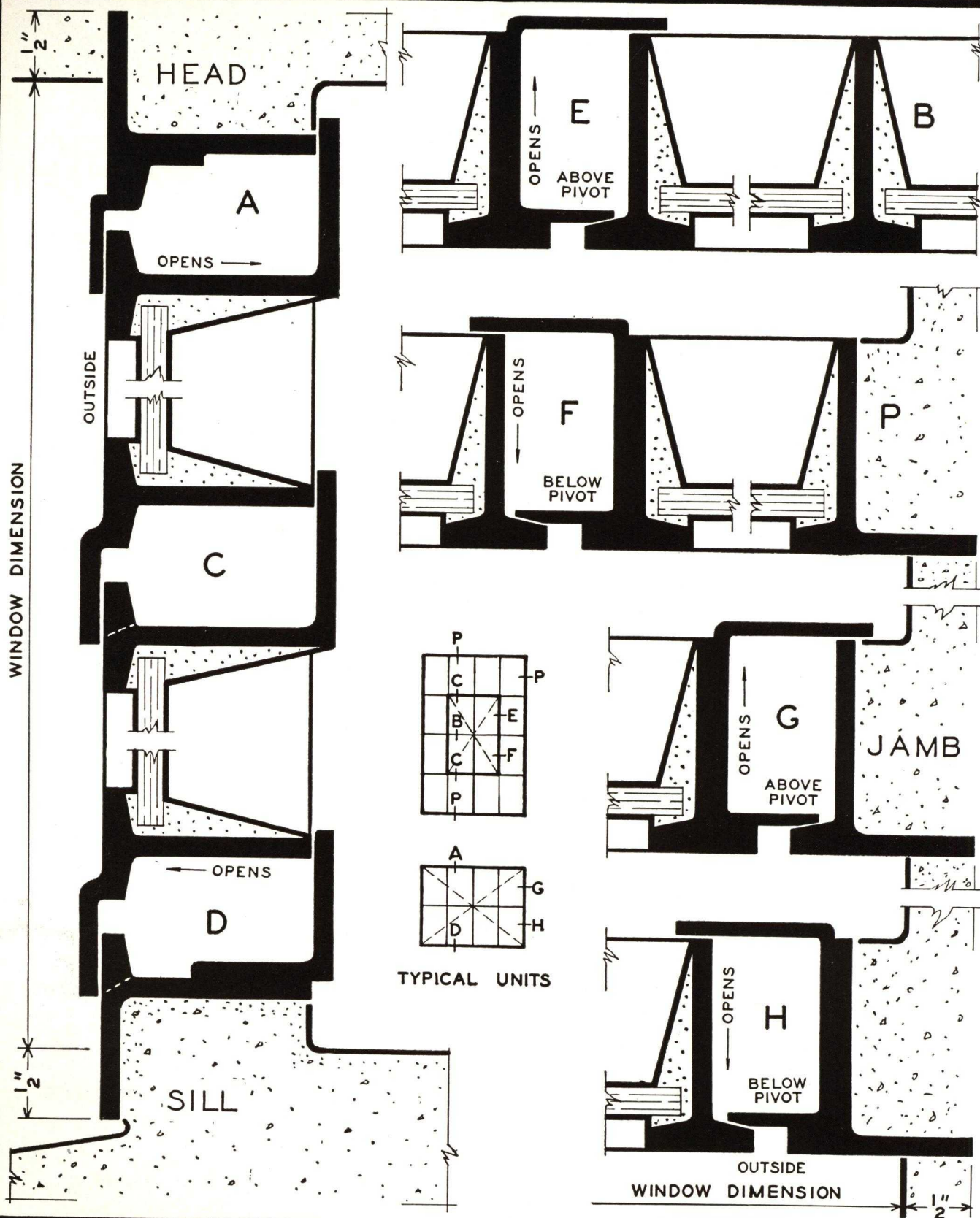
CHAIN SET N



CAM H



CAM H15

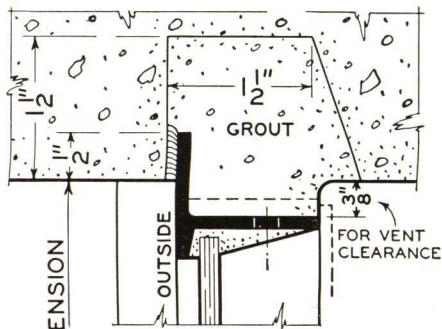


HORIZONTALLY PIVOTED WINDOWS 240

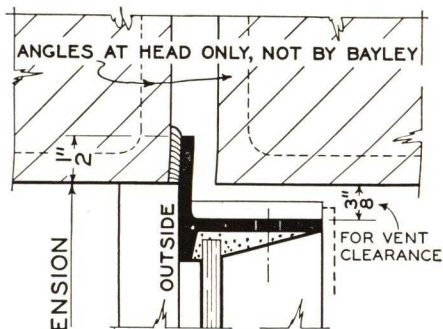
THE WILLIAM BAYLEY CO.

SPRINGFIELD, OHIO.

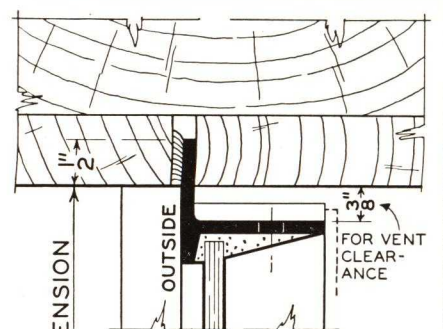
FULL SIZE



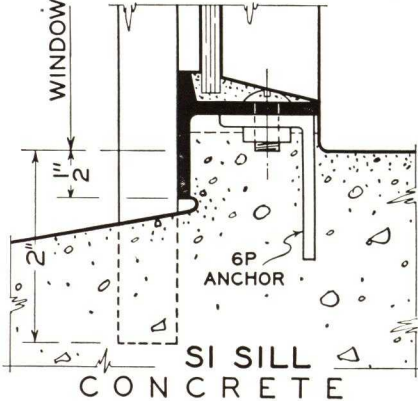
H1 HEAD;
J1 JAMB SIMILAR



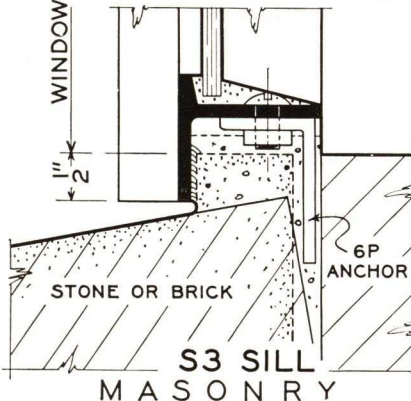
H3 HEAD;
J3 JAMB SIMILAR



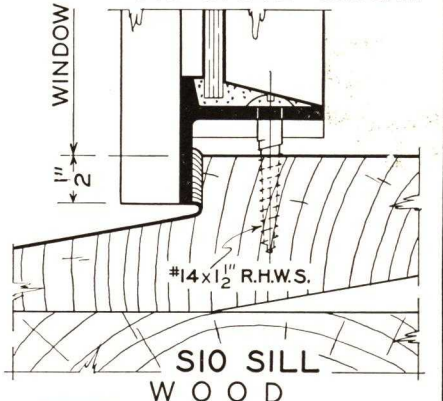
H10 HEAD;
J10 JAMB SIMILAR



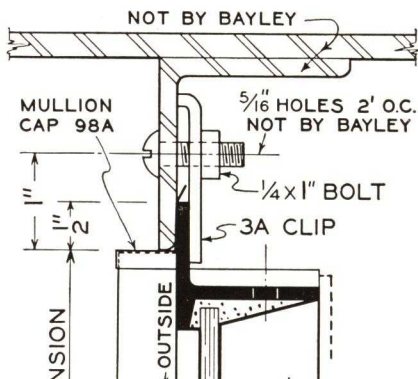
S1 SILL
CONCRETE



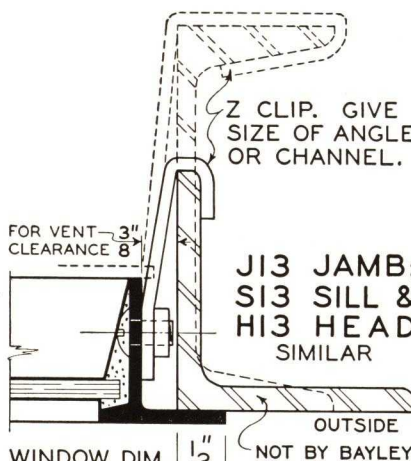
S3 SILL
MASONRY



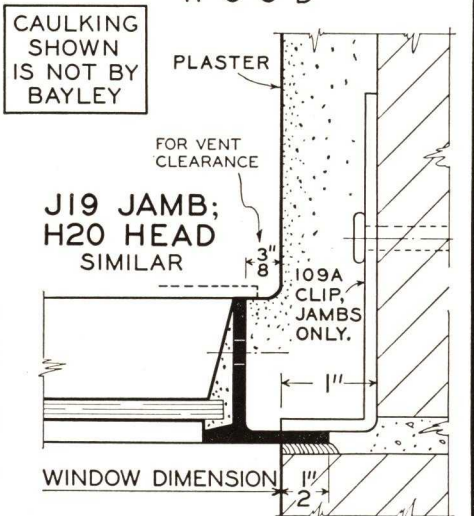
S10 SILL
WOOD



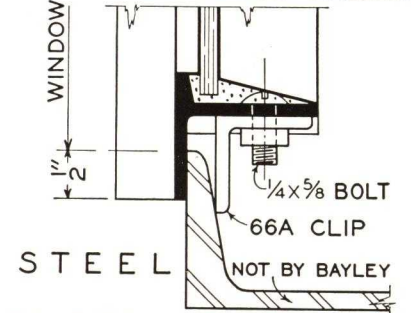
H2 HEAD;
J2 JAMB SIMILAR



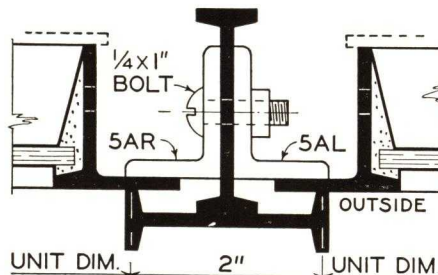
J13 JAMB;
S13 SILL &
H13 HEAD
SIMILAR



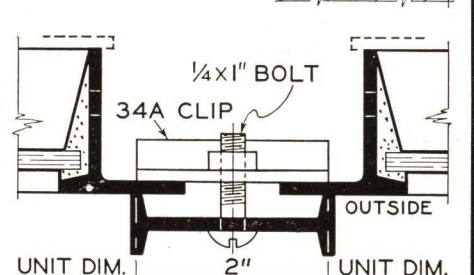
J19 JAMB;
H20 HEAD
SIMILAR



S9 SILL; J9 JAMB &
H9 HEAD SIMILAR



T MULLION
HEIGHT LIMIT 13'-2"



M MULLION
HEIGHT LIMIT 8'-7"

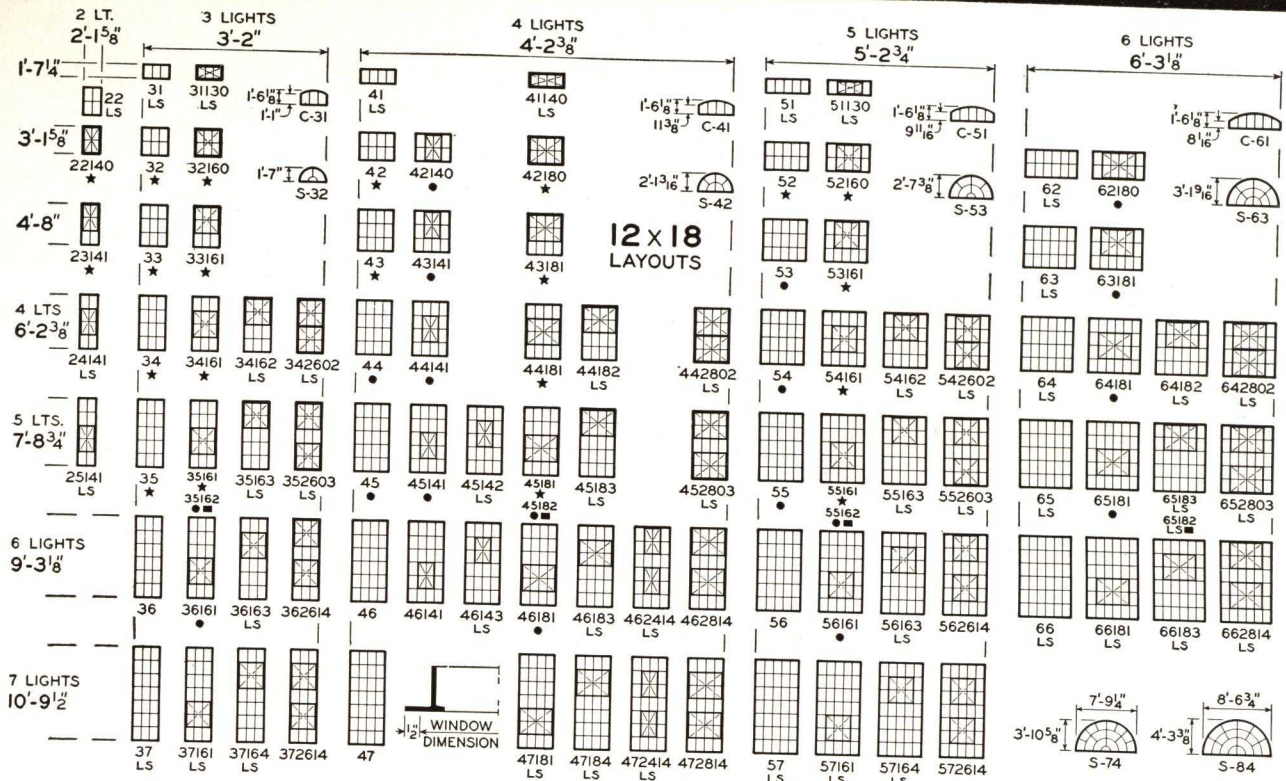
INSTALLATION DETAILS

THE WILLIAM BAYLEY CO.

SPRINGFIELD, OHIO.

330
HALF SIZE

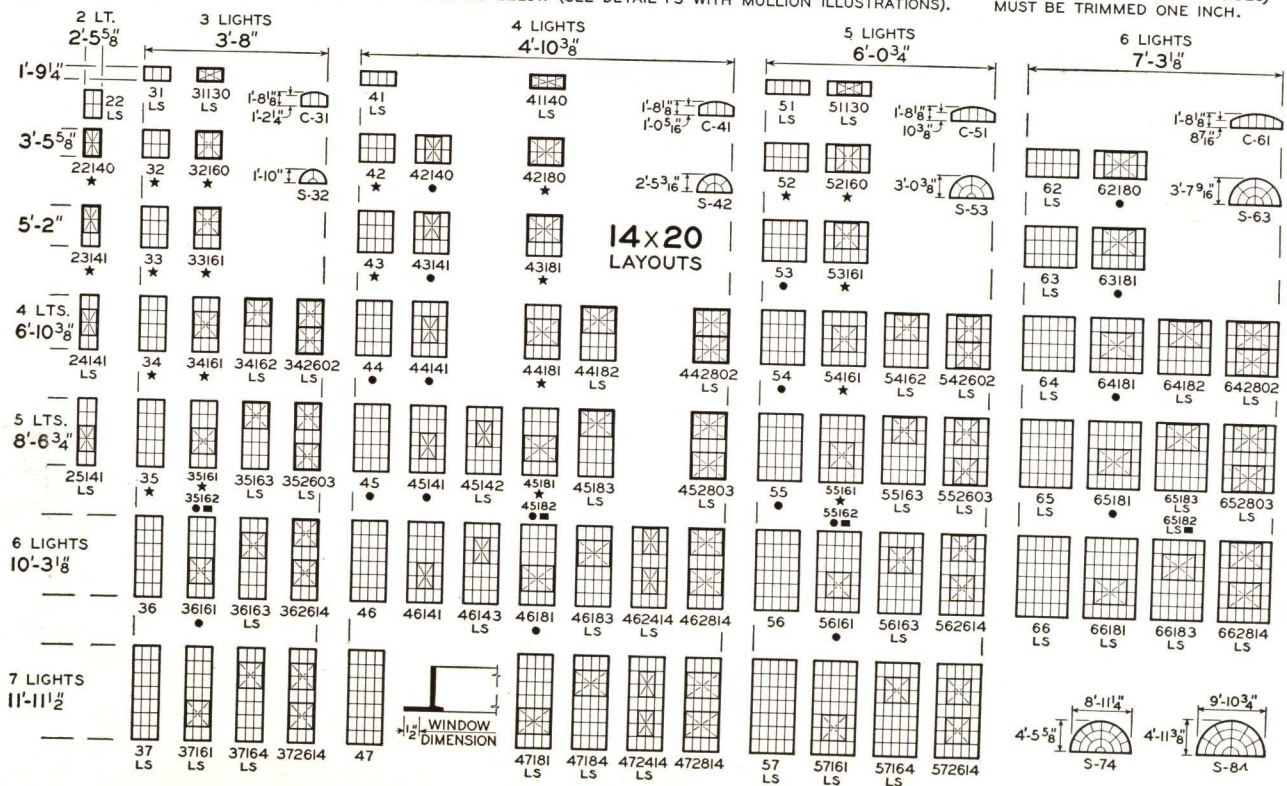
This Plate Applies to Pivoted Windows, Pivoted Windows Screened, and Projected Windows Commercial



★ = STOCKED AT WAREHOUSE;
● = PARTS STOCKED AT FACTORY;
UNMARKED = STANDARDS; LS = LISTED SPECIALS.
■ = VENT LOCATED TWO LIGHTS UP FROM SILL.

SEMI-CIRCULAR UNIT RADIUS = 1/2 WIDTH; CAMBER HEAD RADIUS = WIDTH. UNITS S-74 & S-84 REQUIRE HORIZONTAL MULLION BELOW; ALL OTHER SEMI-CIRCULAR AND CAMBER HEAD UNITS MAY BE ATTACHED DIRECT TO UNITS BELOW (SEE DETAIL F3 WITH MULLION ILLUSTRATIONS).

GLASS SIZES GIVEN ARE FOR FIXED PORTION. GLASS IN VENTS AT EDGES (TOP, BOTTOM, AND BOTH SIDES) MUST BE TRIMMED ONE INCH.



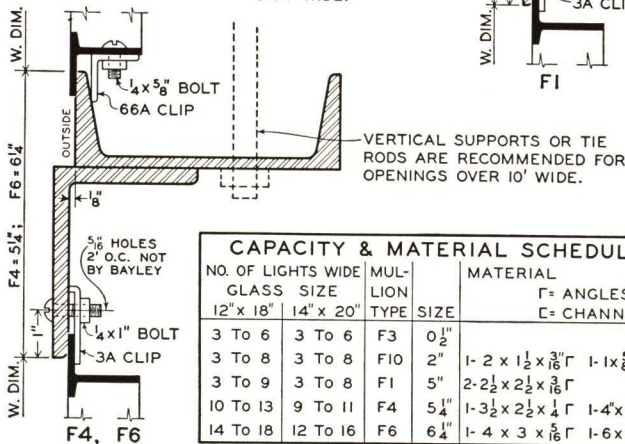
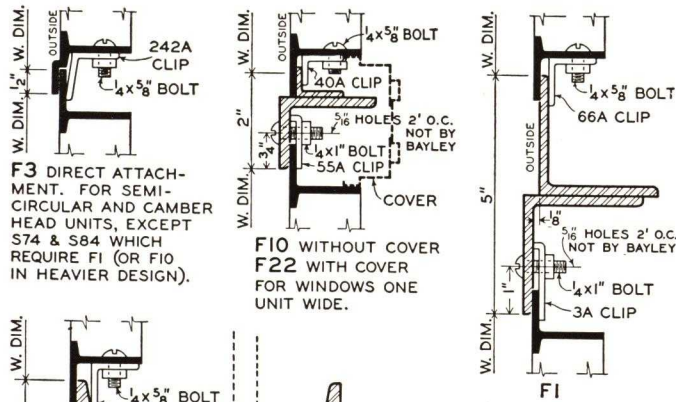
HORIZONTALLY PIVOTED WINDOWS

THE WILLIAM BAYLEY CO.

SPRINGFIELD, OHIO.

331

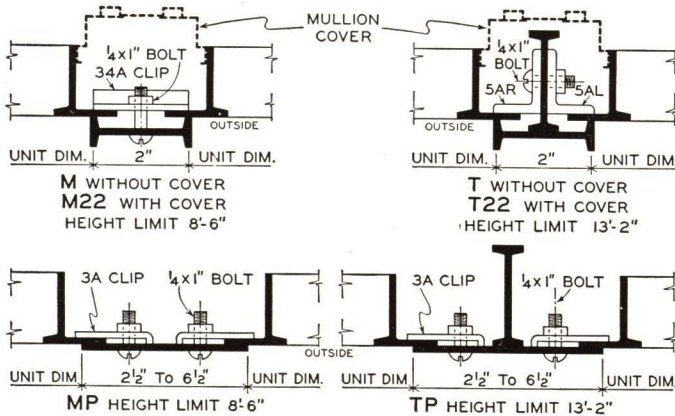
The Above Layouts Also Apply to Pivoted Windows Screened, Shown on Pages 8 and 9



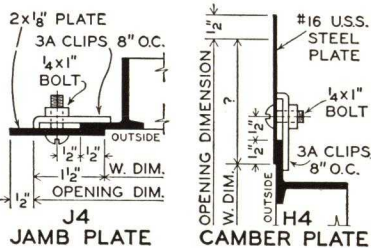
CAPACITY & MATERIAL SCHEDULE					
NO. OF LIGHTS WIDE		MULLION	TYPE	MATERIAL	
GLASS SIZE	SIZE			Γ = ANGLES	Σ = CHANNELS
12" x 18"	14" x 20"				
3 To 6	3 To 6	F3	0 1/2"	1-2 x 1 1/2 x 3/8 Γ	1-1 x 5/8 x 1/2 Γ
3 To 8	3 To 8	F10	2"	2-2 1/2 x 2 1/2 x 1/8 Γ	
3 To 9	3 To 8	F1	5"	1-3 1/2 x 2 1/2 x 1/4 Γ	1-4" x 5/4" Σ
10 To 13	9 To 11	F4	5 1/4"	1-3 1/2 x 2 1/2 x 1/4 Γ	1-4" x 5/4" Σ
14 To 18	12 To 16	F6	6 1/4"	1-4 x 3 x 1/8 Γ	1-6 x 8.2 Σ

HORIZONTAL MULLIONS

SHOULD EXTEND 4" INTO EACH MASONRY JAMB FOR ANCHORAGE

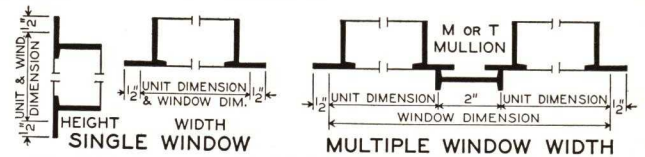


VERTICAL MULLIONS



12	11	12	11	12	14	13	14	13	14
18	17	17	17	18	20	19	19	19	20
12	11	12	11	12	14	13	14	13	14
18	17	17	17	18	20	19	19	19	20
12	11	12	11	12	14	13	14	13	14
18	17	17	17	18	20	19	19	19	20
12	11	12	11	12	14	13	14	13	14
18	17	17	17	18	20	19	19	19	20

12" x 18" AND 14" x 20" GLASS OCCUR ONLY IN FIXED PORTION. GLASS IN VENTS AT EDGES (TOP, BOTTOM, & BOTH SIDES) MUST BE TRIMMED ONE INCH.



Combine 12" widths with 18" heights, & 14" widths with 20" heights.

12" x 18" Glass	14" x 20" Glass	No. of Lights	Arrangement of Units	No. of Units	No. of 2" Mullions
SINGLE WINDOW HEIGHTS					
1' 7 1/4"	1' 9 1/4"	1		1	
3' 1 5/8"	3' 5 5/8"	2		1	
4' 8"	5' 2"	3		1	
6' 2 3/8"	6' 10 3/8"	4		1	
7' 8 3/4"	8' 6 3/4"	5		1	
9' 3 1/8"	10' 3 1/8"	6		1	
10' 9 1/2"	11' 11 1/2"	7		1	

SINGLE WINDOW WIDTHS					
1' 1 1/4"	1' 3 1/4"	1		1	
2' 1 5/8"	2' 5 5/8"	2		1	
3' 2"	3' 8"	3		1	
4' 2 3/8"	4' 10 3/8"	4		1	
5' 2 3/4"	6' 0 3/4"	5		1	
6' 3 1/8"	7' 3 1/8"	6		1	

MULTIPLE WINDOW WIDTHS					
4' 5 1/4"	5' 1 1/4"	4	2-2	2	1
6' 6"	7' 6"	6	3-3	2	1
7' 6 3/8"	8' 8 3/8"	7	4-3	2	1
7' 9 1/4"	8' 11 1/4"	7	2-3-2	3	2
8' 6 3/4"	9' 10 3/4"	8	4-4	2	1
8' 9 5/8"	10' 1 5/8"	8	3-2-3	3	2
9' 10"	11' 4"	9	3-3-3	3	2
10' 7 1/2"	12' 3 1/2"	10	5-5	2	1
10' 10 3/8"	12' 6 3/8"	10	3-4-3	3	2
11' 10 3/4"	13' 8 3/4"	11	3-5-3	3	2
11' 10 3/4"	13' 8 3/4"	11	4-3-4	3	2
12' 8 1/4"	14' 8 1/4"	12	6-6	2	1
12' 11 1/8"	14' 11 1/8"	12	4-4-4	3	2
13' 2"	15' 2"	12	3-3-3-3	4	3
13' 11 1/2"	16' 1 1/2"	13	4-5-4	3	2
13' 11 1/2"	16' 1 1/2"	13	5-3-5	3	2
14' 11 7/8"	17' 3 7/8"	14	4-6-4	3	2
14' 11 7/8"	17' 3 7/8"	14	5-4-5	3	2
15' 2 3/4"	17' 6 3/4"	14	3-4-4-3	4	3
16' 0 1/4"	18' 6 1/4"	15	5-5-5	3	2
16' 0 1/4"	18' 6 1/4"	15	6-3-6	3	2
16' 6"	19' 0"	15	3-3-3-3-3	5	4
17' 0 5/8"	19' 8 5/8"	16	5-6-5	3	2
17' 0 5/8"	19' 8 5/8"	16	6-4-6	3	2
17' 3 1/2"	19' 11 1/2"	16	4-4-4-4	4	3
17' 3 1/2"	19' 11 1/2"	16	3-5-5-3	4	3
17' 6 3/8"	20' 2 3/8"	16	3-3-4-3-3	5	4
18' 1"	20' 11"	17	6-5-6	3	2
18' 6 3/4"	21' 4 3/4"	17	3-4-3-4-3	5	4
19' 1 3/8"	22' 1 3/8"	18	6-6-6	3	2
19' 4 1/4"	22' 4 1/4"	18	4-5-5-4	4	3
19' 7 1/8"	22' 7 1/8"	18	3-4-4-4-3	5	4
20' 7 1/2"	23' 9 1/2"	19	4-4-3-4-4	5	4
20' 7 1/2"	23' 9 1/2"	19	3-5-3-5-3	5	4
21' 5"	24' 9"	20	5-5-5-5	4	3
21' 5"	24' 9"	20	4-6-6-4	4	3
21' 7 7/8"	24' 11 7/8"	20	4-4-4-4-4	5	4
22' 8 1/4"	26' 2 1/4"	21	3-5-5-5-3	5	4
22' 8 1/4"	26' 2 1/4"	21	4-4-5-4-4	5	4
23' 5 3/4"	27' 1 3/4"	22	5-6-6-5	4	3
23' 8 5/8"	27' 4 5/8"	22	4-5-4-5-4	5	4
23' 11 1/2"	27' 7 1/2"	22	3-4-4-4-4-3	6	5
24' 9"	28' 7"	23	4-5-5-5-4	5	4
25' 6 1/2"	29' 6 1/2"	24	6-6-6-6	4	3
25' 9 3/8"	29' 9 3/8"	24	5-5-4-5-5	5	4

MULLIONS, PLATES, & MULTIPLE WINDOWS 329

THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.

This Plate Applies to Pivoted Windows, Pivoted Windows Screened, and Projected Windows Commercial



PIVOTED WINDOWS Screened

FOR buildings requiring screen protection in addition to the advantages of pivoted windows. Bayley Pivoted Windows—Screened completely protect materials and processes in all kinds of manufacturing and distributing plants. They should not be confused with ordinary pivoted windows to which screens have been attached as an after-thought. This exclusive Bayley development is backed by thousands of successful installations for many particular owners. These windows are widely used in power houses, chemical plants, tanneries, textile mills and printing plants where protection to materials or machinery is desirable; also in bakeries, packing houses, restaurants, candy factories, hotel kitchens, dairies and other buildings where foods are prepared.

Materials and Features

This product is made with ventilators having industrial sections, (plate No. 292) available in steel or wrought iron, or Series 30 casement sections, (plate No. 313) available in steel. Both products may be hot dip galvanized. Ventilators and screens are built together but screens are removable.

STANDARD LAYOUTS AND SIZES are 12 x 18 and 14 x 20 inches. Opening dimensions match those of pivoted windows. Refer to Page 6 (Plate 331) for layouts except for one light high, where commercial projected in screened should be used.

SECTIONS duplicate those of standard pivoted windows except some are exclusive to this product. Horizontal muntin bar of ventilator is 1-13/16 inches deep and is shaped to provide continuous close fitting screen contacts, with ventilator in any position.

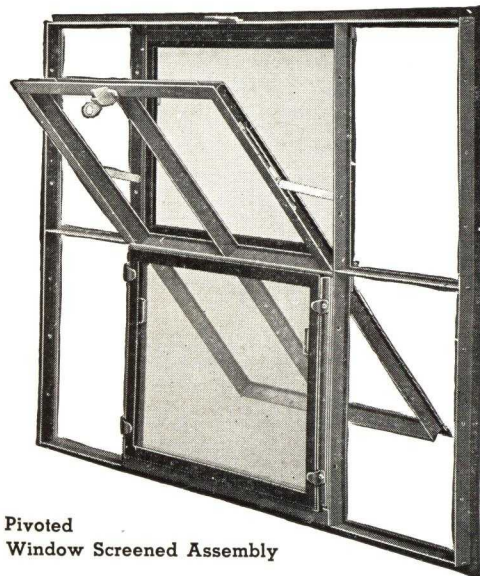
PIVOTS exclusive to this product are located at exact center of ventilator.

FRICTION ADJUSTERS of non-corrosive metal hold ventilator securely in any position. They are attached within the weathering at each side, properly adjusted in manufacture and protected during shipment and erection.

POLE CATCH H112 IS OF MALLEABLE IRON in cadmium plated finish. Cam H113, optional.

SCREENS made by the William Bayley Co. are an integral part of window. They have solid steel frames in hot dip galvanized finish. Bronze screen cloth, 16 mesh, is standard. Screens are interchangeable and easily removed from inside for cleaning windows or for winter storage. Rewiring may be done by any mechanic without special tools.

GLAZING is with putty. Industrial section windows, glazed inside; series 30 glazed outside. Double glazing is an exclusive feature which may be specified in this as in other Bayley products. It is specially desirable where uniform temperature and humidity is necessary and where fuel saving is considered.



Pivoted
Window Screened Assembly

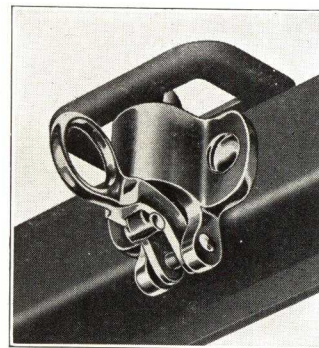


Ohio Edison Co. Mad River Plant

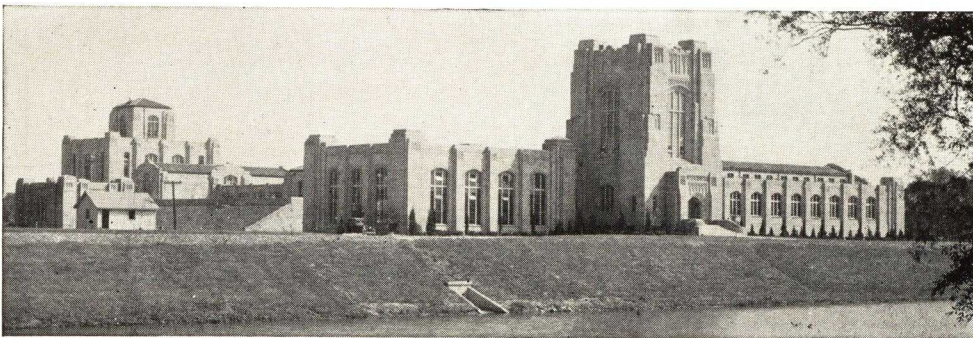
One dip coat of standard red oxide paint is applied to steel before shipment.

MECHANICAL OPERATORS of either manual or electric control may be used for ventilators in long lines and those out of reach.

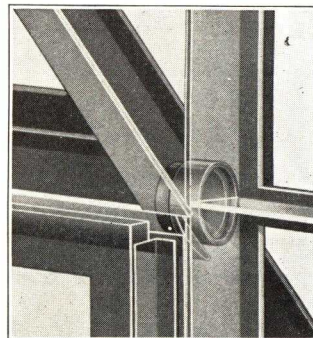
Bayley Pivoted Windows Screened keep out swarms of insects attracted by brilliantly lighted interiors of power houses, water works, and other plants engaged in day and night operation. Sensitive electrical equipment as well as intricate processes of water purification must have screen protection in order that public service may not be interrupted.



Pole Catch H 112



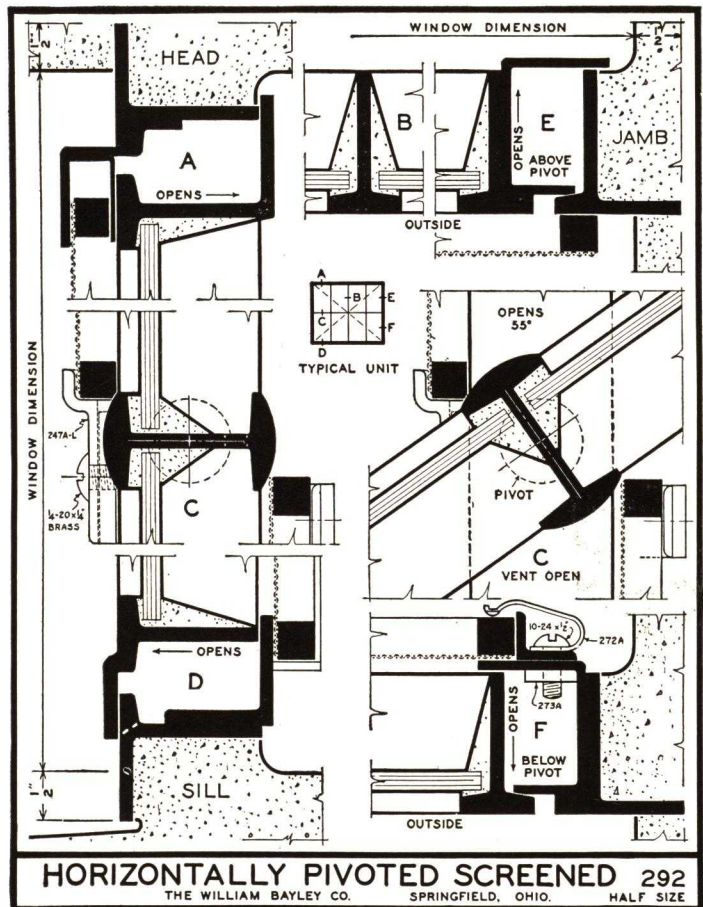
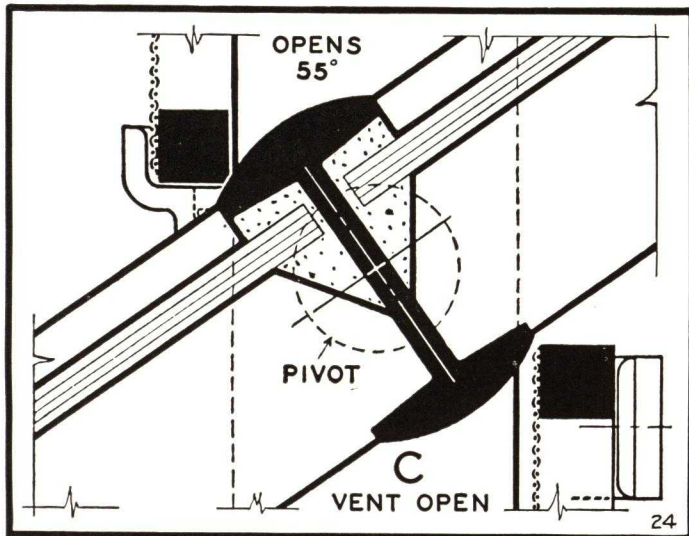
Three Rivers Filtration and Pumping Station, Ft. Wayne, Indiana



Center Rail and Pivot

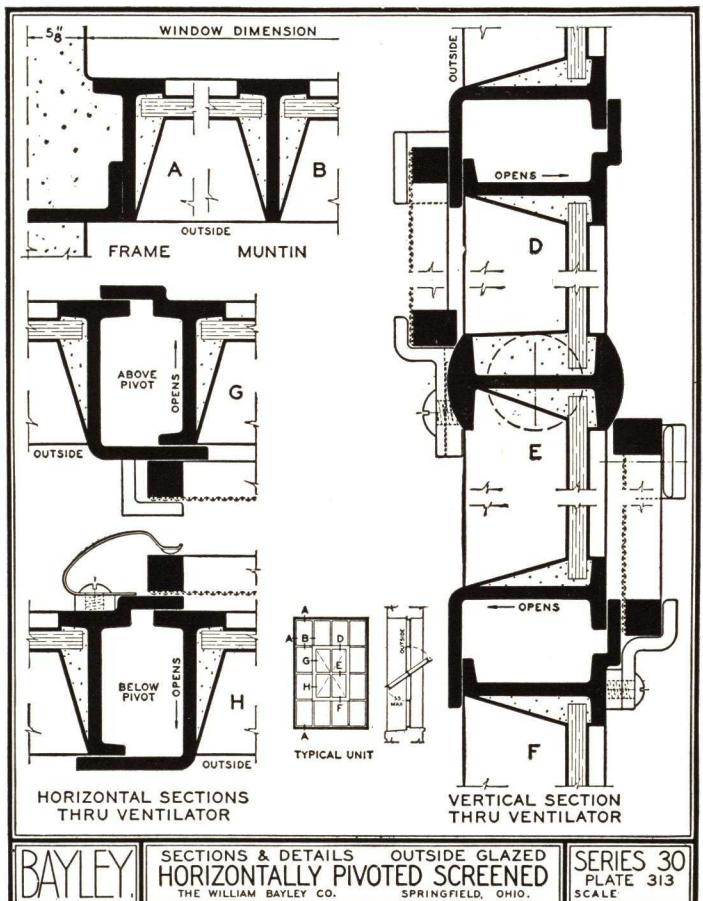
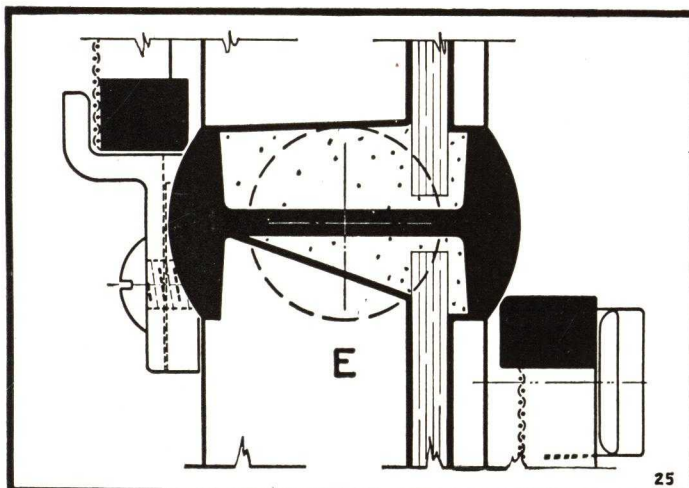
BAYLEY PIVOTED WINDOWS Screened INDUSTRIAL SECTIONS — GLAZED INSIDE—(Patented)

Bayley center rail contact and pivot arrangement with Fixed Flat screens is the key to these special "keep out insects" center pivoted ventilators. Illustrations show ventilators in the open and closed positions with horizontal screen frame members always in contact with curved center rail and the perimeter of the opening.



BAYLEY PIVOTED WINDOWS Screened SERIES 30 CASEMENT SECTIONS GLAZED OUTSIDE—(Patented)

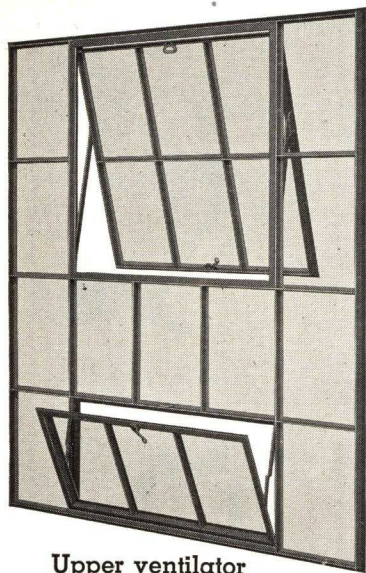
The application of Series 30 casement sections to pivoted ventilators is another long step forward by Bayley. This product has sections $\frac{1}{8}$ " thick and carries casement workmanship which assure better weathering and permanency since the complete window unit is most rigid and less subject to corrosion.



See Pages 5, 6 and 7 for Layouts, Installation Details, Mullions and Multiple Windows.



PROJECTED WINDOWS Commercial Screened



Upper ventilator
projected out, screen inside

Lower ventilator
projected in, screen outside

BAYLEY PROJECTED WINDOWS COMMERCIAL Screened, Inside Glazed (Plate 223) are designed for garages, lofts, storage and industrial buildings; Outside Glazed (Plates 333 and 334) for schools, offices and better commercial buildings.

Materials and Features

The windows are manufactured in steel, or wrought iron and may also be hot dip galvanized.

INDUSTRIAL SECTIONS $1\frac{1}{2}$ " and $1\frac{5}{8}$ " deep arranged for inside putty glazing or for outside glazing upon request.

LAYOUTS are for basic glass sizes 12x18" and 14x20". Opening dimensions match those of pivoted windows.

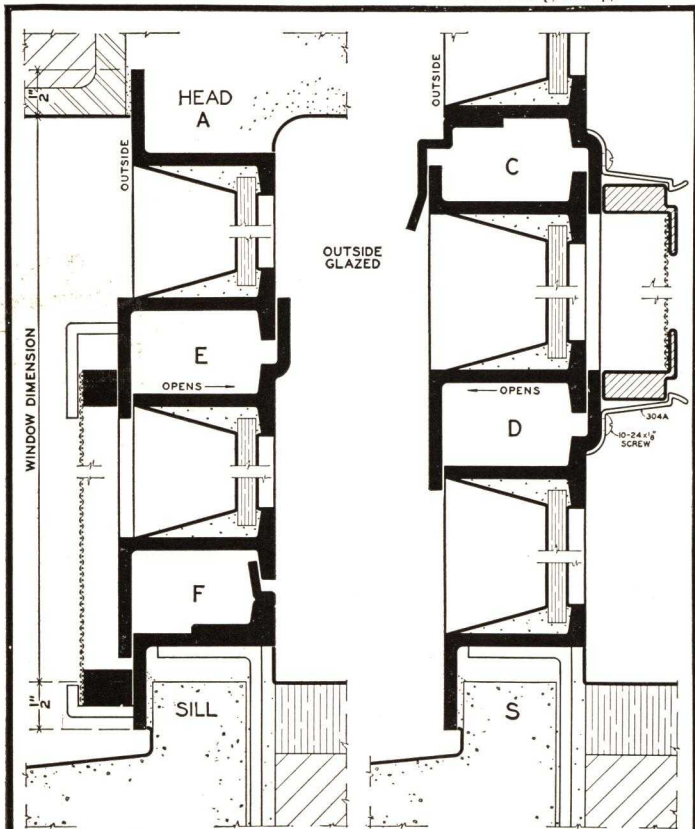
VENTILATORS and openings for ventilators have corners coped, tenoned and riveted, and welded where necessary for strength. Ventilators balance on heavy steel friction arms with friction increasing as the movement nears the closing point. They slide on bronze pivots; at top when

projected out, and at bottom when projected in.

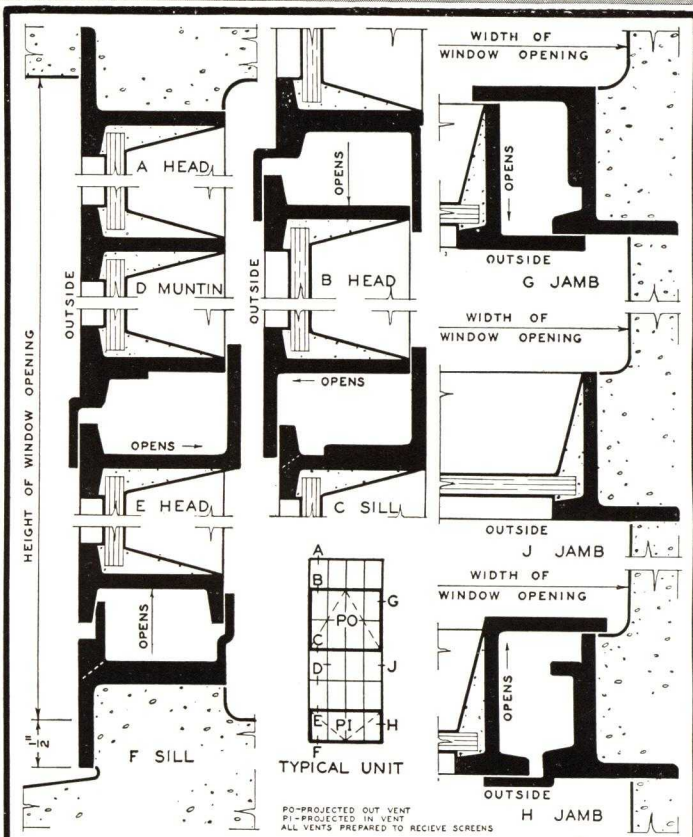
Awning-like protection during showers is a feature. Outside washing can be done from the inside when ventilators are open.

SCREENS fit flat against weathering. Bayley's section depth provides for secure attachment of hardware and its coverage by screens. All windows are prepared to receive screens $\frac{3}{8}$ " thick.

Available with underwriter's label and with double glazing.

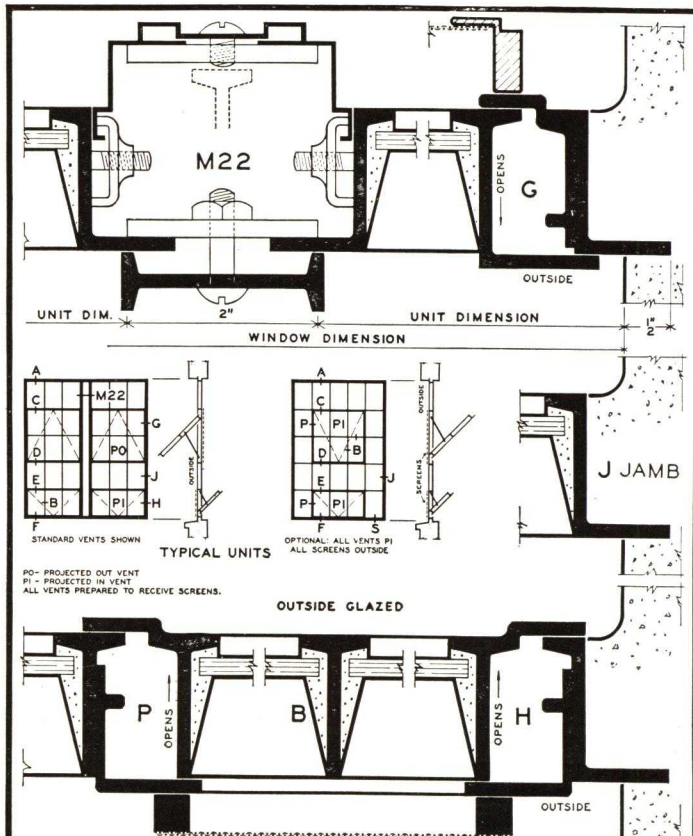


COMMERCIAL PROJECTED WINDOWS 333
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. HALF SIZE

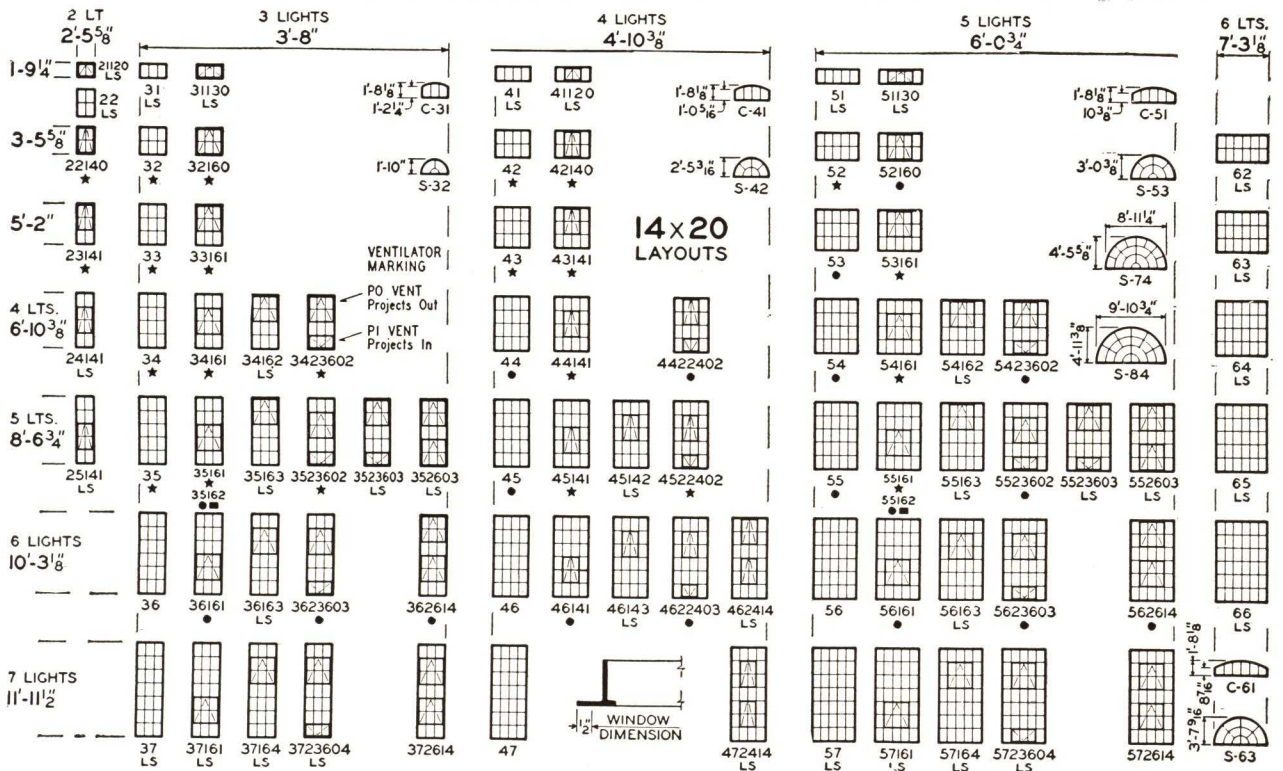
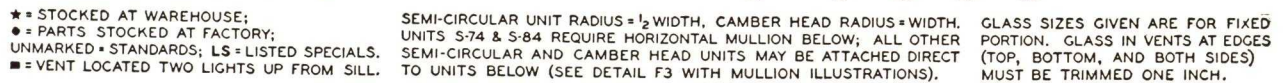


COMMERCIAL PROJECTED WINDOWS 223
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. HALF SIZE

Hardware for Commercial & Architectural Projected is the same design



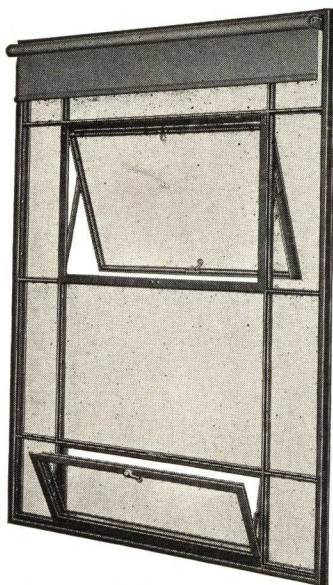
COMMERCIAL PROJECTED WINDOWS 334
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. HALF SIZE



Layouts Show Standard Projected Out and Projected In Ventilation. Windows Having All Ventilators Projected In May Be Furnished If Specified (Not Stocked at Warehouse). See Pages 5 and 7 for Installation Details and Mullions

BAYLEY

PROJECTED WINDOWS Architectural Screened



Projected Out Ventilator above permits use of screens and shades without interference

Projected In Ventilator below controls ventilation

Materials and Features

The windows are manufactured in steel, or steel hot dip galvanized. Ventilator sections, welding, weathering, and working parts are similar to those used in commercial projected but workmanship is stepped up for this more finished window.

SECTIONS $1\frac{1}{2}$ " and $1\frac{3}{8}$ " deep enclosed within an outside frame of extra heavy deep flanged channel welded at corners. This increased width stiffens the product and improves appearance.

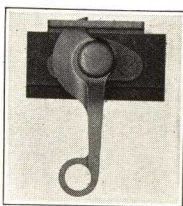
GLAZING is inside with bed putty and steel beads, or with putty, and outside with putty when requested.

HARDWARE is of heavy pressed steel, cast malleable and bronze. The cam so often found on Bayley windows is the most effective draw-up-tight attachment. As in all Bayley windows the depth of sections and their shape provides for secure fastening, another outstanding Bayley feature.

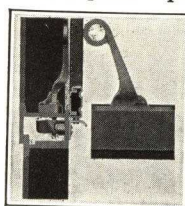
SCREENS manufactured by Bayley fit flat against the weathering and cover cam hardware.

Available with underwriter's label and with double glazing.

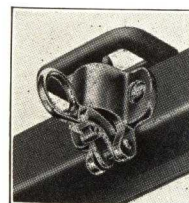
Recognizing value, careful designers rate this Bayley window as today's best buy, for they know the sections, workmanship, and trim, place its usefulness equal to that of more expensive products.



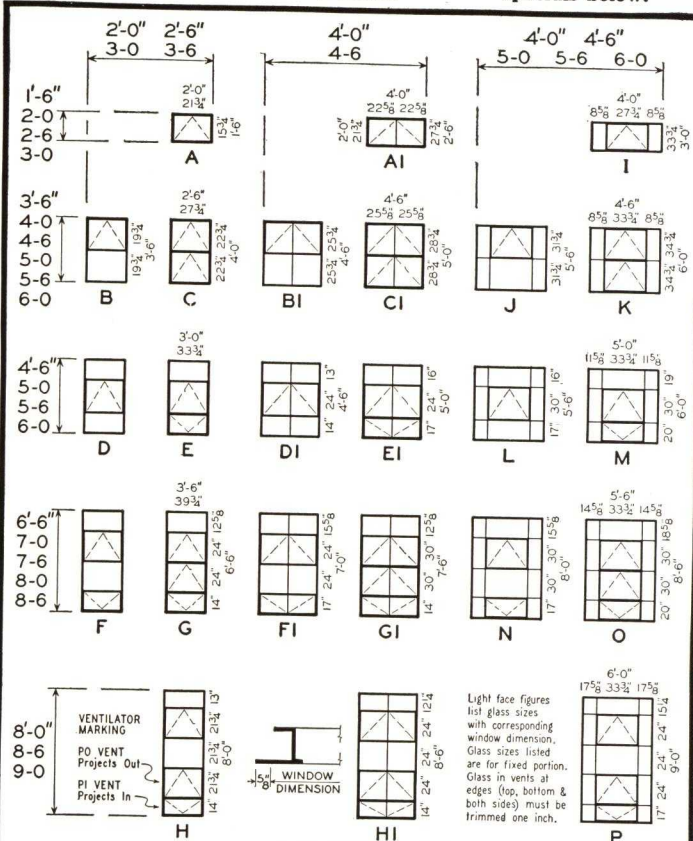
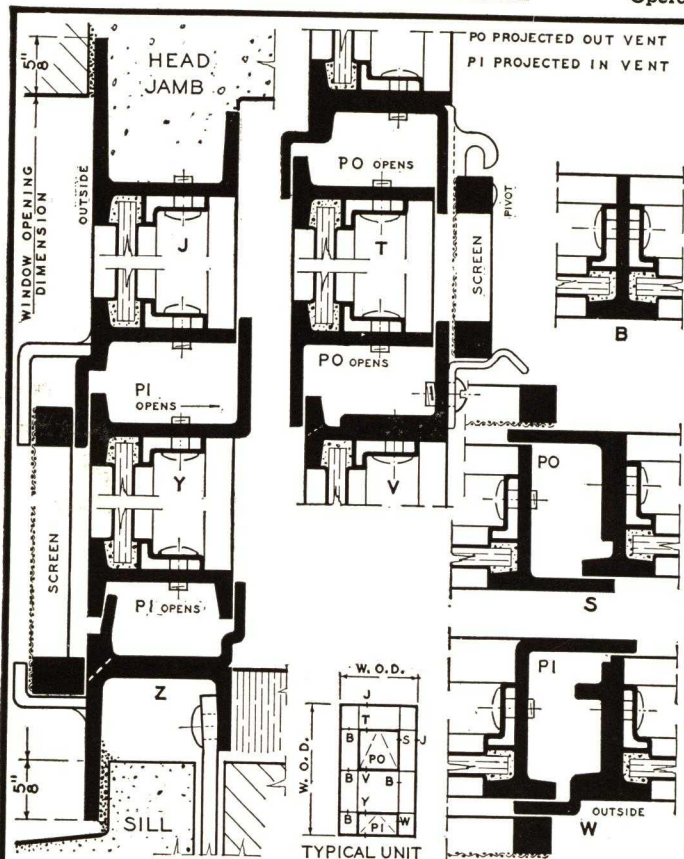
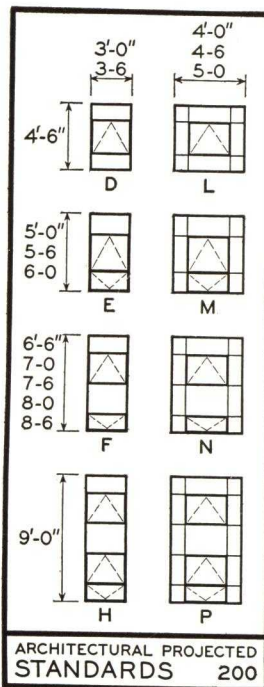
H113 Cam for Projected In Vents Within Reach



H20 Cam for Projected Out Located Within Ventilator Operates Through Sill

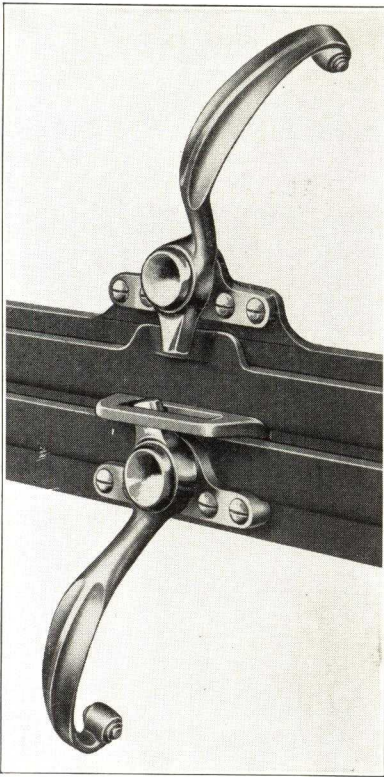


H112 Pole Catch for Projected In Vents Out of Reach

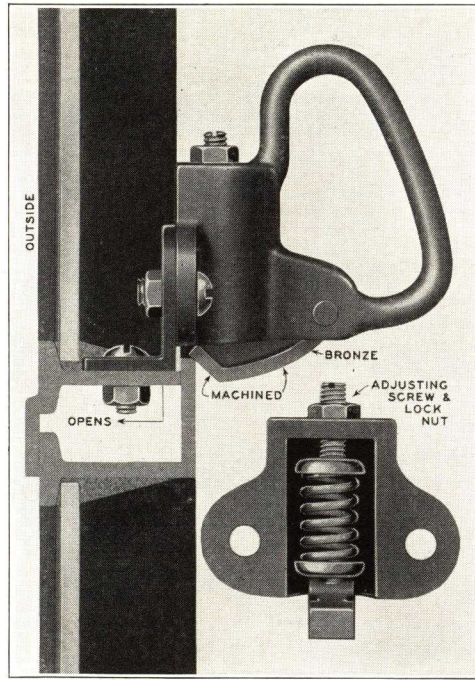


Inside Glazed (Flat Surface Outside).

Layouts are for Inside or Outside Glazed.

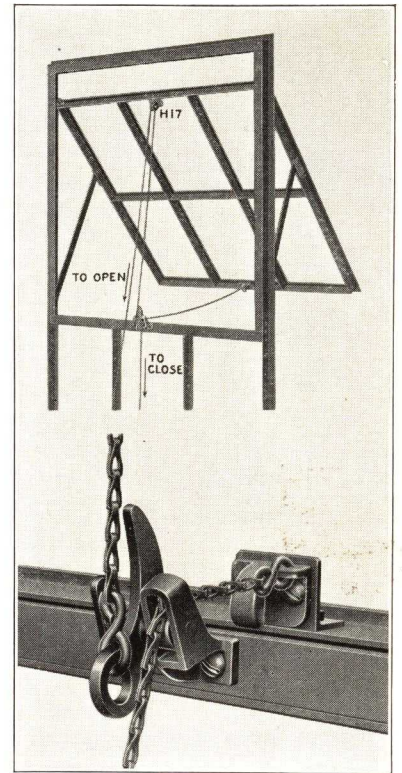


Bronze handle H126 for Projected Out and H127 for Projected In ventilators, when windows are glazed from inside. Bronze handle H128 for Projected Out and H129 for Projected In ventilators when windows are glazed from outside.

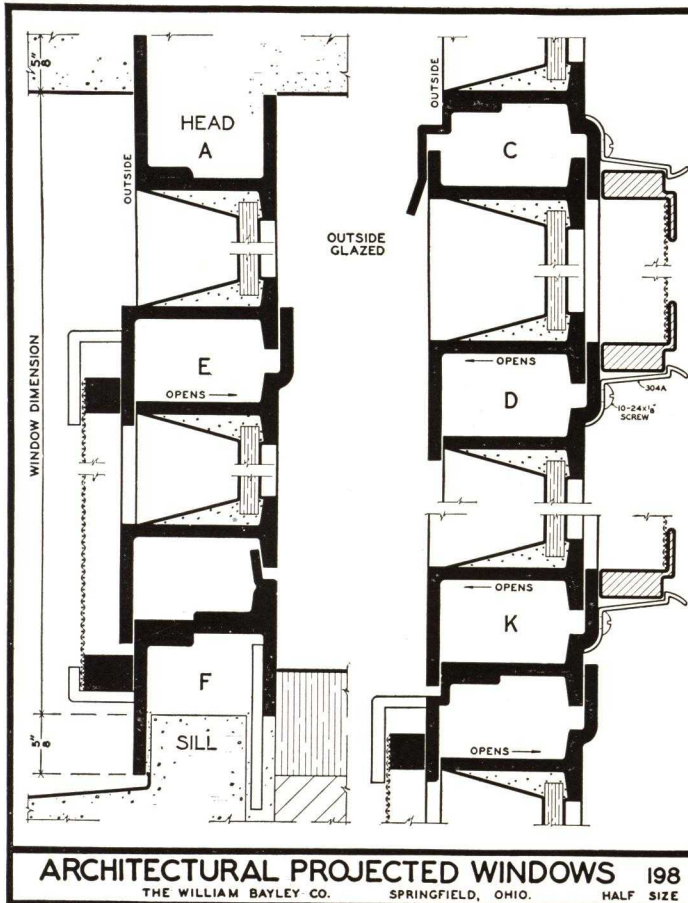


PRESSURE RELEASE LATCH H64

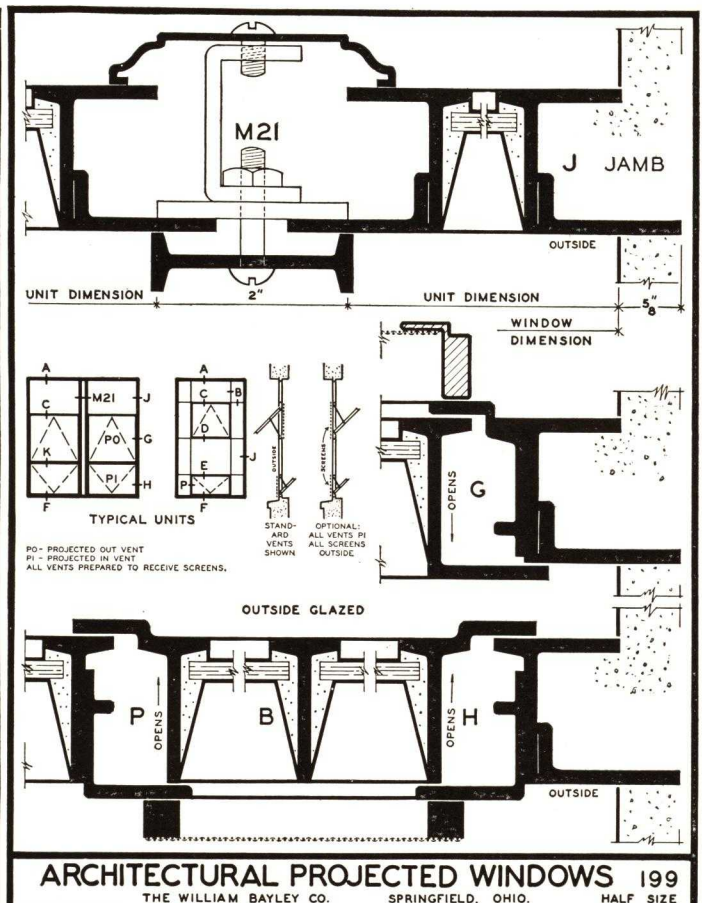
Developed by Bayley for use on Projected Outswinging and also ventilators pivoted horizontally near top, to release ventilators and relieve pressure caused by explosion. May be adjusted to release at any pressure. H64 Pressure Release Latch is approved by the Underwriters' Laboratories Inc., Chicago, and by the Associated Factory Mutual Fire Insurance Companies, Boston, as a means of holding ventilators closed for fire protection and prevention.



Chain Catch H121 for operating Projected Out ventilators which are out of reach of floor. May be chain or pole operated. Mechanical Operators are recommended for groups of ventilators in long lines or when they are high above the floor.



ARCHITECTURAL PROJECTED WINDOWS 198
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. HALF SIZE



ARCHITECTURAL PROJECTED WINDOWS 199
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO. HALF SIZE

Plates 198 and 199 Above Show Outside Putty Glazed (Flat Surface Inside)

BAYLEY

DETENTION WINDOWS Screened



Bayley Detention Windows—Screened—as shown and described on this and the following pages were originated by Bayley. Their adoption by Federal, State, County and Municipal authorities, and the thousands of these windows which have been installed prove the suitability of the design and construction to meet all requirements for detention.

Not only do GUARD WINDOWS provide protection, but they also discourage tampering with the ventilators. Even if the ventilators are damaged or completely removed the detention value of the window is in no way impaired. It is the only window wherein the factor of security remains constant irrespective of the location or number of ventilators used.

These Detention Windows consist of three parts, namely: the guard for detention, the ventilator and the screen. The construction and assembly of these parts is described as follows:

The Bayley GUARD is composed of horizontal and vertical bars continuous between jambs and from head to sill, interlocked mechanically and deep welded at intersections. The BAYLEY GUARD is made in three weights of bars:

Bayley SUPER-SAFE-BARS, For Maximum Detention.

Bayley SUPER-BARS, For Medium Detention.

Bayley INTER-BARS, For Moderate Detention.

Bars are shaped and spaced for glass approximately 6"x9" for outside putty glazing. Spaces in guard covered by ventilators are not glazed.

Bayley VENTILATORS, of Series 30 casement sections 15/8" deep, are super-imposed on each guard. Each is a frame and movable section fabricated separately from the guard, and complete within itself. Ventilators are outside putty glazed. Maximum size of lights in ventilators must not exceed an area equivalent to ten lights, 6"x9".



The GUARD Window, screened, as shown above, was originated, developed and perfected by Bayley

Ventilators which swing in at the top from heavy hinges welded to bottom corners of frame and ventilator are standard construction and are recommended. The less rigid projected in movement may be substituted if desired. Heavy side friction stays 1"x1/4", the minimum essential for prison usage, fold within the weathering.

Bayley SCREENS have solid steel hot galvanized frames butt welded at corners. Bronze or stainless steel insect cloth is securely fastened. Rewiring requires no special tools. Screens are placed between the ventilator and the grille.

Variations can be made in Bayley Detention Windows to meet individual problems. Specifications will be carefully observed.

ORIGINAL BAYLEY FEATURES

Specifications--

Welds on Guard Portion are not dressed flush except on surfaces where screen frames and the supporting frames of ventilators contact the guard portion, when ventilators are located as indicated on the plans. Guard portion permits the attachment of additional ventilators or the relocation of indicated ventilators.

The Supporting Frames of Ventilators attach to the guard portion in the field after the guard portion has

been set and provide for later removal for repairs or replacement, or for relocating on the guard portion. The bottom member of the supporting frame overlaps the horizontal guard member to form an outside drip.

Ventilators Attach to the guard portion by interlocking and overlapping the bottom frame member with the horizontal guard member and the top rail of each supporting frame clamped to the guard portion by special bolts.

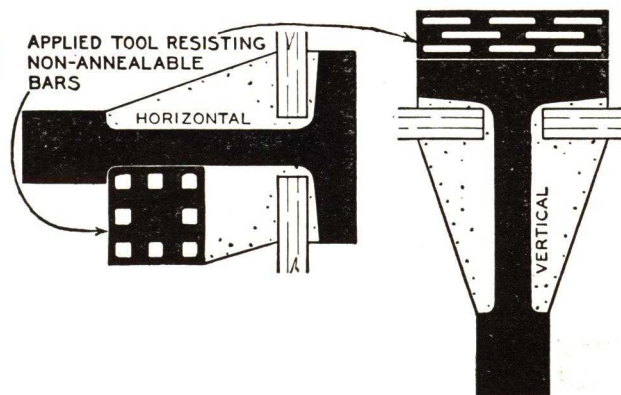
Ventilator Supporting Frames are of solid hot rolled

Shown Below are Three Kinds of Bars Used in BAYLEY GUARD WINDOWS—Full Size

BAYLEY SUPER-SAFE-BARS

For Maximum Detention

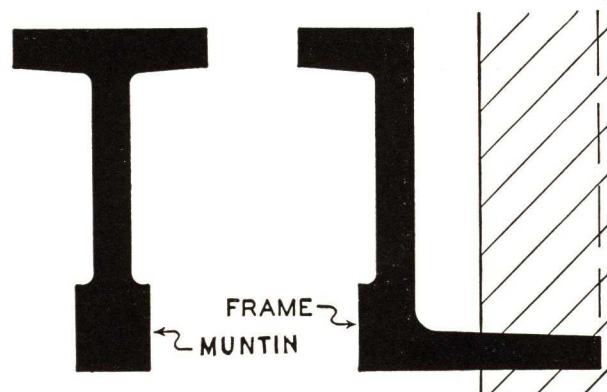
Bayley Super-Safe Bars include reinforcing with continuous non-machined tool resisting members which are interlocked with and welded to the Bayley super-bar. This construction combines the highest development of structural strength with tool resisting non-annealable features and is accepted as affording the maximum security in windows.



BAYLEY SUPER-BARS

For Medium Detention

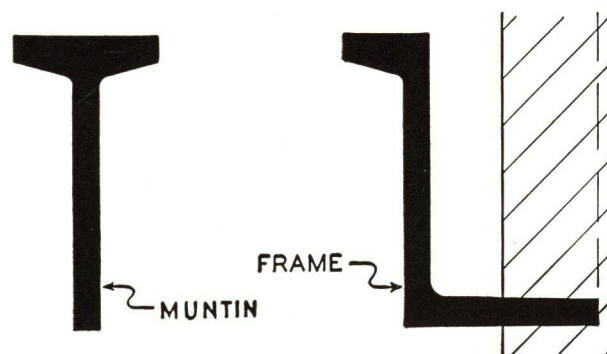
Bayley Super-Bars $1\frac{3}{4}$ " deep of structural grade steel also meet many normal maximum security requirements even though they are not tool resisting. When built into the guard they are interlocked mechanically at intersections and welded.



BAYLEY INTER-BARS

For Moderate Detention

Bayley's Inter- (Intermediate) Bars $1\frac{1}{2}$ " deep are of structural grade steel. They parallel the Super-Bar construction in fabrication and welding. Recommended for use where economy is essential and only for moderate security where supervision is always rigid.



COMMON TO ALL THESE WINDOWS

double contact steel casement sections except that the sill member is a low carbon cold formed section.

Ventilator Supporting Frames provide a continuous retention for a contact fill where frames make metal to metal contact with the guard portion.

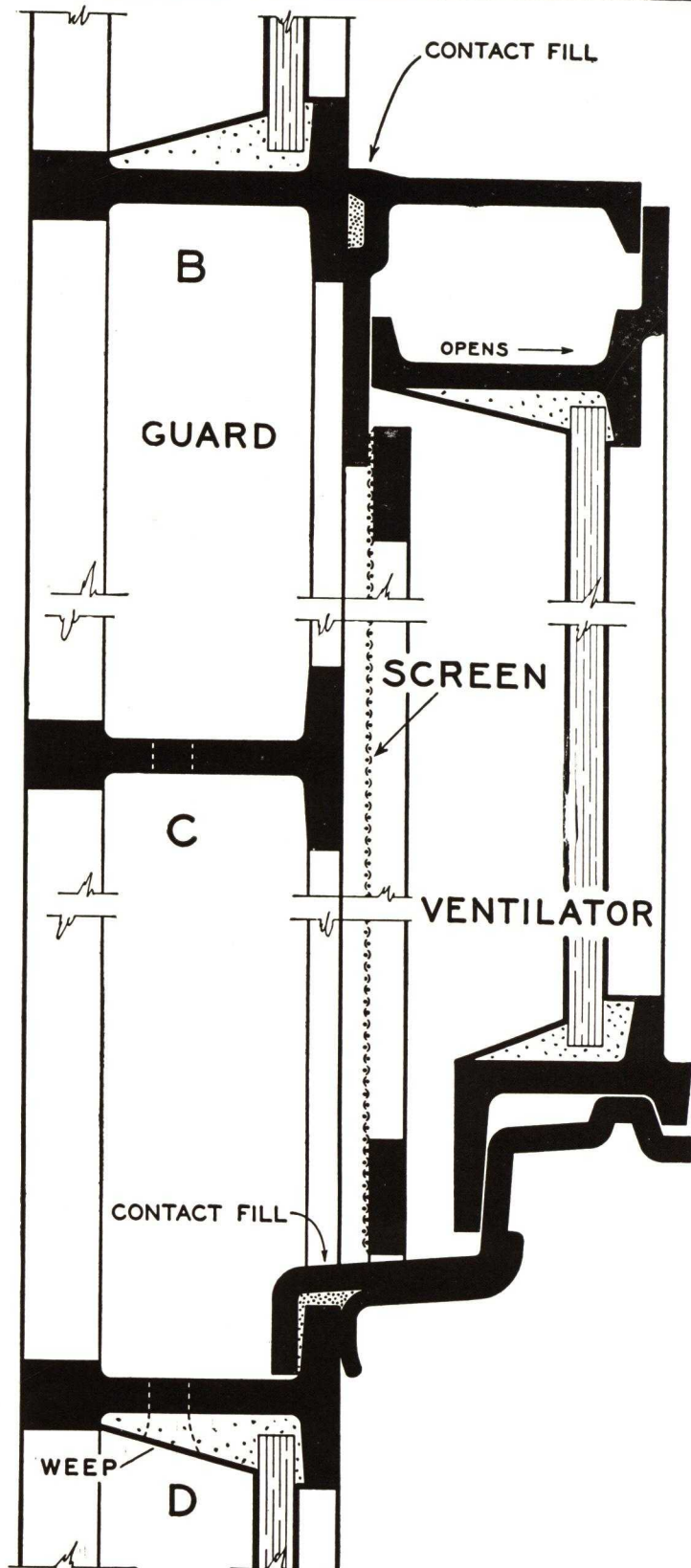
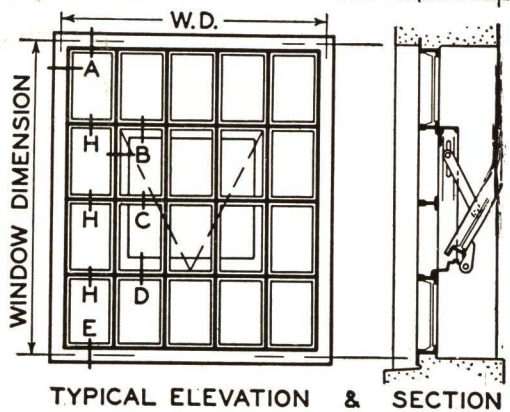
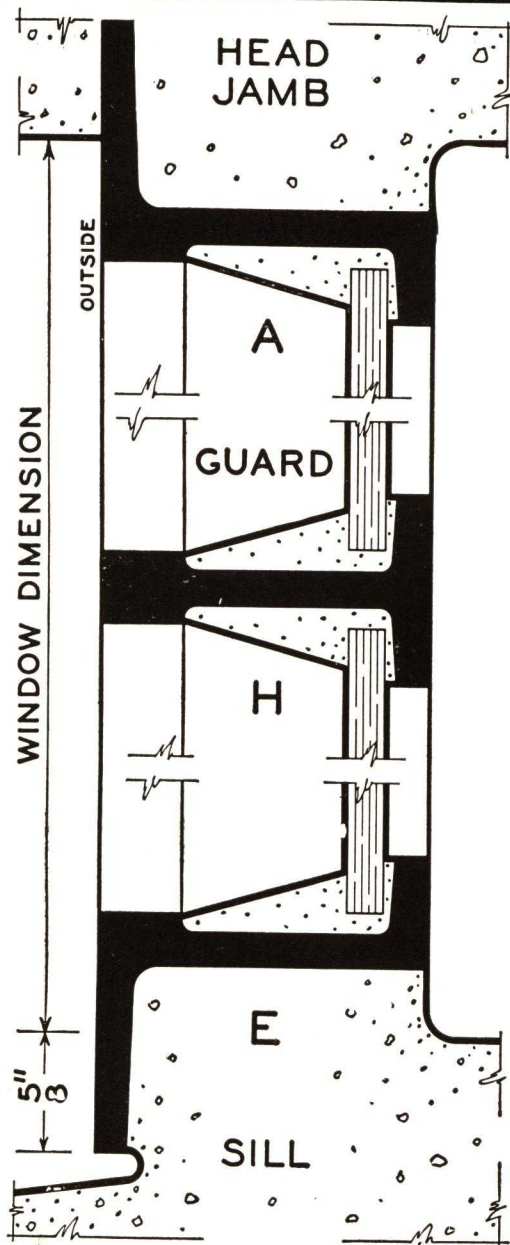
Ventilators Are Hinged at the bottom to swing in at the top. This construction best meets all detention requirements. Protected ventilators can be furnished if specified.

Screens Are Furnished as an integral part of the

window. They are made in the Bayley shops. This results in single responsibility. Screens are located on the inside face of the guard between ventilator and guard.

Hardware Is Extra Heavy and departs from the sizes and weights of that commonly used. It has been specially designed and developed by Bayley engineers to withstand severe prison use. All hardware is made exclusively in Bayley shops.

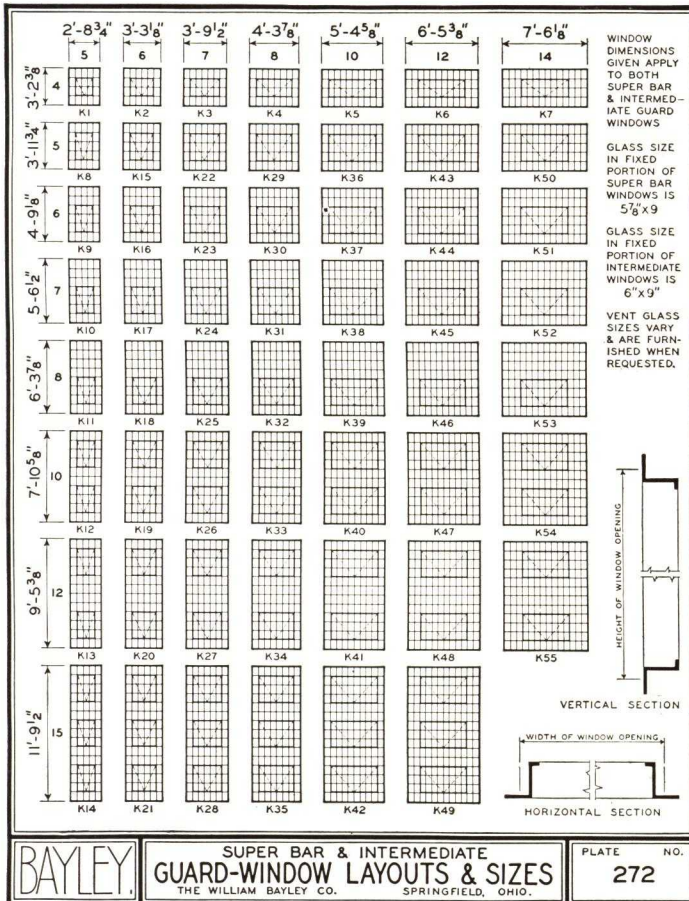
Complete specifications and details will be sent on request.



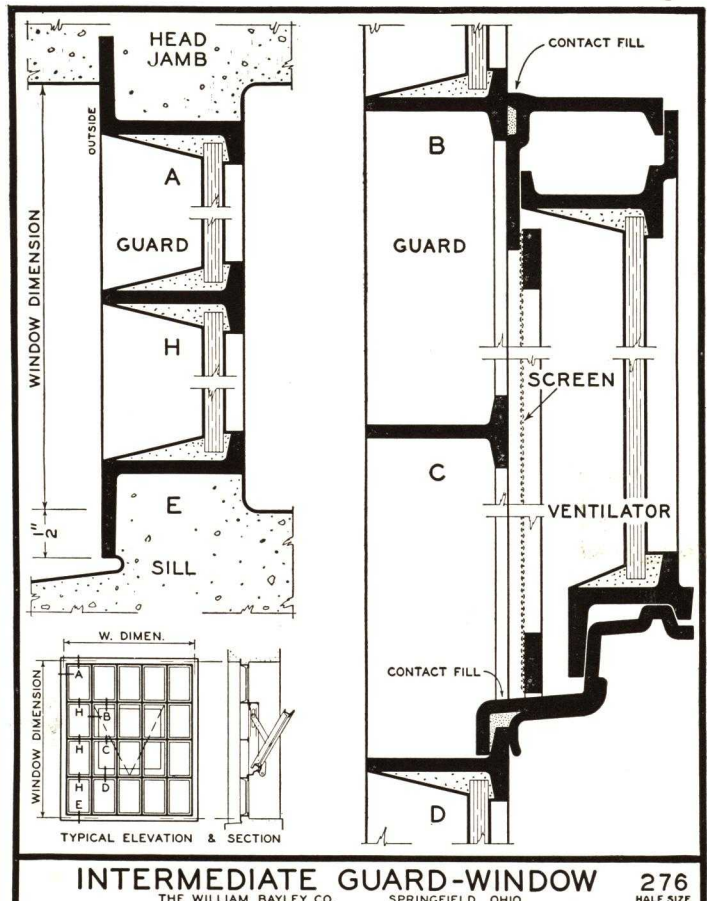
SUPER BAR GUARD-WINDOW
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.

275
FULL SIZE

For Layouts See Plate 272 on Opposite Page

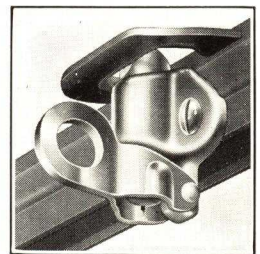


Prefix "K" indicates Intermediate Bar Guards.
Prefix "G" (Instead of "K") indicates Super-Bar Guards.
Prefix "Y" (Instead of "K") indicates Super-Safe-Bar Guards.

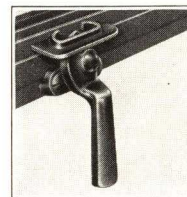


BAYLEY VENTILATORS AND HARDWARE

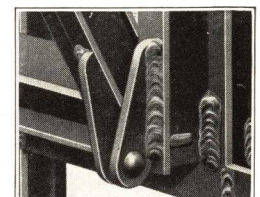
Ventilator and its frame fabricated as a unit with provision for later attachment to the grille in the field has the following advantages: (1) Grilles may be shipped in advance of ventilators. (2) Grilles may be bricked in or placed in concrete forms. (3) Ventilators are attached as the building is being finished, thus protecting contacts, hardware and finish. (4) Ventilators have hardware attached in the shop before shipment. (5) Ventilators may be glazed and painted separately on trestles on the job under more favorable conditions. Large scale operations already completed have proven the soundness of this Bayley plan of guard window construction.



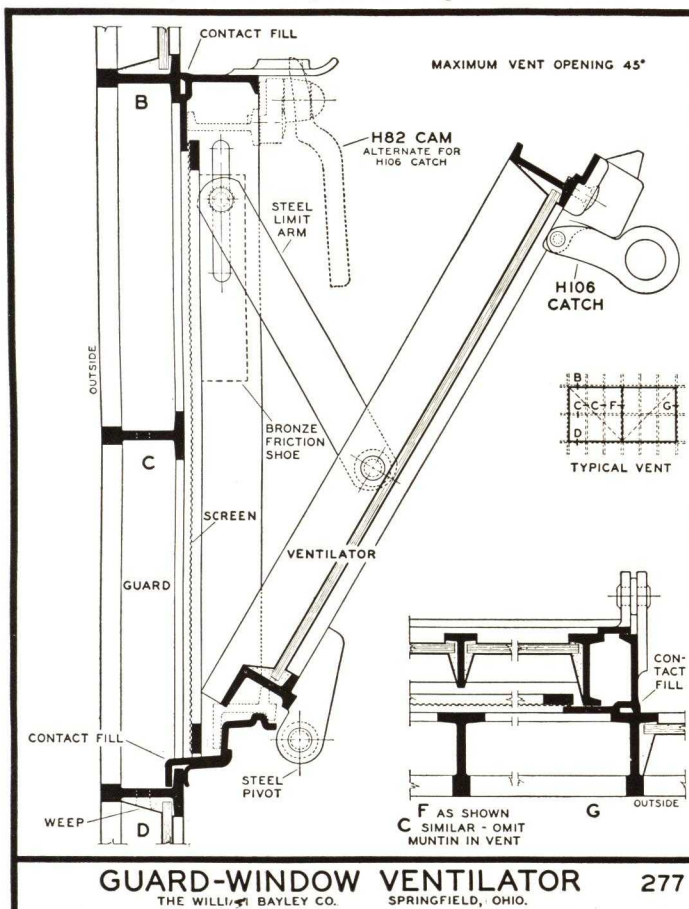
Spring Catch H 106



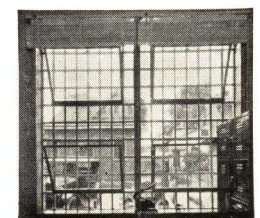
Cam H 82



Hinge Welded to Frame



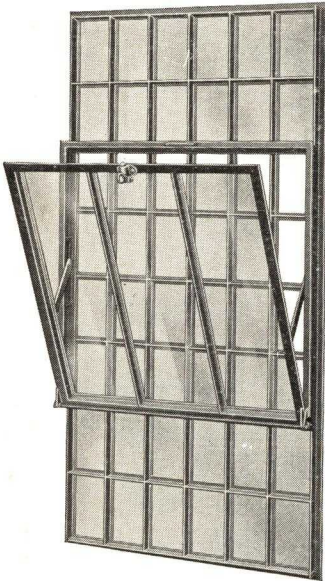
When it is vital to protect valuable contents against entrance, as in banks, fur and silk storages, bonded warehouses, precious metal shops, etc., Bayley recommends that designers select and specify windows of the great strength and weight of this "Detention" group. The super-bar guard window is a minimum recommendation for such protection. See photo at right.



BAYLEY

PROTECTION WINDOWS Screened

'PROTECTION' WINDOWS



Protection Window. Ventilator inside. Screen between ventilator and grille

These Protection Windows and the Security Windows shown at bottom of this page, employ the guard window principle of grille and ventilator. Sections are 1½" deep. They are designed for protection against forced entrance from the outside when the ventilator is in either the open or closed position. Their use discourages those who unlawfully seek to enter retail stores, warehouses, factories, tool rooms and offices, especially through the windows on alley, rear or dark elevations of such buildings.

Grille of Protection Windows consists of Muntins which are continuous from head to sill and from jamb to jamb with intersections made as in Bayley Pivoted Windows. Grille is glazed except where ventilators occur. Glass size in grille is 6 x 9". Opening dimensions and window dimensions are identical. For sizes see plate 272, page 17.

Ventilator is superimposed on, and welded to the grille. They are bottom hinged to swing in at top and have arms which limit the degree of opening. They may be hand or mechanically operated.

Ventilators are glazed and are listed by the number of open grille spaces they cover. They do not have muntins except when covering ten or more spaces in grille, then muntins are vertical only, occur directly in line with grille muntins, and are so located that the glass divisions of the ventilator are symmetrical.

Protection Windows are Putty Glazed INSIDE as standard, but may be Putty Glazed OUTSIDE. Glazing angles may be applied, but are unnecessary and are not recommended except when windows carry the Underwriters' label.

Underwriters' labeled Protection Windows may have the grille either Putty Glazed OUTSIDE or Angle Glazed INSIDE; vent must be Angle Glazed INSIDE.

Screens by BAYLEY are furnished when required. They are especially designed for this product, are of solid sections, butt welded at corners, hot dip galvanized, and covered with heavy bronze wire cloth. When grille is glazed inside, screens are placed between vent and grille.

The windows shown on this page exceed the usual trade offering for protection. However, for maximum safety of valuable contents against forced entrance as in banks, bonded warehouses, fur and silk storages, and precious metal shops, BAYLEY recommends that designers select and specify windows of greater strength and weight from the "Detention" group. (Pages 14 to 16.)

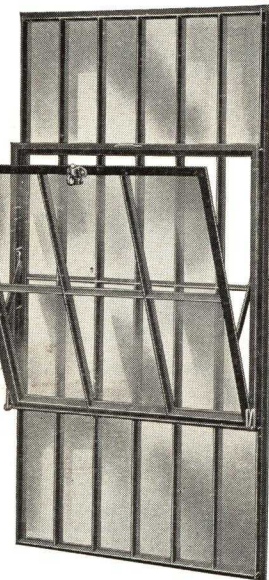
'SECURITY' WINDOWS

These are made in large quantities to standard sizes and carried in stock for prompt shipment, therefore in proportion to size and weight, they are relatively inexpensive.

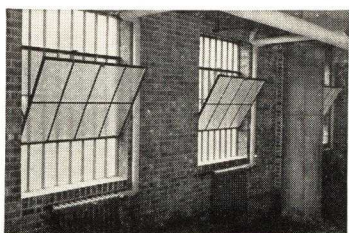
The grille, of sections 1½" deep, with Bayley exclusive interlocked joints, assures better protection from outside entrance than grilles of less depth and less effective jointing. Glass size in the grille is always 5-13/16" x 18". Ventilators are superimposed, hinged at bottom to swing in. Glass sizes in ventilators are shown on plate 270 at right.

Screens especially designed by BAYLEY for this product, are of solid sections, butt welded at corners, hot dip galvanized, and covered with heavy bronze wire cloth. They drop into position between the grille and the ventilator — an exclusive Bayley feature.

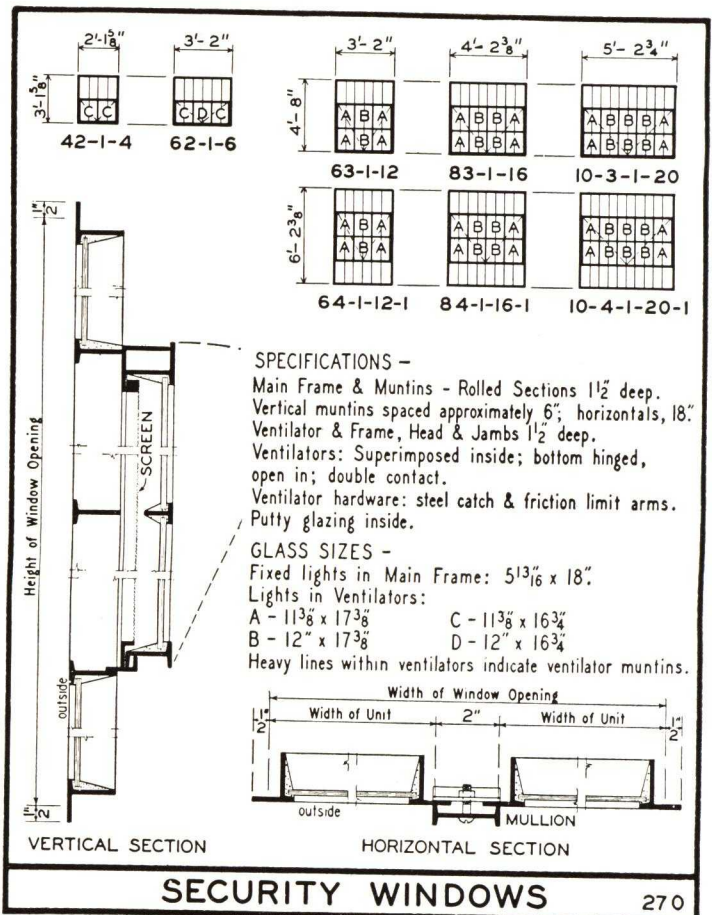
This window gives more light and ventilation than the former wood window and separate guard. It improves appearance, and since it is built as one unit it is easily cleaned and painted.



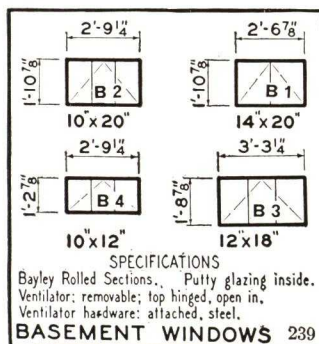
Security Window. Ventilator inside. Screen between ventilator and grille



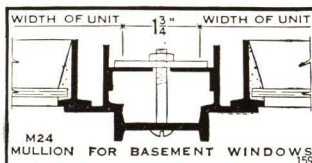
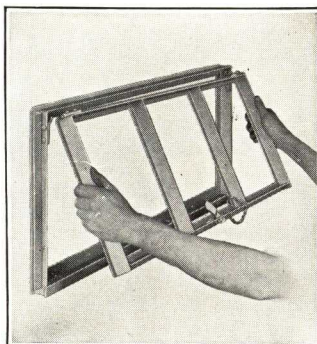
Typical ground floor alley installation of stock Security Windows. Ventilators are hinged in-swinging, — no projections outside of building line. Removable screen is in place between ventilator and grille.



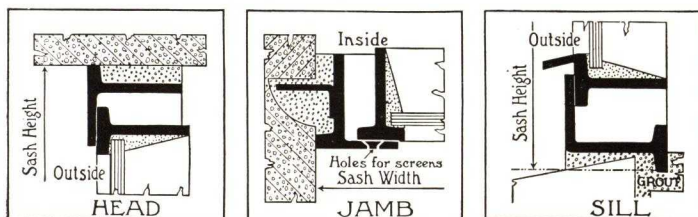
BAYLEY BASEMENT WINDOWS



For residential purposes. In stock of steel. Wrought iron on special orders. Sections $1\frac{1}{2}$ " make these units especially rigid. Ventilators are top pivoted to swing in. Pivot construction permits easy removal of ventilator for glazing. Bayley screens may be furnished. Mullions M-24, for vertical attachment of more than one unit in an opening.



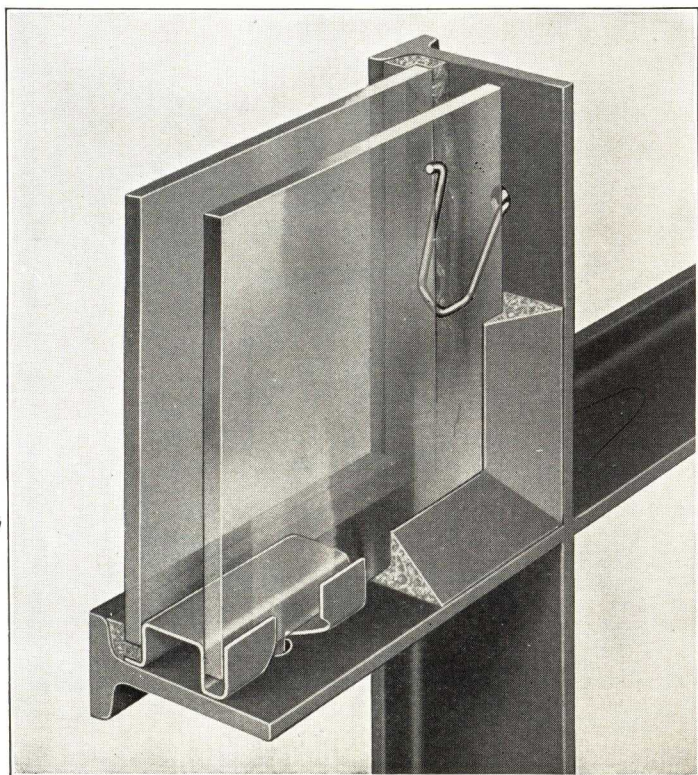
Bayley Basement Window Installation Details



BAYLEY DOUBLE GLAZING

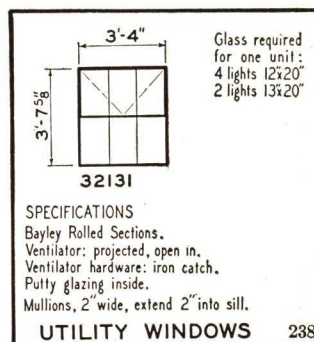
Double glazing the Bayley way is an exclusive feature, essential where constant temperature and humidity is desired. It also saves fuel. Double glazing in each glass space is accomplished with copper separators 2" long, which provides $\frac{3}{8}$ " or $\frac{1}{2}$ " space between the two lights. Bed putty is applied for outside seal, outside light inserted followed by glazing spring and double glazing separators, inside light is held in place by separators. Face putty is applied for finish and inside seal.

Bayley Windows carry enormous areas of double glazing where constant humidity and temperature is desired. This exclusive Bayley construction pays for itself by reducing heating costs.



BAYLEY UTILITY WINDOWS

Are companion products to pivoted and projected windows. In stock of steel. Wrought iron on special order. Ventilators project in at top with a minimum of inside interference. Sections $1\frac{1}{2}$ " and $1\frac{5}{8}$ " deep. Iron catch hardware standard. Used on lot lines or where outside projections are objectionable, specially adapted to garages. This product may be screened with Bayley screens.

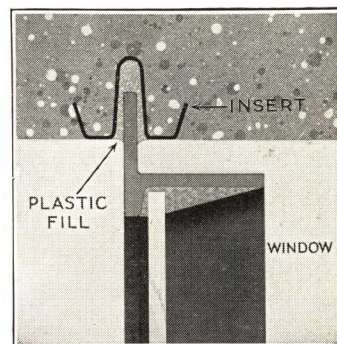


BAYLEY STEEL WINDOW INSERTS

for buildings of concrete construction and finish, or of concrete frame faced with brick.

Inserts are of galvanized rust resisting Armco ingot iron providing recesses in jambs and heads of openings for steel windows. They nail to the forms. Recesses are filled with natural colored mastic. Requires no additional caulking.

Window erection at any temperature, glazing follows immediately. General construction speeded up.

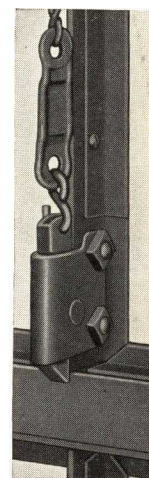


UNDERWRITER'S LABELED WINDOWS

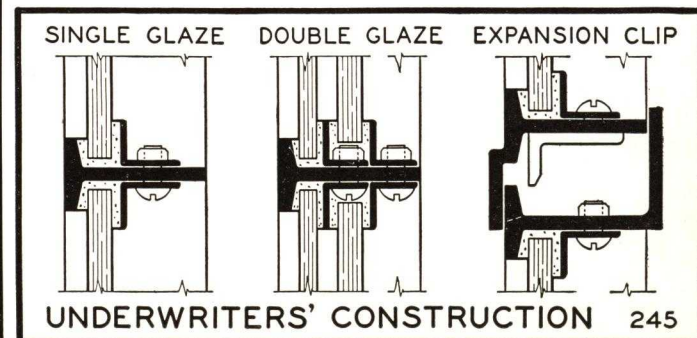


include those with horizontal pivoted ventilators at the center and at the top (Page 3), Pivoted Windows Screened (Page 8), Projected Windows Commercial (Page 10), Projected Windows Architectural (Page 12), Protection and Security Windows (Page 18). Sections and details duplicate those of these standard windows with the following exceptions.

Glass is held in place by glazing angles, and ventilators are equipped at heads and sills with expansion clips. Window units are limited to 7 feet x 12 feet. Width and height may be either dimension. Glass size is limited to 350 square inches. Larger openings are made up of several units connected together by approved T mullions. Mullions have special anchors at heads and sills. Window openings are not limited to any width. Hardware may be either lockbar, spring catch and chain, or cam H 15 and chain. Double glazing may be had in these windows and provides two lights in each glass space, held in place by 2 sets of glazing angles. It is essential that ample bed putty be used to insure a water-tight job. Underwriter's label is placed on inside face of glazing angle located at lower edge of fixed light near center and sill of unit.



Fusible Link Chain Set A



BAYLEY

INDUSTRIAL STEEL DOORS



Industrial
hinged door
and frame

Fully meet the requirement for a steel door of intermediate grade to serve where neat appearance, durability, and economy are essential, as in service entrances of all types of buildings, in retail stores and shops, and in office, warehouse and light manufacturing buildings. They are particularly suitable for water purification and sewage disposal plants, gymnasiums, armories and the non-detention portion of penal institutions.

Extensive manufacturing equipment of latest design, and quantity production make it possible to offer this product of uniformity and quality at low cost. Stock sizes are shown on opposite page. Designs to meet individual conditions are available.

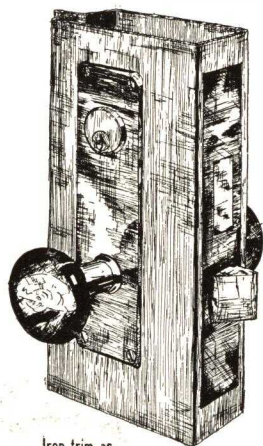
STILES AND RAILS are 5" wide, formed of 14 gauge steel. Corners are mitered, reinforced, welded solid and ground smooth. Where hinges occur, stiles have internal reinforcement. **PANELS** are stretcher-leveled steel plate panels throughout.

HARDWARE — a wide selection is offered to meet all conditions. Standards are shown below. Doors and frames are prepared for the hardware furnished by Bayley.

HARDWARE for SWING Doors — Bayley standard includes 5" x 5" heavy steel, half surface, template hinges No. 135D, three per leaf; top and bottom bolts for standing leaf of double doors. Other hardware available — five kinds of mortise locks with knobs, surface latch and hasps (without padlock), 5" x 5" ball bearing template hinges in steel or bronze, hook back (all illustrated below), door checks, and panic hardware.

HARDWARE for SLIDE Doors — Bayley standard includes track with wall brackets (ceiling brackets if required) and four-wheel roller-bearing adjustable-hanger trolleys, hasp and staple (without padlock), handles, floor guides and stops. Latch of steel is offered at low extra cost; cylinder lock at additional cost. Mortise extension bolts with hasps may be used (padlocks not included). Slide Doors and Hardware are designed to be placed on inside of wall; specify when on outside of wall and proper hardware will be furnished.

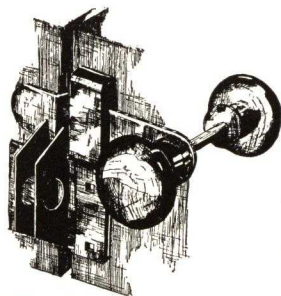
FRAMES for SWING Doors are 14 gauge steel channels with rebate and stop. Jams extend 1" below finished floor line providing $\frac{5}{8}$ " clearance between door and floor for threshold (this $\frac{5}{8}$ " clearance can be reduced if desired by setting the frames further into the floor). Threshold is not included. Frames are shipped knocked down and have double spreader bars designed to set beneath top of finished floor. Masonry anchors with vertical adjustment are provided for 24" spacing at jams. Slide Door framing is not included.



Y89 LATCH

Iron trim as listed. Add (b) to mark to indicate bronze trim.

- Y120 LOCK with cylinder and thumb turn.
- Y121 LOCK with two cylinders.
- Y122 LOCK with cylinder and push buttons.
- Y130 LATCH without cylinders or deadbolt.
- Y140 LOCK with bit key (not illustrated).



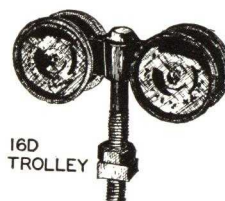
73D HANDLE



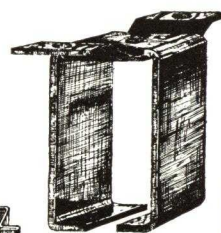
Y91 TOP BOLT



43D WALL BRACKET



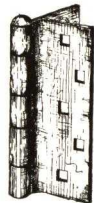
16D TROLLEY



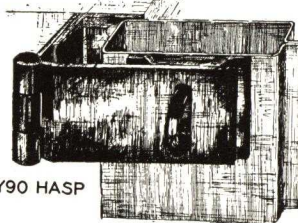
47D CEILING BRACKET



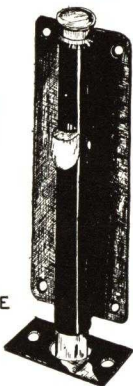
BALL BEARING HINGES
142D-STEEL
141D-BRONZE



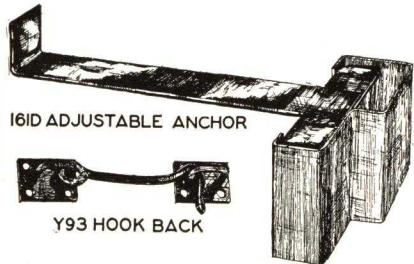
135D STEEL HINGE



Y90 HASP

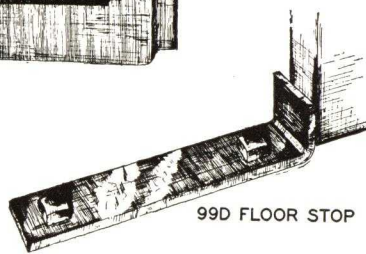


Y92 BOTTOM BOLT



161D ADJUSTABLE ANCHOR

Y93 HOOK BACK



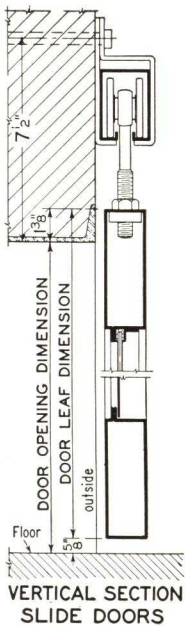
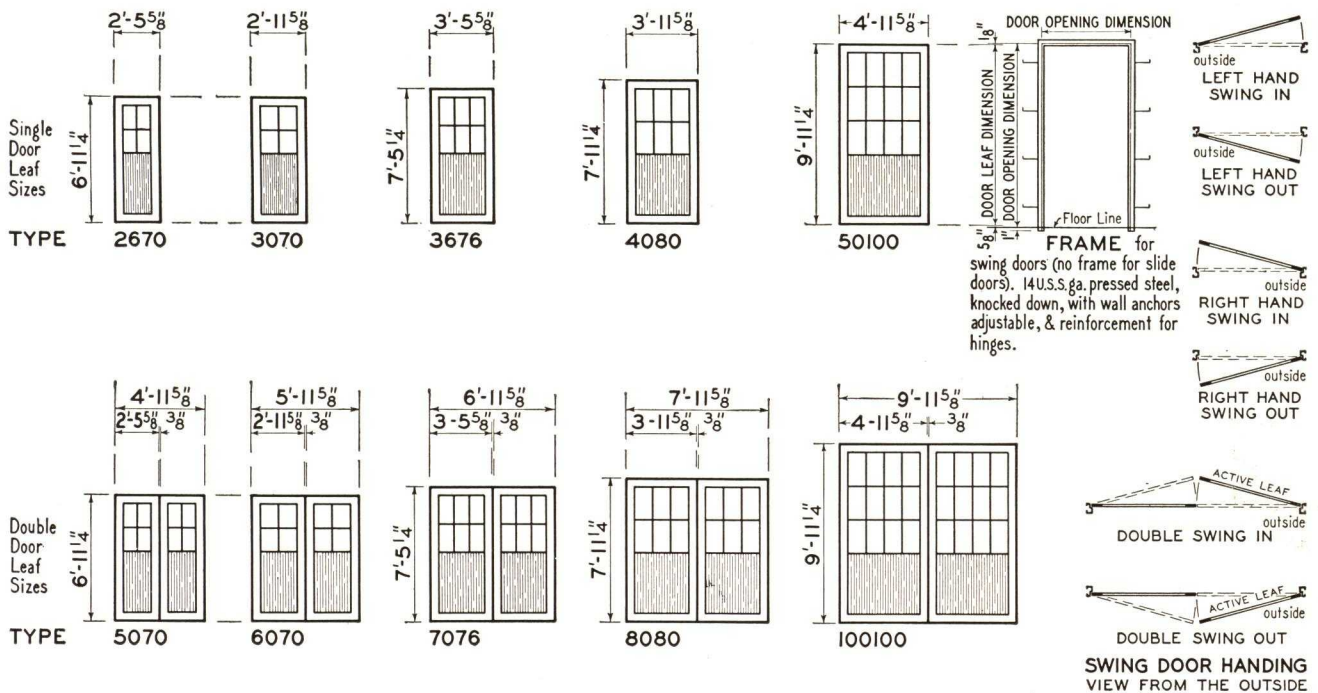
99D FLOOR STOP

HARDWARE FOR INDUSTRIAL STEEL DOORS

THE WILLIAM BAYLEY CO.

SPRINGFIELD, OHIO.

218



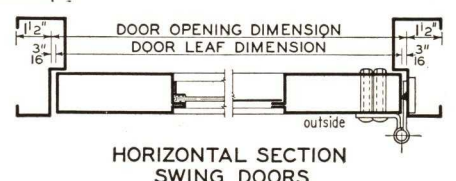
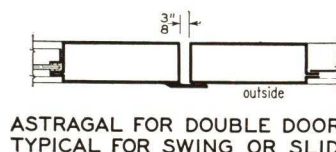
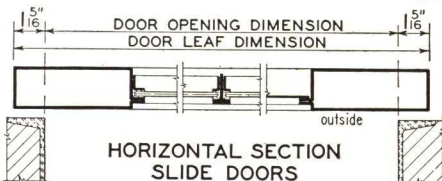
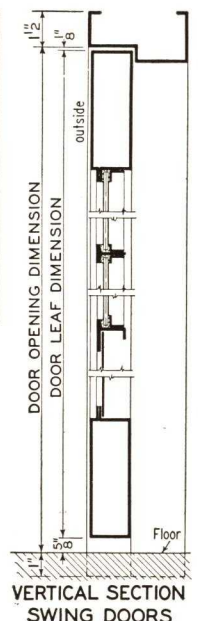
SIZES - SWING & SLIDE DOORS										
DOOR TYPE		SWING & SLIDE LEAF SIZES		SWING DOOR DOOR OPENING SIZES		SWING DOOR *MASONRY OPENINGS		SLIDE DOOR OPENING SIZES		GLASS SIZES
		Width	Height	Width	Height	Width	Height	Width	Height	
Single Doors	2670	2'-5 5/8"	6'-11 1/4"	2'-6"	7'-0"	2'-9"	7'-1 1/2"	2'-3"	6'-10 1/2"	9 1/2" x 16"
	3070	2'-11 5/8"	6'-11 1/4"	3'-0"	7'-0"	3'-3"	7'-1 1/2"	2'-9"	6'-10 1/2"	12 1/2 x 16
	3676	3'-5 5/8"	7'-5 1/4"	3'-6"	7'-6"	3'-9"	7'-7 1/2"	3'-3"	7'-4 1/2"	10 1/4 x 19
	4080	3'-11 5/8"	7'-11 1/4"	4'-0"	8'-0"	4'-3"	8'-1 1/2"	3'-9"	7'-10 1/2"	12 1/4 x 22
	50100	4'-11 5/8"	9'-11 1/4"	5'-0"	10'-0"	5'-3"	10'-1 1/2"	4'-9"	9'-10 1/2"	12 1/8 x 22 1/2
Double Doors	5070	2'-5 5/8"	6'-11 1/4"	5'-0"	7'-0"	5'-3"	7'-1 1/2"	4'-9"	6'-10 1/2"	9 1/2 x 16
	6070	2'-11 5/8"	6'-11 1/4"	6'-0"	7'-0"	6'-3"	7'-1 1/2"	5'-9"	6'-10 1/2"	12 1/2 x 16
	7076	3'-5 5/8"	7'-5 1/4"	7'-0"	7'-6"	7'-3"	7'-7 1/2"	6'-9"	7'-4 1/2"	10 1/4 x 19
	8080	3'-11 5/8"	7'-11 1/4"	8'-0"	8'-0"	8'-3"	8'-1 1/2"	7'-9"	7'-10 1/2"	12 1/4 x 22
	100100	4'-11 5/8"	9'-11 1/4"	10'-0"	10'-0"	10'-3"	10'-1 1/2"	9'-9"	9'-10 1/2"	12 1/8 x 22 1/2

*MASONRY OPENING SIZES BASED ON USE OF BAYLEY STANDARD PRESSED STEEL DOOR FRAMES.

SPECIFICATIONS: Elevations are viewed from outside.
Swing doors: specify hand and swing (see diagrams above).
Slide doors: singles - specify "slide right" or "slide left"; all double slide doors slide apart.
Tube: 1 1/4 x 5/16 U.S.S. pressed steel. Corners mitered, internally reinforced, welded and ground.
Upper panel: inside, angle glazed. Glass and putty not included.
Lower panel: 18 U.S.S. gauge steel, welded in.
Upper and lower panels: steel (no glass) - same price, factory shipment.
Paint: one standard protective coat.
Hardware included

Swing doors: three hinges per leaf; and top and bottom bolts for inactive leaf of double doors.
Slide doors: complete track equipment, hasp and staple (without padlock), handles, guides, and stops.

EXTRAS for SWING DOORS	
CYLINDER LOCK - Iron Handles.....*	
- Bronze Handles.....*	
LEVER LATCH (without padlock).....*	
BIT KEY LOCK (leaf limit 32 sq. ft.) -	
- Steel Plated Trim.....*	
- Bronze Trim.....*	
HOOK BACK & RING..... per leaf	
*ONE REQUIRED PER DOOR OPENING	



BAYLEY

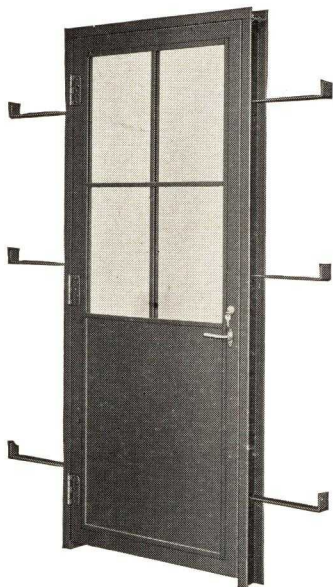
LAYOUTS, SIZES, SECTIONS & DETAILS
INDUSTRIAL DOORS
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.

PLATE NO.
219
SCALE 1 1/2" = 1'-0"

Stock sizes are shown on the above plate.



TUBULAR STEEL DOORS



**Tubular Steel
Hinged Door and Frame**

Are made to withstand the constant abuse incident to commercial and industrial installations, and combine strength and performance with good appearance. They are made to swing, slide, fold, and lift, with hardware of the most substantial kind designed for permanent, trouble-free service. Bayley pioneered the tubular door idea as applied to standardized manufacture, and continues to lead in design and workmanship.

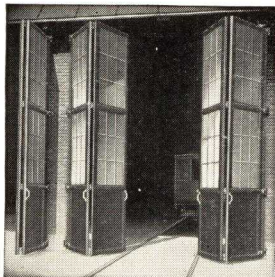
STILES AND RAILS are welded steel tubes, generally $2\frac{1}{2} \times 1\frac{1}{2} \times 5/32$ ". Larger tubes or structural shapes are employed for doors of unusual size or design. **PANELS** (steel below, muntins and beads for glass above) have $1\frac{1}{2}$ " deep channels which straddle and are rigidly welded to stiles and rails. This exclusive feature provides a neat appearance on both sides of door. Doors may have steel panels thruout.

HARDWARE for **SWING** doors includes steel hinges, and the mortise extension bolts for the inactive leaf of double doors. **MORTISE LOCKS AND LATCHES** especially designed and manufactured by BAYLEY of non-corrosive metals are reliable for heavy duty. **Y2 LOCK** has handles and cylinders both sides, and has latch bolt 2" high and $7/8$ " thick which is deadlocked by key only. **CYLINDERS** made for Bayley are standard; masterkeying extra. Cylinders may be omitted from either side, or thumb turn may be substituted for key. **LATCH Y11** is identical in construction to Lock Y2 when cylinders are omitted. **SURFACE LATCH Y14** of steel offered at lower cost. **PANIC DEVICES** with handle or bar release are furnished in several combinations.

HARDWARE for **SLIDE** doors includes complete track equipment, hasp and staple (without padlock), handles, floor guides, and stops. Slide doors and hardware are designed to be placed inside of wall; when placed outside, mention must be made so that proper hardware may be furnished. **LOCK Y17** is similar in materials and construction to Lock Y2 for swing doors. **LATCH Y13** of steel offered at lower cost. **HASP BOLT Y71** for single, and Y72 for double doors may be used. Padlocks not included.

FRAMES for swing doors are structural channels fitted in shop. Slide Door framing not included. Tubular Doors and Frames with grilles and side lights of Super Bars, in steel or non-annealable, are used in walls and corridors of prisons. They can be glazed with bullet proof glass or left open. Bakery Proof Room Doors of tubular steel, with hardware of unique design, were originated by BAYLEY and are offered to meet steam and acid conditions. Send for separate catalog on Airplane Hangar Doors.

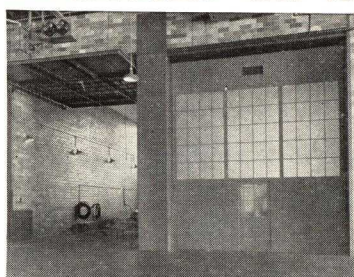
BAYLEY STEEL DOORS HAND OPERATED OR ELECTRIC CONTROLLED



Railroad Accordion



Large Canopy



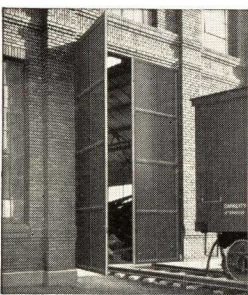
Canopy Open and Closed



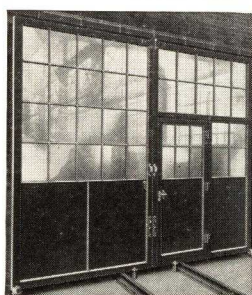
Overhead



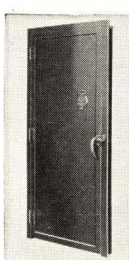
Craneway



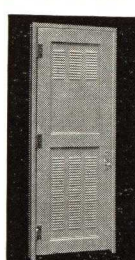
Railroad Hinged



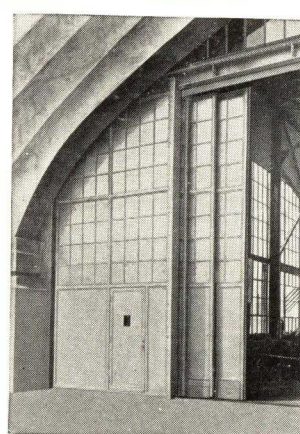
Railroad Sliding



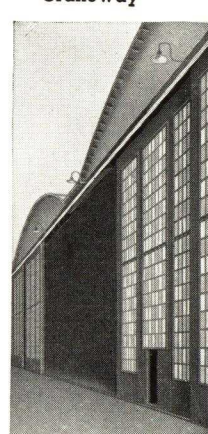
Proof Room



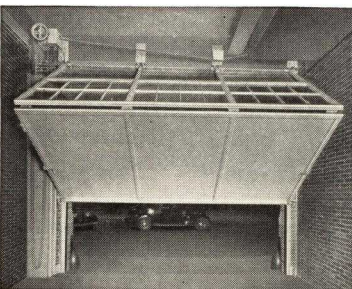
Louvre



Tubular Hangar



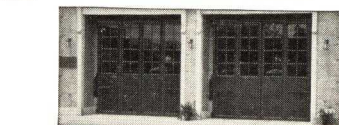
Structural Hangar



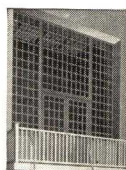
Bifold



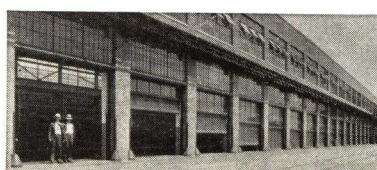
Prison and Grille



Fire Station

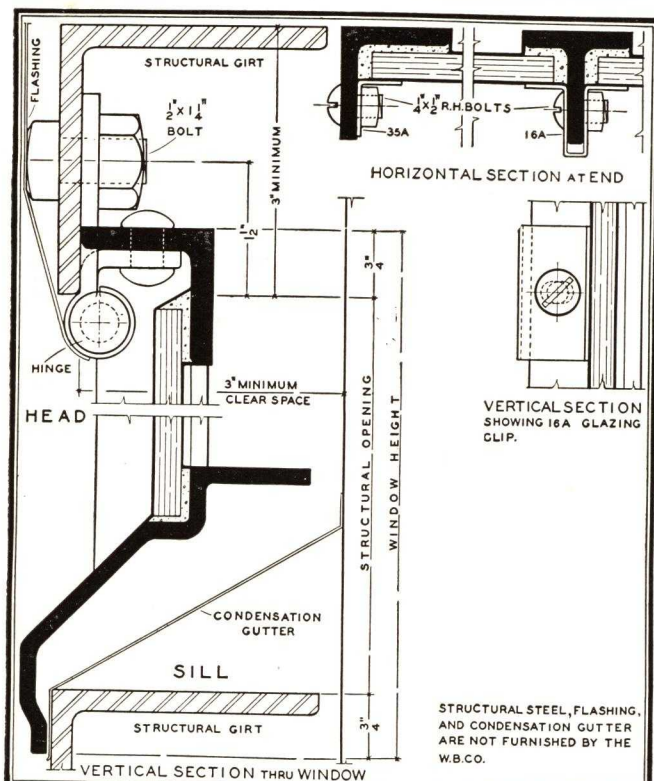


Vertical Lift



Tubular Hangar

CONTINUOUS WINDOWS AND OPERATORS



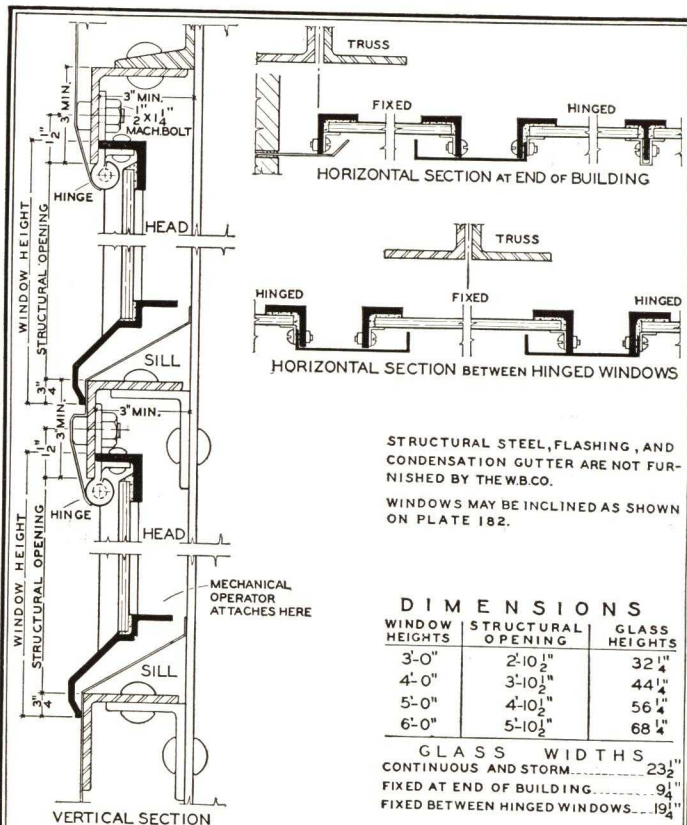
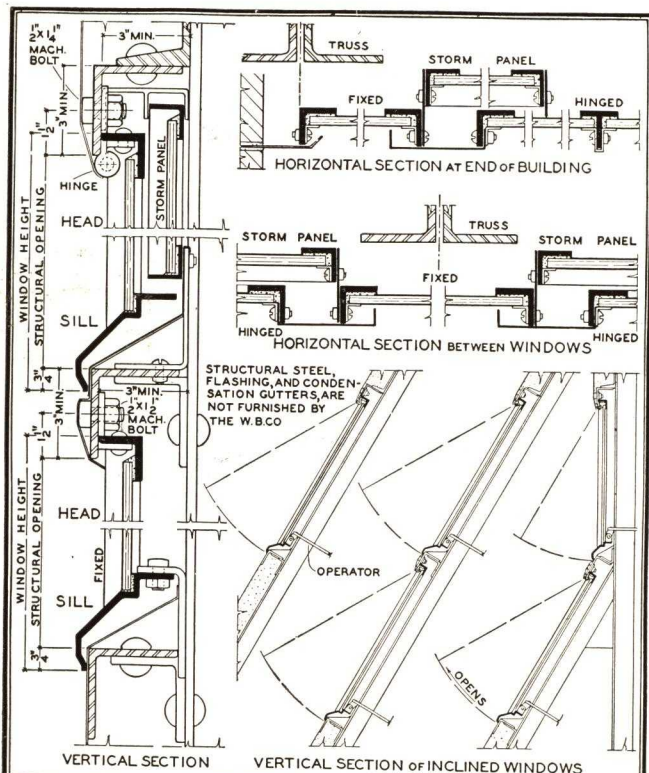
Designed for roofs and sidewalls these windows are constructed of specially designed solid rolled steel sections riveted together for strength and permanency. The sill member is of a design having no pockets for water or ice in either the open or closed position, at any useful angle. It has an integral flange for operator attachment and a flat-surface contact with the structural steel and its shape is such that a condensation gutter of effective size and form may be used where advisable. Hinges, at four feet centers, placed inside of steel framing for protection, are of heavy steel with three-eighths inch brass pins and have slotted holes for adjustment to steel work. Vertical bars are spaced at two feet centers. Putty-bed on all members is in the same plane which facilitates glazing, requires less putty and reduces glass breakage. Where panels are joined the splice is placed at the center of glass space, and fully develops the strength of horizontal members. Vertical weathering, where hinged portions meet fixed panels, is of formed galvanized steel. Hinged windows have fixed panels one foot wide at extreme ends of lines and two feet wide at intermediate ends. All steel is given one dip coat of standard red oxide paint.

Overall length of windows should be held to full feet in order to use stock and insure quick shipment. Variations from full feet to be taken up with flashing by others.

Storm Panels are not included but are furnished at extra cost when specially ordered and fit inside the three inch clearance space with provision to drain water outside. Glass in storm panels is of same size as glass in main part of line.

Wire glass one quarter inch thick is recommended and must be twenty-three and one-half inches wide, except in end panels, set in an even bed of putty struck flush with outside surface of glass and held by galvanized metal clips and bolts. Face putty may be used at extra cost.

Items not furnished by The William Bayley Co. are structural steel, all flashing and condensation gutters, glass, putty, erection, pointing, field painting and glazing, unless specifically mentioned in the contract.



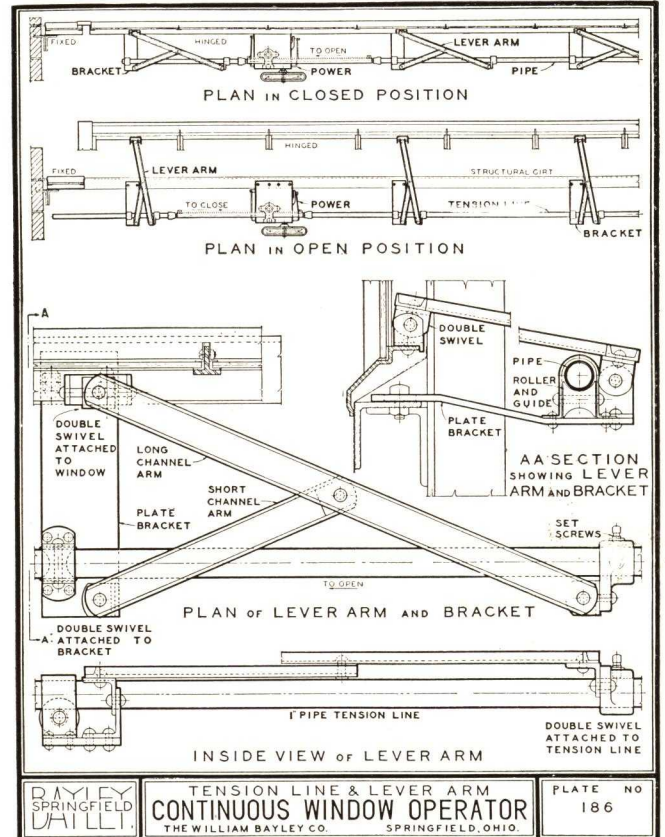
STRUCTURAL STEEL, FLASHING, AND
CONDENSATION GUTTER ARE NOT FUR-
NISHED BY THE W.B.CO.

WINDOWS MAY BE INCLINED AS SHOWN
ON PLATE 182.

D I M E N S I O N S		
WINDOW HEIGHTS	STRUCTURAL OPENING	GLASS HEIGHTS
3'-0"	2'-10 1/2"	32 1/4"
4'-0"	3'-10 1/2"	44 1/4"
5'-0"	4'-10 1/2"	56 1/4"
6'-0"	5'-10 1/2"	68 1/4"

GLASS WIDTHS	
CONTINUOUS AND STORM.....	23 1/2"
FIXED AT END OF BUILDING.....	9 1/4"
FIXED BETWEEN HINGED WINDOWS.....	19 1/2"

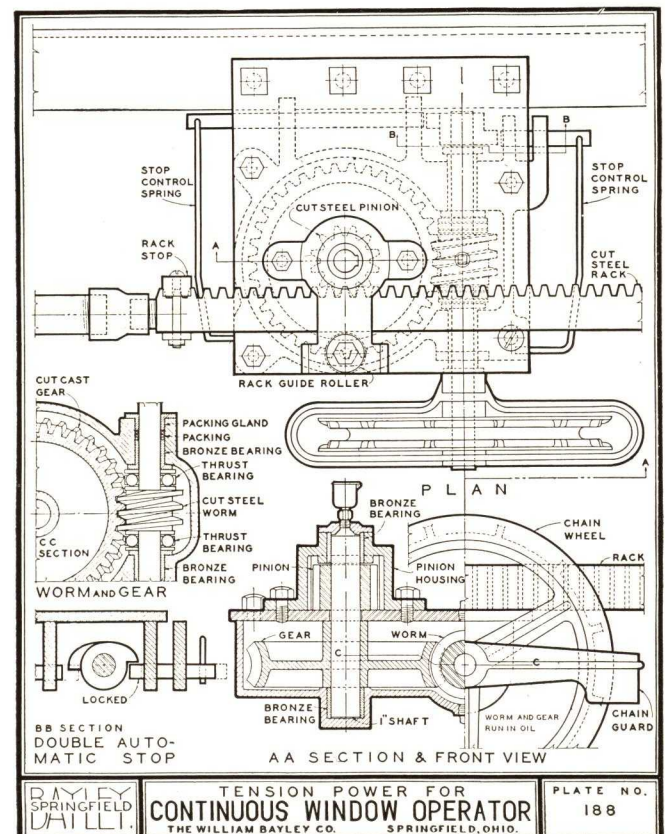




nate friction and include such features as machine-cut racks, pinions, worms and gears; bronze or ball bearings, where necessary; and provision for working parts to run in oil. BAYLEY MECHANICAL OPERATORS for Sidewall and Continuous Windows are offered with or without window products.

BAYLEY electric control is dependable and recommended.

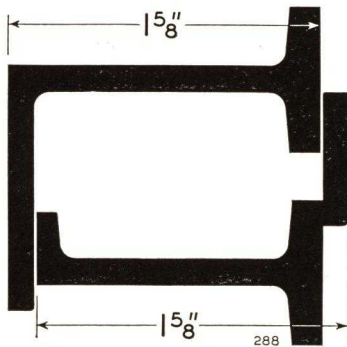
BAYLEY electric control is dependable and recommended.



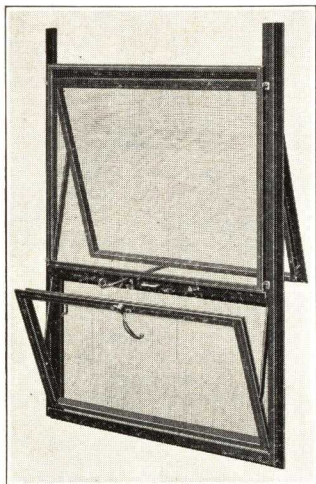


CASEMENTS—SERIES 30

For Residential, Office and Monumental Buildings



Casement Sections



Projected Out Ventilator.
Screen Inside Through
screen operator H87

Projected In Ventilator. Screen Outside
Handle H 81

The Series 30 section as developed by Bayley represents unusual features for windows for all types of buildings requiring the finest equipment. As shown in the detail the form of the sections provides flat surface contacts parallel to the glass with the resulting advantages of smooth, tight operation, improved appearance and minimum air leakage.

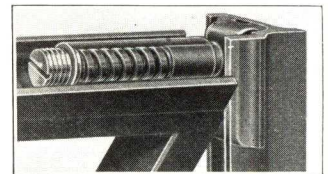
The Series 30 sections are formed into a variety of window types to meet practically any conditions or requirements of a particular building. Standard types are shown below; Bayley engineers will be glad to work with architects to design special windows when required. (Continued on next page)

BAYLEY CASEMENTS PROJECTED—Screened—Series 30

Ventilators to move out and down, and in and up, are a recent development for domestic uses. These movements insure unusual service and weathering, especially for casements of Series 30 sections and in combination with the Bayley developed adjustable friction arms and shoes. Series 30 steel contact sections 1 5/8" deep, meet all the conditions of casements of this kind. Corners are welded and ground as in other windows of this group.

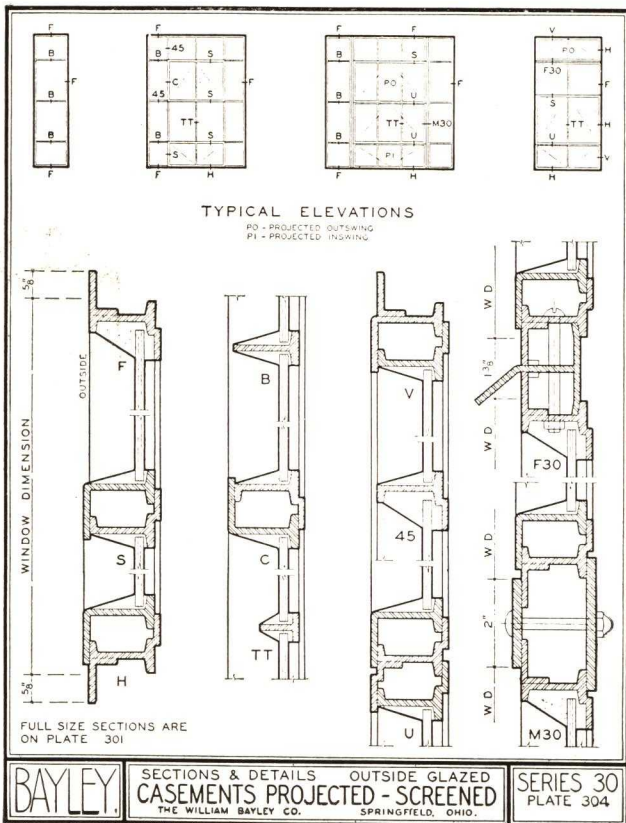
Supporting arms are heavy and arranged to hold casements firmly. The sliding friction pivot shoes are of bronze machined and are adjustable. They top the list in casement hardware.

Projected out ventilators have screens inside and bronze through-screen operator H87. Projected in ventilators have screens outside and bronze handle H81.



Sliding Friction Pivot

welded to projected "out" and "in" ventilators. Constant friction is maintained by heavy helical spring and machined adjusting screw. Working parts protected against paint and dirt.



1'-6"	1'-6"	4'-0"	4'-0"
2-0	2-0	4-6	4-6
2-6	2-6	5-0	5-0
3-0	3-0	5-6	5-6
3-6	3-6	6-0	6-0
4-0	4-0	6-6	6-6
4-6	4-6	7-0	7-0
1'-0"	1'-0"	4'-0"	4'-0"
1-6	1-6	4-6	4-6
2-0	2-0	5-0	5-0
2-6	2-6	5-6	5-6
3-0	3-0	6-0	6-0
3-6	3-6	6-6	6-6
4-0	4-0	7-0	7-0
1'-0"	1'-0"	4'-0"	4'-0"
1-6	1-6	4-6	4-6
2-0	2-0	5-0	5-0
2-6	2-6	5-6	5-6
3-0	3-0	6-0	6-0
3-6	3-6	6-6	6-6
4-0	4-0	7-0	7-0
1'-0"	1'-0"	4'-0"	4'-0"
1-6	1-6	4-6	4-6
2-0	2-0	5-0	5-0
2-6	2-6	5-6	5-6
3-0	3-0	6-0	6-0
3-6	3-6	6-6	6-6
4-0	4-0	7-0	7-0
1'-0"	1'-0"	4'-0"	4'-0"
1-6	1-6	4-6	4-6
2-0	2-0	5-0	5-0
2-6	2-6	5-6	5-6
3-0	3-0	6-0	6-0
3-6	3-6	6-6	6-6
4-0	4-0	7-0	7-0

VENTILATORS ARE NOT TO EXCEED 5 FEET WIDE OR 4 FEET HIGH OR 12 SQ. FEET AREA

STANDARD SIZES

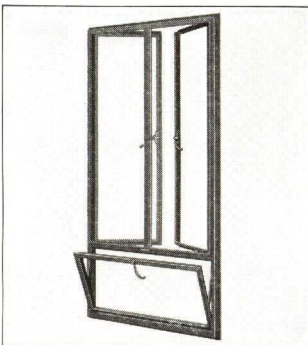
CASEMENT PROJECTED 285

SHOP PRACTICE includes the use of only carefully selected materials, most accurate machining and fitting, and corners of units of ventilators and of openings for ventilators butt welded and surface ground. Finish is one coat of gray paint.

HARDWARE includes extended hinges of steel to provide arm room for outside washing. They are welded to casements and have solid bronze collar pivots. Under-screen casement operator is of the rotary type with bronze operating handle and bronze locking handle, in statuary bronze finish. Bronze friction adjuster of the concealed type, and lever handles are standard where screens are not required. For inswing see illustrations. Standard hardware is solid bronze.

SCREENS of Bayley manufacture are long life and rigid. Frames of steel or bronze.

BAYLEY CASEMENTS COMBINATION—Screened—Series 30

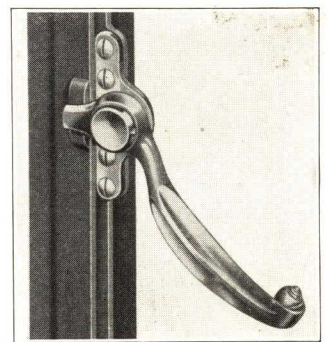


Casement Combination

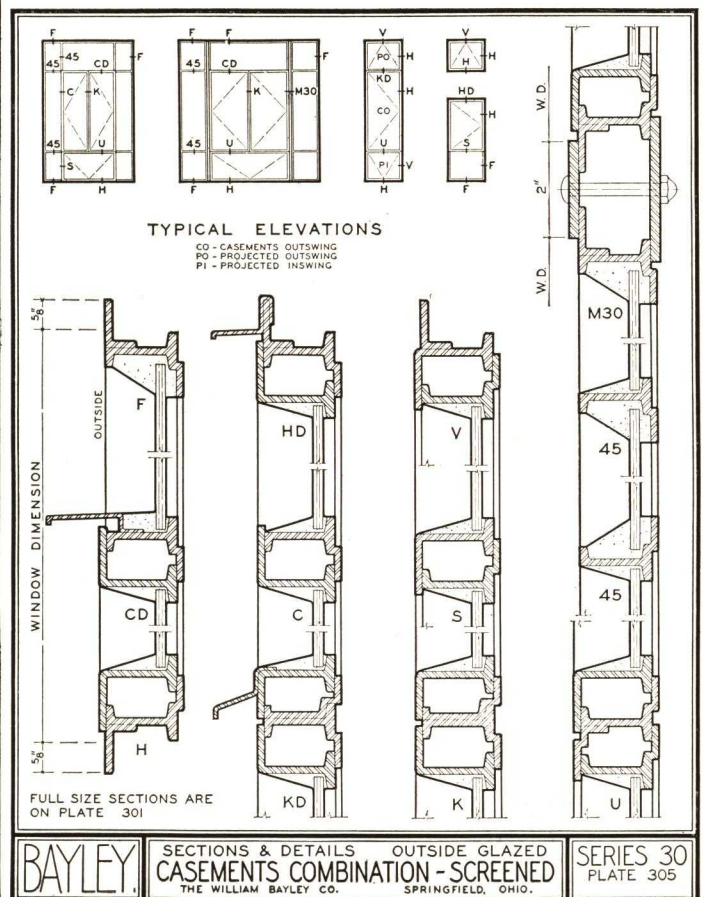
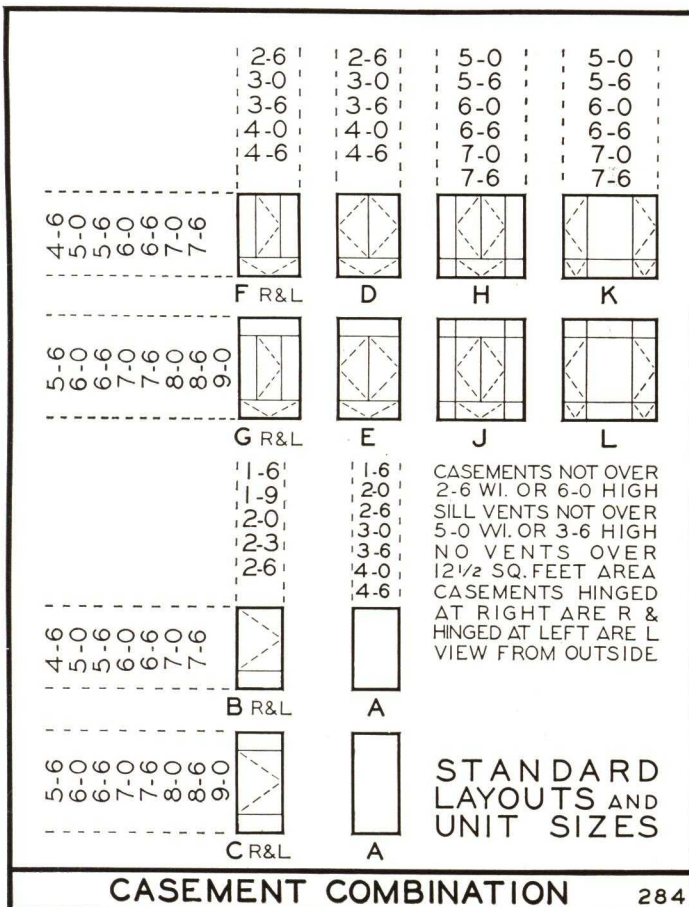
Incorporated in this steel window is a sill line inswinging horizontal casement similar to that of Sir Christopher. The vertical casements, however, swing out. The fixed portions also offer drapery spaces.

Hardware for the outswinging parts is through the sill and screens for these openings are on the inside. In construction and material these screens duplicate those of Sir Christopher, are Bayley made and an integral part of the window.

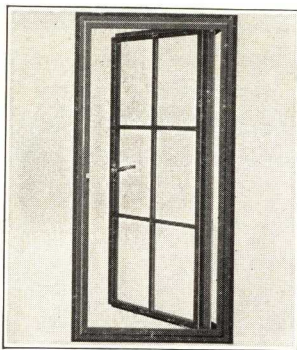
For those not desiring the complete inswing, but whose requirements fall within limited layouts, this window is recommended above all other casement windows.



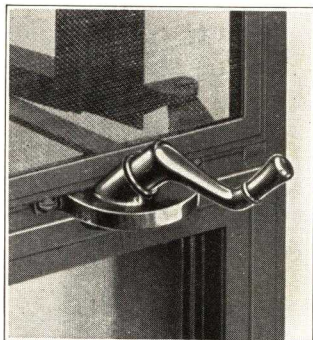
Bronze Handle H70



BAYLEY CASEMENTS—OUTSWING Screened—Series 30



Casement Outswing



Geared Underscreen
Operator H115

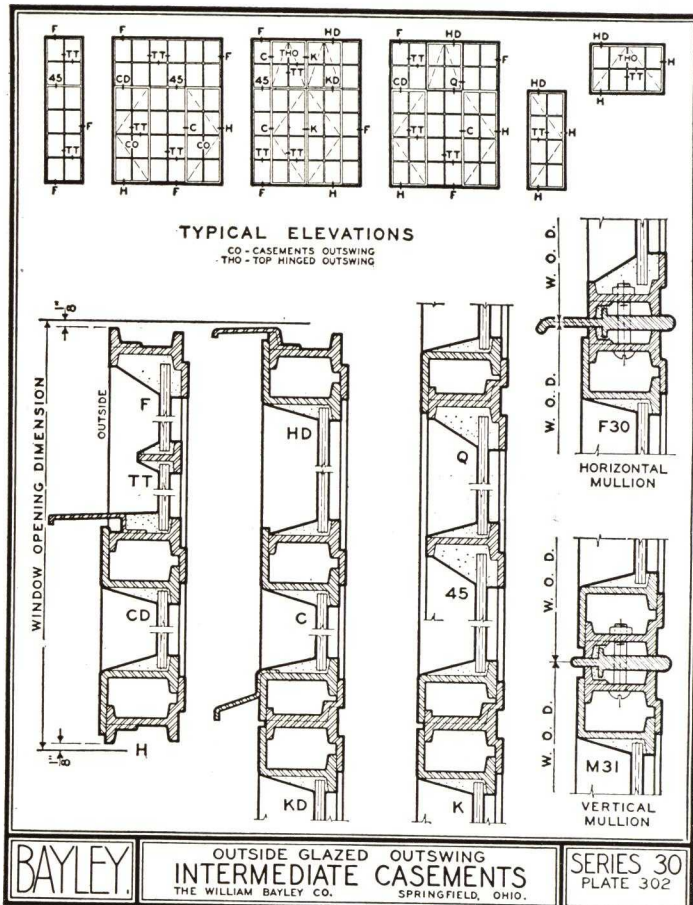
Very early workers in metal casements blazed the trail for these single or double outswinging ventilators, sometimes combined with casement transoms.

Standards and listed special layouts are extensive in sizes and numbers. Available in steel and bronze and aluminum.

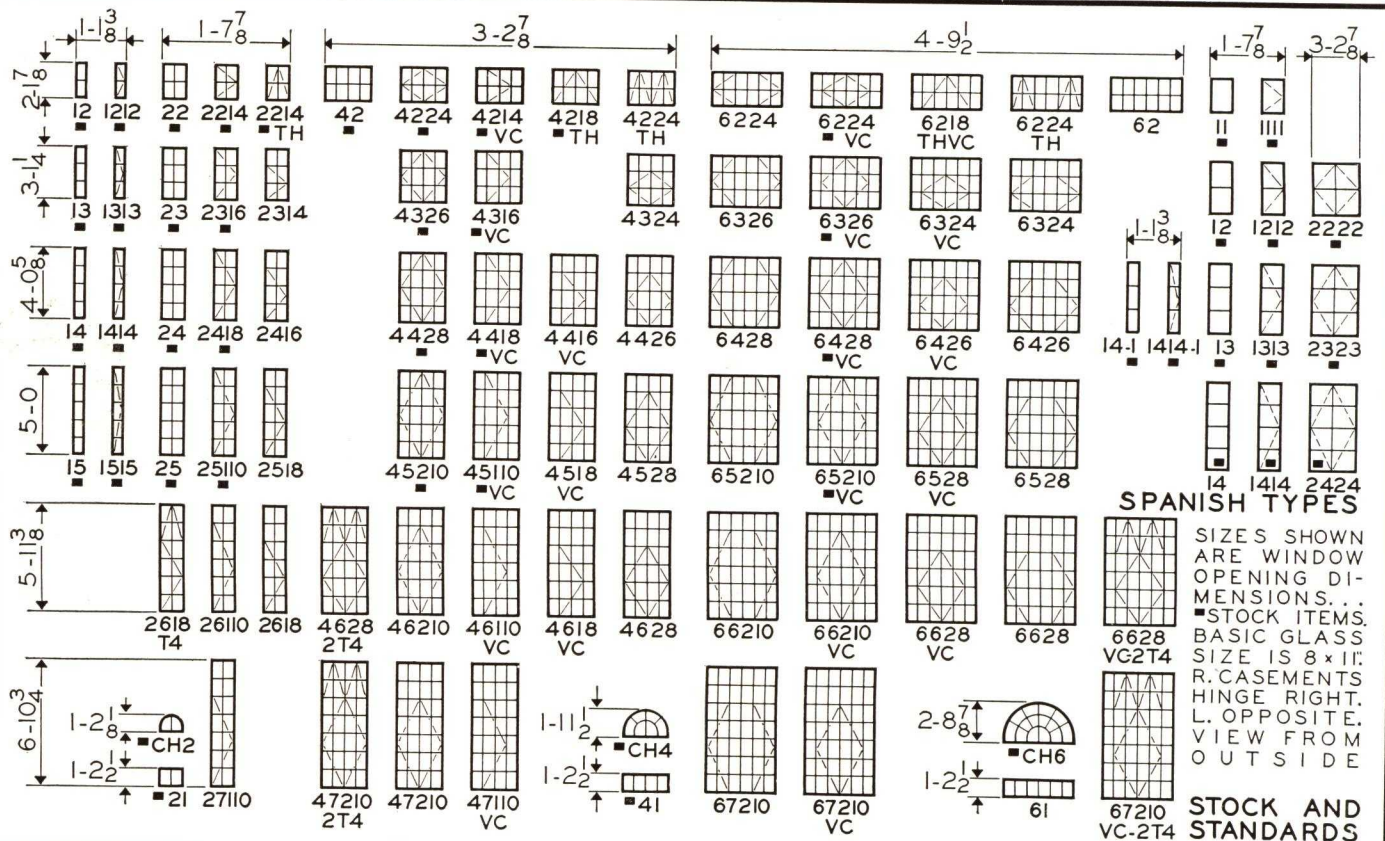
Ventilators like in all Series 30 products are rigid with sections shaped to insure good permanent contacts. Their $1\frac{5}{8}$ " depth is fabricated the Bayley way with mitered corners of casements and the corners of ventilator openings butt welded and ground flush on contact and outside faces. Welding converts each of these frames into continuous perimeters. The flat, parallel-to-glass contacts, assures good weather protection even though the casement may become sagged a trifle through rough handling before or after installation.

Hardware is through-the-sill stays for opening, holding, and closing and hinges are extended kinds. This extended hinge provides arm room for outside washing from the inside.

Screens flat and on the inside are removable and can be replaced with a panel of glass for insulation against outside temperatures and where air conditioning is employed.



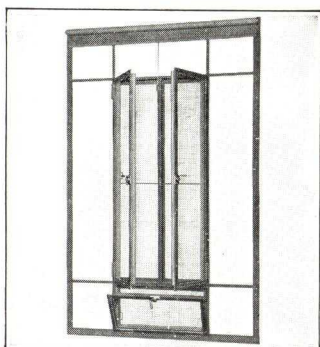
BAYLEY OUTSIDE GLAZED OUTSWING
INTERMEDIATE CASEMENTS
THE WILLIAM BAYLEY CO. SPRINGFIELD, OHIO.
SERIES 30
PLATE 302



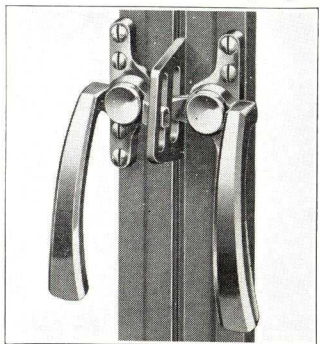
INTERMEDIATE CASEMENT OUTSWING

SERIES 30

BAYLEY CASEMENTS—INSWING COMBINATION—Screened—Series 30



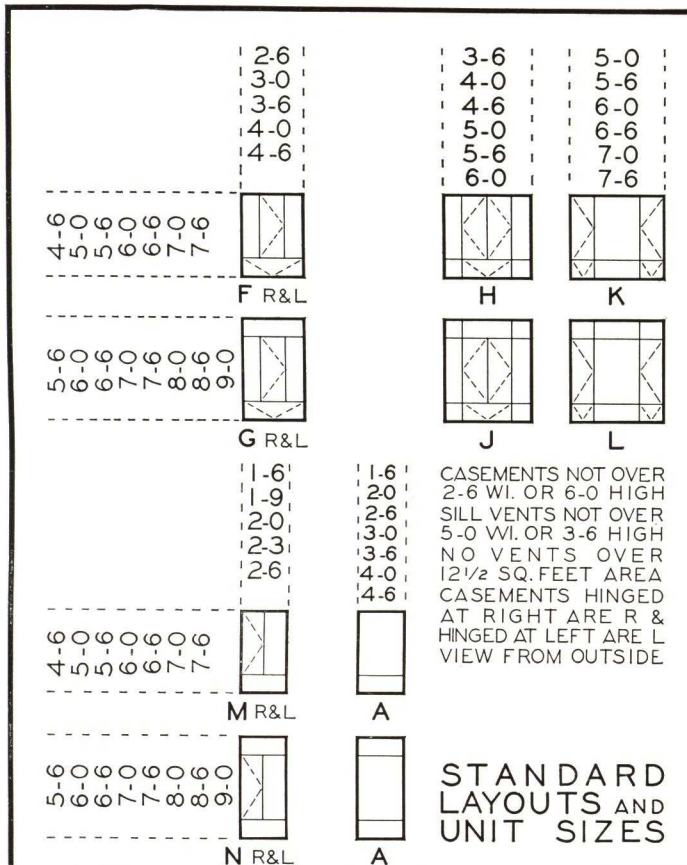
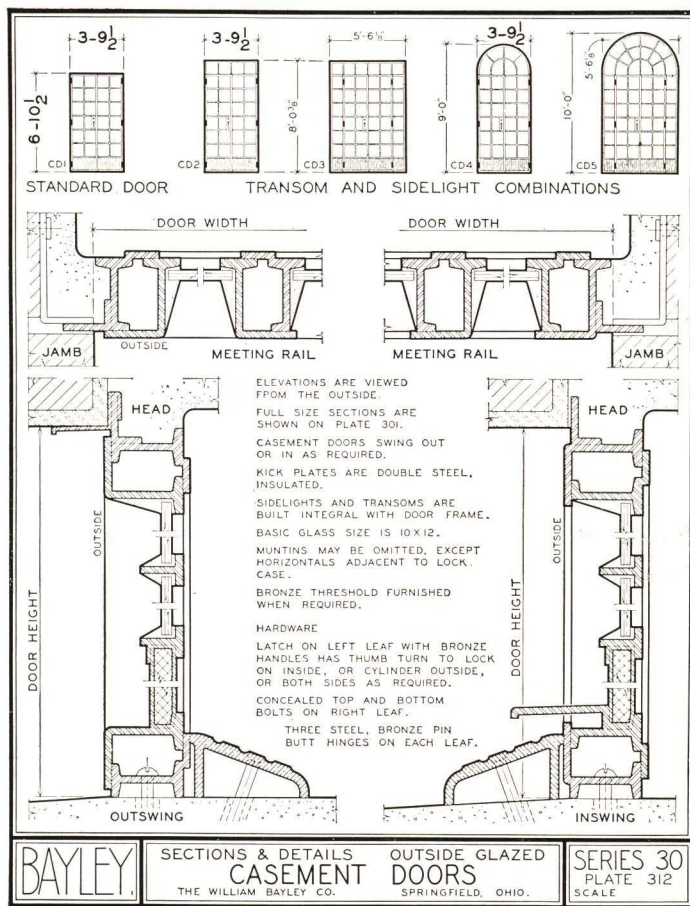
Casement Inswinging



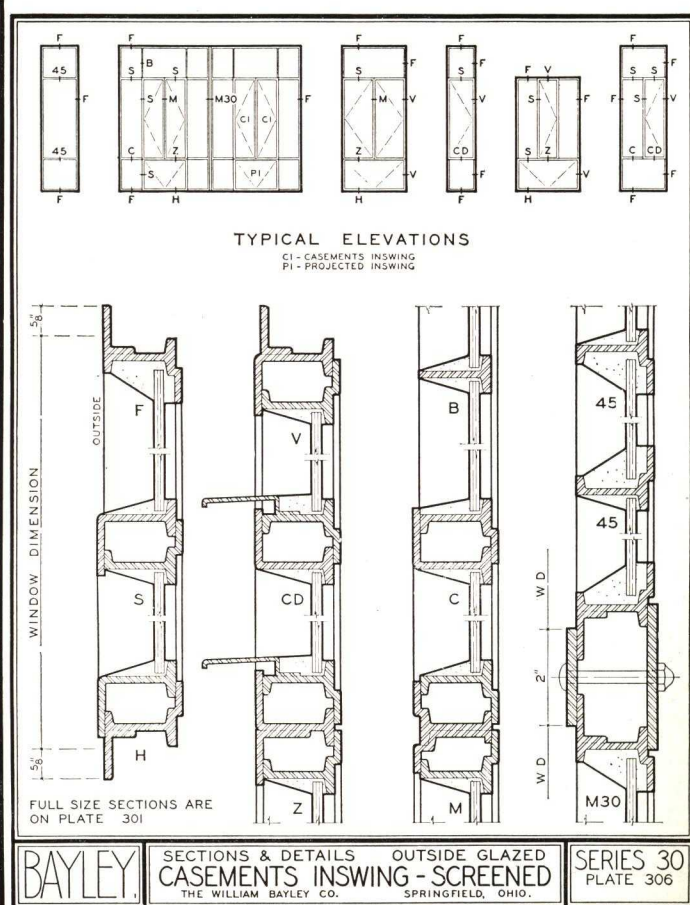
Bronze Handles H123 and H122R for vertical in-opening casements. H122R for horizontal in-opening casement

Known as the "Sir Christopher" the inswing casement developed by Bayley of Series 30 Sections shows many unique characteristics which solve those long-standing problems which have confronted architects when using casements. Unusual features of layout, quality, convenience and efficiency are individual and distinctive.

Vertical inswinging casements are set in a frame of fixed glass and have below a horizontal in-opening casement. Such a design provides for draperies and shades and assures draftless ventilation under almost any condition. Vertical casements opening flat against fixed glass, outside washing from inside, fixed side lights for draperies, life safety because of difficult egress through narrow ventilator spaces, screens with steel or bronze frames hinged and to lock, supplement other features of this draft-control, easily operated window.



INSWING CASEMENT COMBINATION 286



DISTRICT OFFICES

THE WILLIAM BAYLEY COMPANY

SPRINGFIELD, OHIO
1200 WARDER ST.,
PHONE: 8647

NEW YORK
103 PARK AVENUE,
PHONE: ASHland 4-2398

CHICAGO
105 W. MADISON ST.,
PHONE: RANdolph 5997

WASHINGTON, D. C.
3701 MASS. AVE., N. W.,
PHONE: EMerson 5596

Licensed Representatives reporting to the above offices

Albany, N. Y.—James McKinney & Sons
Allentown, Pa.—A. L. Ochs
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Cumberland, Md.—Young Sales & Engr.
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Fargo, N. D.—Dakota Plate Glass Co.
Ft. Wayne, Ind.—Hugh J. Baker & Co.
Ft. Worth, Tex.—Charles A. Bonnett
Greeneville, Tenn.—F. A. Rosenblatt Co.
Greenville, S. C.—W. Lindsay Smith
Gulfport, Miss.—Miss. Equip. & Supply
Hammond, Ind.—W. J. Holliday & Co.
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Houston, Tex.—Earl E. Jones
Honolulu, Hawaii—Lewers & Cooke, Ltd.
Huntington, W. Va.—Jas. J. Weiler & Sons
Hutchinson, Kans.—Hutchinson Fdry. & Steel
Indianapolis, Ind.—Hugh J. Baker & Co.
Jackson, Ohio—Harding-Kemp Co.
Jackson, Tenn.—Kirby Williams Steel
Jacksonville, Fla.—Builders Products Co.
Kansas City, Mo.—Construction Prod. Co.
Knoxville, Tenn.—Chandler & Co.
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Little Rock, Ark.—Arkmo Lumber Yards
Lubbock, Tex.—Lubbock Steel Works
Mansfield, O.—Richland Shale Brick Co.
Memphis, Tenn.—Leo F. Magnus
Miami, Fla.—Carl Adams
Milwaukee, Wisc.—C. C. Banholzer
Minneapolis—Hauenstein & Burmeister
Mobile, Ala.—Mobile Steel Co. Inc.
Moline, Ill.—Moline Consumers Co.
Nashville, Tenn.—Builders Specialty Co.
Newark, N. J.—Igoe Brothers, Inc.
New Orleans, La.—J. T. Mann & Co. Inc.
New York, N. Y.—Seaboard Steel Products Corp.
Oklahoma City, Okla.—Town-Sco Equip.

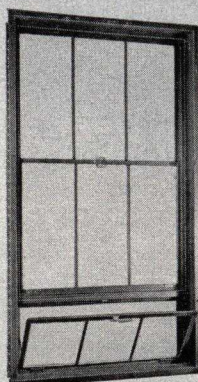
Omaha, Nebr.—Lumberman's Brick & Supply
Philadelphia, Pa.—Furlong and Stout
Phoenix, Ariz.—Steffy Sales Agency
Pittsburgh, Pa.—James Hood Miller
Pittsfield, Mass.—The Pittsfield Iron Wks. & Coal Supply
Portsmouth, Ohio—Valley Supply Co.
Raleigh, N. C.—Engr. & Sales Co.
Richmond, Va.—Virginia Equip. & Supply
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Rochester, N. Y.—Matt G. Lorscheider
Rockford, Ill.—National Mirror Works
St. Louis, Mo.—Lasar Glass & Mfg. Co.
St. Marys, O.—O. H. Kohler
St. Paul, Minn.—Hauenstein & Burmeister
Salt Lake City—Williams-Richardson Co.
San Antonio, Tex.—John W. Phillips Co.
San Francisco, Calif.—Rolph, Mills & Co.
San Juan, Puerto Rico—Carlos R. Rossi
Savannah, Ga.—Dan J. Sheehan Co.
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Shanghai, China—Andersen-Meyer & Co. Ltd.
Shreveport, La.—Simmons Bldg. Mat. Co.
South Chicago, Ill.—Milton Silverman
Springfield, Mass.—Carlisle Hdwe. Co.
Tacoma, Wash.—The C. & H. Engr. Co.
Tampa, Fla.—Stovall & Archer
Toledo, O.—The Hausman Steel Co.
Torrington, Conn.—Nierintz Engr. Co.
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Wabash, Ind.—Hugh J. Baker & Co.
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Wheeling, W. Va.—Riverside Steel Co.
Wichita, Kans.—Chester L. Anderson Co.
Wilkes-Barre, Pa.—Harry W. Poust
Wilmington, Dela.—William F. Boyce

Complete specifications and full size details of the products shown in this Catalog are available; also separate catalogs mechanical operators for windows, and on airplane hangar doors.

THE WILLIAM BAYLEY COMPANY

SPRINGFIELD • OHIO

CAMPBELL METAL WINDOWS



DRAFTLESS VENTILA-
TION AND ECONOMY
See Pages 6 and 7

PRODUCTS

PAGE

CAMPBELL DOUBLE
HUNG WINDOWS 2 & 3

SPRING BALANCED
WINDOWS 4

VOIGTMANN TYPE
DOUBLE HUNG
WINDOWS 5

MODEL 101 RESIDENTIAL
DOUBLE HUNG
WINDOWS 6 & 7

RESIDENCE
CASEMENTS 8 & 9

HOUSING TYPE
CASEMENTS 10 & 11

ORNAMENTAL
PROJECTED WINDOWS 12 & 13

CUSTOM CASEMENTS 14 & 15

INDUSTRIAL
WINDOWS 16 to 19

ARCHITECTURAL
PROJECTED WINDOWS 20 & 21

DETENTION WINDOWS 22

RUSTPROOFING 23

CAMPBELL METAL WINDOW CORP.

DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

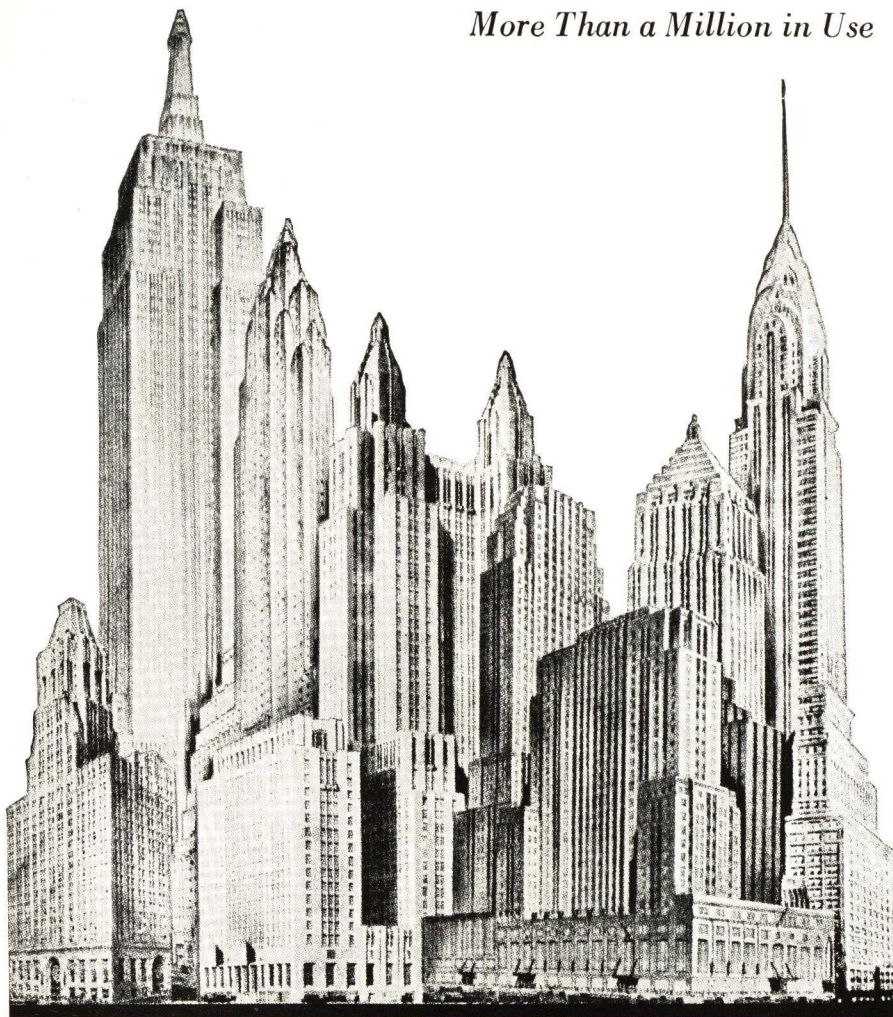
Main Office: Bush & Hamburg Streets, Baltimore, Maryland

District Sales Offices: New York, Boston, Philadelphia, Chicago

Factories: Baltimore, Maryland, Bremen, Indiana

CAMPBELL DOUBLE HUNG WINDOWS

More Than a Million in Use



Baltimore Trust Bldg. Baltimore, Md. Cities Service Bldg. New York City Waldorf-Astoria Hotel New York City Gulf Building Pittsburgh, Pa. Chrysler Bldg. New York City Empire State Bldg. New York City Carew Tower Bldg. Cincinnati, Ohio

The decision to use Double-Hung Windows in any type of building naturally leads to the selection of the window which has been incorporated in outstanding building projects for many years. A few typical installations of Campbell Double-Hung Windows, shown above, testify to their acceptability and their satisfactory service in nationally known structures.

Weather-tightness is assured by a construction which permits a guarantee against leakage in excess of $\frac{1}{2}$ cubic foot per minute per lineal foot of sash perimeter under a static pressure equivalent to that exerted by wind of twenty-five miles per hour velocity.

Ease of Operation distinguishes the unique Campbell design which eliminates more than 80% of the friction surfaces usually found in other Double-Hung windows.

Adaptability to all types of building construction is inherent in the window design. Multiple openings with weightless or standard mullions broaden the scope of building treatment.

Maintenance Cost is negligible. All exposed members are rust proofed after fabrication and before shop painting. No joints come in contact with masonry. The extra strength and rigidity of sash and frame members contribute to long, trouble-free use.

Underwriters' Labels can be applied when specified.

Ease of Installation and Glazing contribute to an economical first cost.

Two Models are Available, identical in design. Model 26 MW is slightly heavier in certain members than Model 25 MW, as shown in the table at right.

SPECIFICATIONS

General:

1. Steel Double Hung Windows shall be Campbell Model 26 MW (or 25MW) as manufactured by the Campbell Metal Window Corporation. No substitution shall be made without written approval from the architect.

Material:

2. See Table of Gauges, below.

Construction:

3. Frame members shall be accurately rolled or formed, neatly coped to abutting members and assembled by means of mortise and tenon joints, riveted, or welded joints. The sill members shall be solidly welded to the staff beads, making a water-tight joint.

4. Sash members shall be mitred, butt welded and ground smooth. Each sash shall have adjusters within the jamb to eliminate side play and assure smooth, easy operation.

5. Meeting rails shall be interlocking.

6. Window design shall provide for positive adjustment of the sash way for both upper and lower sash.

7. Inside jamb cover plates shall be removable and provide easy access to the counter-weights.

8. Sash shall be designed for glazing from the interior. Glass to be held in place by means of flat glass stops inserted in glass stop holders welded to the sides and top of each sash.

Weathering:

9. Flexible, non-ferrous, metallic weatherstrips shall be fitted to the sill, head and meeting rail. Interlocking, flexible, metallic weatherstrips shall be provided at the sides of the sash and concealed within the jambs.

Hardware:

10. Sash shall be hung on No. 130, hot galvanized, steel sash chains and counter-weighted with single-unit, cast iron weights. Pulley assemblies shall consist of pressed steel housings, securely attached to the frame, and pressed steel pulley wheels with graphite bronze bushings mounted on $\frac{3}{8}$ " diameter cold rolled steel shafts. Pulley assemblies and chains shall be entirely concealed within the jambs.

11. Adjustable rubbing strips shall be attached to the parting strips at the ends of the meeting rail.

Finished Hardware:

12. Finished hardware shall be of bronze, except the pole sockets which shall be cast iron, painted. The upper sash shall be equipped with a pole socket and pull and the lower sash shall have two lever type lifts and sash fastener. The lifts shall be given U. S. No. 10 finish; fastener and keeper, a burnished finish and the pull, a water rolled finish. Windows beyond easy reach from the floor shall be equipped with hardware designed for pole operation.

Shop Finish:

13. All steel members except glass stops, holders and cover plates shall be zinc coated after fabrication by means of electro-galvanizing. (If additional protection is desired add specification for BONDING at this point—see page 23.) Windows shall then be given one dip coat of rust inhibitive paint, baked on for one half hour at 300° F. or an equivalent bake. The cleaning, processing, painting and baking procedure shall be carried out in the plant of the window manufacturer with a minimum time interval between operations.

Erection:

14. Windows shall be set plumb and square in prepared openings. The sash shall be adjusted for easy operation and the weights hung after the glazing has been completed.

Guarantee:

15. The amount of infiltration of air through Standard Double Hung Windows shall be not more than $\frac{1}{2}$ cubic foot of air per foot of sash perimeter per minute when subjected to a static air pressure equivalent to that exerted by a wind of twenty-five (25) miles per hour velocity.

TABLE OF GAUGES

Member	Heavy Type Model 26-MW	Intermediate Type Model 25-MW
Sill	12 GA.	12 GA.
Staff bead or chain pocket	12 GA.	12 GA.
Sash	12 GA.	14 GA.
Glass stop	14 GA.	14 GA.
Parting strip or baffle	16 GA.	16 GA.
Head	16 GA.	16 GA.
Weight box	16 GA.	20 GA.
Lift rail	16 GA.	16 GA.
Jamb cover	16 GA.	20 GA.
Glass stop holder	20 GA.	20 GA.

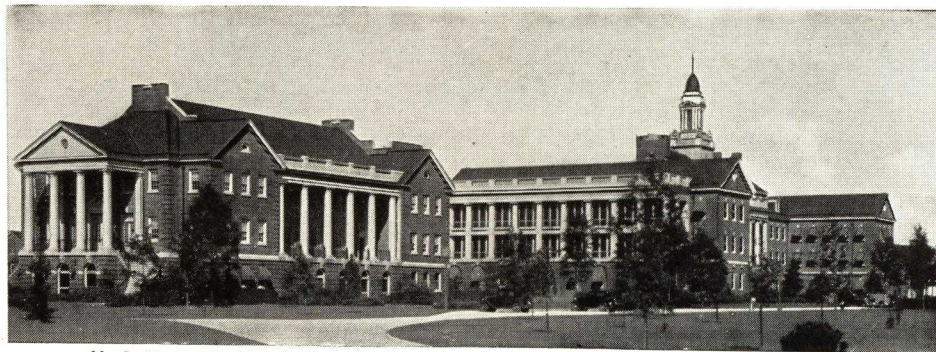
TYPICAL DETAILS MODEL 25 MW & 26 MW — Scale of Details 3" = 1'-0"



CAMPBELL SPRING BALANCED DETENTION WINDOWS

Campbell Spring Balanced Detention Windows are similar in appearance to double hung windows. Because of their effective detention features they have been widely accepted for buildings which house mental patients. An important factor in the control of these inmates is an absence of any visible evidence of restraint.

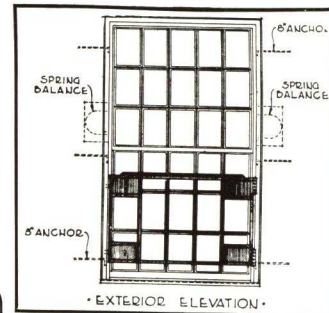
This feature is vital to U. S. Veteran's Hospitals. The building pictured at the right, for instance, would not suggest either to the visitor or the inmate that the windows were designed for detention purposes.



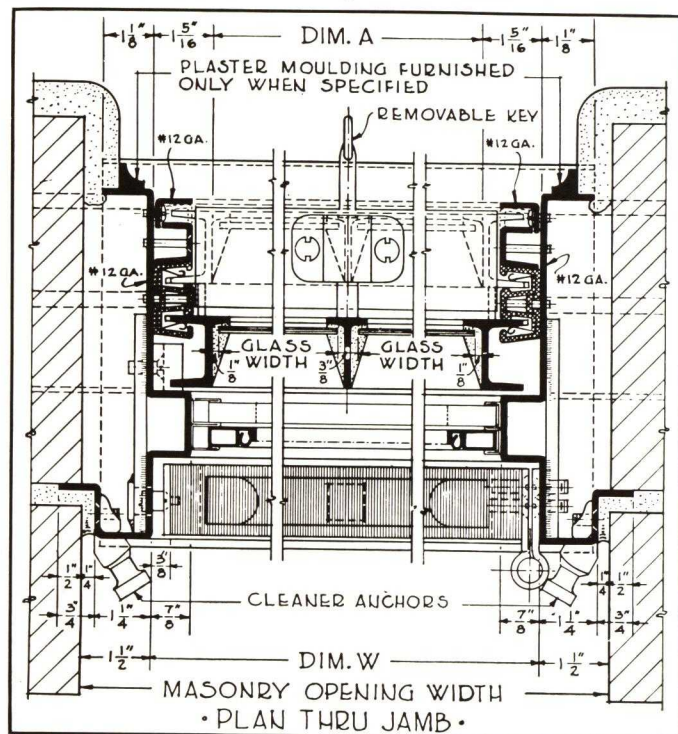
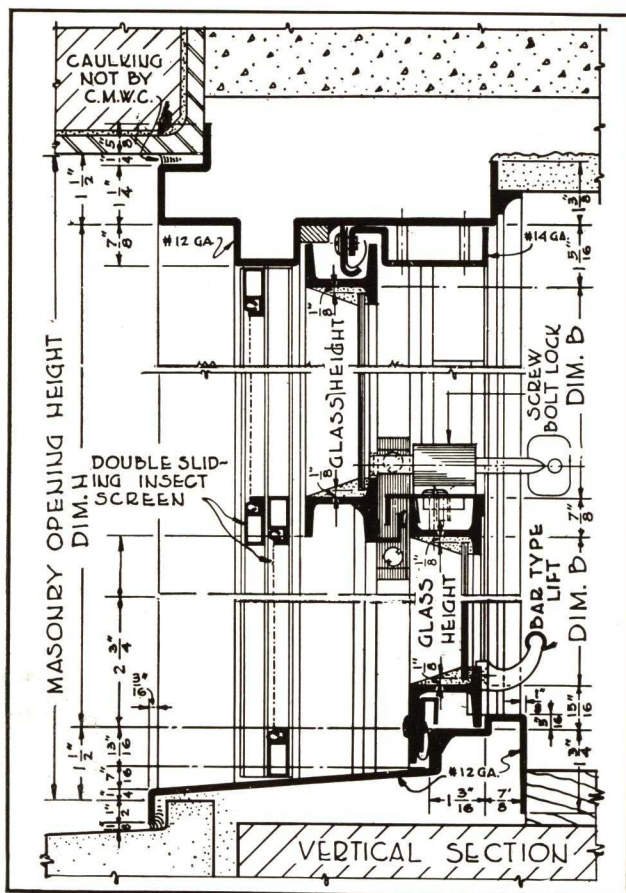
U. S. Veteran's Hospital, Columbia, S. C.
795 Spring Balanced Detention Windows

Spring Balanced Detention Windows combine heavy pressed steel frames and rolled section sash members. They are 100% weatherstripped and glazed from the exterior. Double sliding insect screens are easily applied to the exterior.

A grille is applied to the frame, opposite the lower sash. A removable key operates a hardened steel screw bolt lock in a bronze housing and provision is made for two-stage locking. Detention size glass, 6" x 9" is used. Upper sash stops applied with interrupted slot head detention screws limit the opening of the upper sash.



(Scale of Details 3"=1'0")



INSTALLATIONS OF SPRING BALANCED WINDOWS

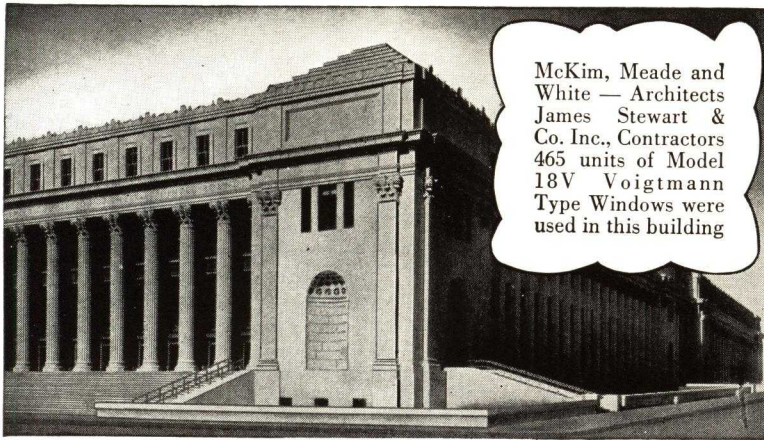
Waco (Texas) Veterans Hospital
Perry Point (Md.) Veterans Hospital
Togus (Maine) Veterans Hospital
Roanoke (Va.) Veterans Hospital
Des Moines (Iowa) Veterans Hospital
Coatesville (Pa.) Veterans Hospital
Fort Lyon (Colorado) Veterans Hospital
St. Cloud (Minn.) Veterans Hospital
Fort Snelling (Minn.) Veterans Hospital
Lexington (Ky.) Veterans Hospital
Chillicothe (Ohio) Veterans Hospital
Northampton (Mass.) Veterans Building
Bedford (Mass.) Veterans Hospital

Canandaigua (N. Y.) Veterans Hospital
Knoxville (Iowa) Veterans Hospital
Lyons (N. J.) Vet. T. B. Infirm. Bldg. No. 7
Gulfport (Miss.) Veterans Building
Northport (N. Y. C.) Veterans Hospital
Camp Custer (Mich.) Veterans Hospital
Columbia (S. C.) Veterans Hospital
Taunton (Mass.) State Hospital
Boston (Mass.) State T. B. Hospital
St. Elizabeth's Hospital (Washington, D. C.)
Virginia Epileptic Colony
Philadelphia (Pa.) Naval Hospital
Maryland State Hospital Infirmery

Waltham (Mass.) Medical and Surgery
McConnell Park (Mass.) Field House
Anderson (Ind.) Masonic Temple
McKeesport (Pa.) Daily News Building
Ware (Mass.) Post Office
Highbridge Park (N. Y. C.) Bath House
Spencer (W. Va.) Hospital Clinic Bldg.
Vienna (Ohio) Brewing Co.
Medical Center (N. J.) Clinical Bldg.
Hayfield (Calif.) Pumping Plant
Springfield (Mo.) Hosp. for Def. Del.
National Home for Lepers (La.)

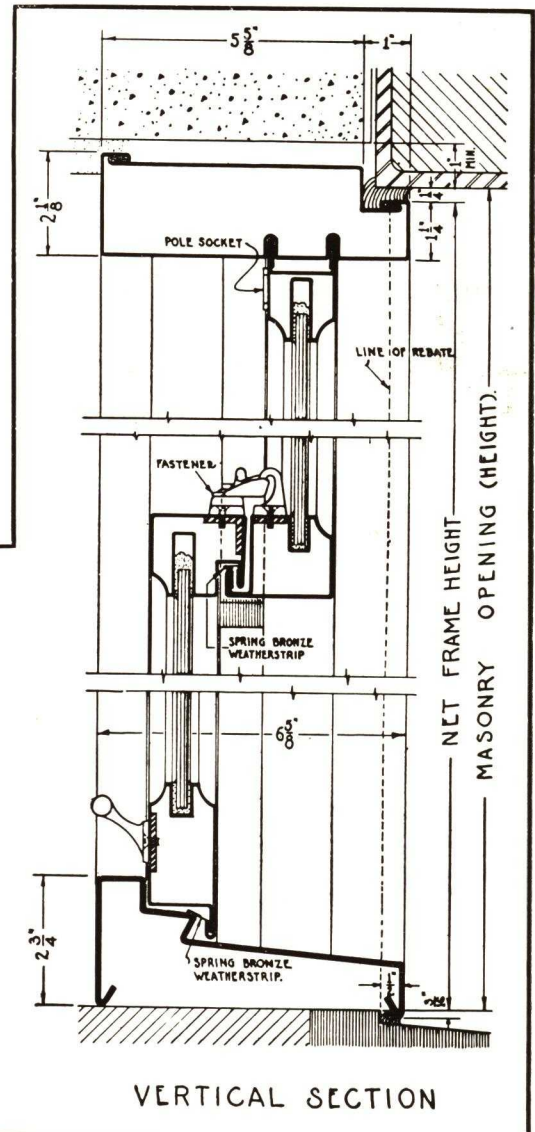
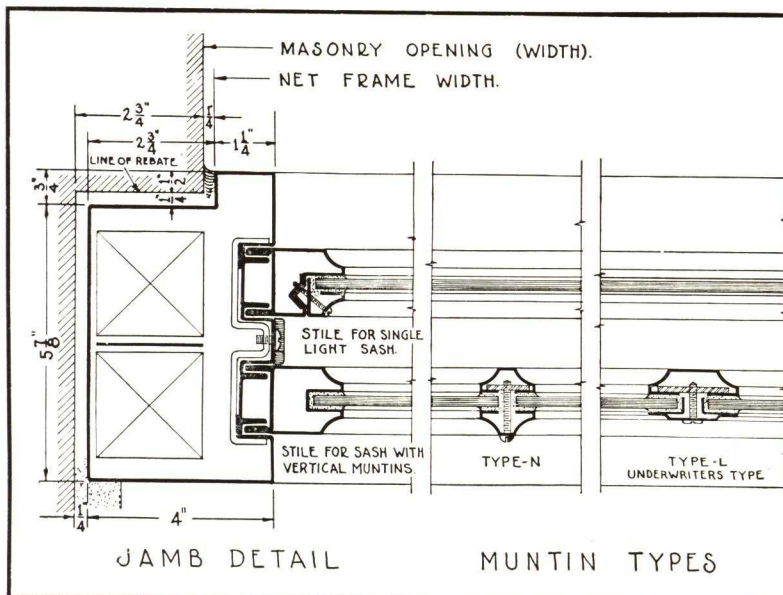
VOIGTMANN TYPE DOUBLE HUNG WINDOWS

(SCALE OF DETAILS — 3" = 1' - 0")



McKim, Meade and
White — Architects
James Stewart &
Co. Inc., Contractors
465 units of Model
18V Voigtmann
Type Windows were
used in this building

New York Post Office Annex



SPECIFICATIONS

Hollow Metal Double Hung Windows were designed to simulate the traditional lines of wood windows and to provide fire protection—at low cost. The Voigtmann Type Campbell Window satisfactorily fulfills these conditions.

They feature exceptional ease of operation, and a thoroughly weathertight assembly. Sash members are tubular with all ends closed and all exposed edges eliminated, assuring maximum strength, rigidity and long life.

Models 18V and 20V are identical in design, although the gauges of members vary as shown in the table under the specifications at the right.

Voigtmann Type Windows are widely used in Post Office Buildings, Hotels, Schools, Office Buildings and Public Buildings.

SPECIFY—Steel Double Hung Windows, Voigtmann Type, Model 18-V (or 20-V) manufactured by Campbell Metal Window Corporation, Baltimore, Md.

MATERIAL—All members shall be hot dipped galvanized steel of gauges shown in the table below.

CONSTRUCTION—Frames shall have mitred corners, soldered watertight and flush riveted. Sash shall have mitred corners, lapped, welded and soldered watertight. Glazing stops shall be attached with screws on the interior side of sash. Pulleys shall be removable type galvanized steel, bronze bushed, with $\frac{3}{8}$ " steel axles. Sash weights shall be cast iron, sectional or single unit type. Chains shall be of galvanized steel, with galvanized connections to sash and weights. Rubbing strips shall be attached to each jamb at ends of meetings rail.

WEATHERING—Lift and lock rails shall be fitted with flexible bronze weather strips. Pulley stiles and head shall be formed with double deep weathering grooves.

HARDWARE—All finished hardware shall be of malleable iron, bronze plated, of Voigtmann standard design. (Polished bronze hardware is available at slightly increased cost.)

SHOP FINISH—(Note. If rustproofing is desired insert specification for BONDERRIZING at this point. See Page 23.)

Windows shall receive one coat of paint of special formula for dipping to provide rust inhibitive priming, baked on for one half-hour at a temperature of 300° F. or an equivalent bake.

The cleaning, processing, painting and baking procedure shall be carried out in the plant of the window manufacturer with a minimum time interval between operations.

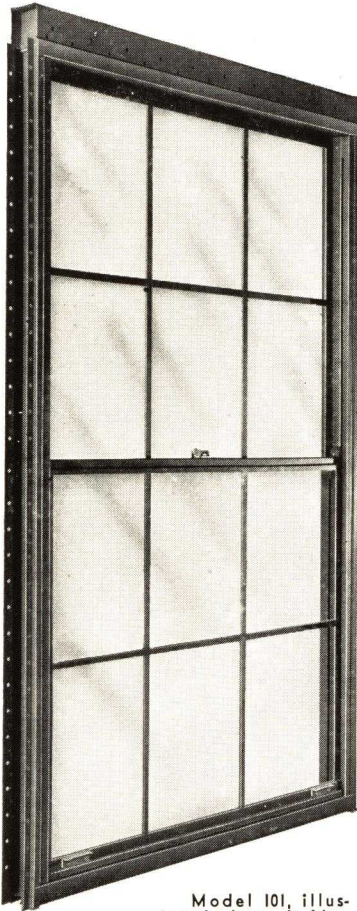
GUARANTEE—The amount of infiltration of air through standard double hung windows shall not be more than 1.00 cubic foot of air per foot of sash perimeter per minute when subjected to a static air pressure equal to that exerted by a wind of 25 miles per hour.

TABLE OF GAUGES

MEMBER	MODEL 18-V	MODEL 20-V
Sill	14 Ga.	14 Ga.
Jamb	20 Ga.	24 Ga.
Pulley Stile	18 Ga.	20 Ga.
Head	18 Ga.	24 Ga.
Sash Rail	20 Ga.	24 Ga.
Muntin Bar	20 Ga.	24 Ga.
Sash Stile	18 Ga.	24 Ga.
Muntin Cap	18 Ga.	24 Ga.

MODEL 101 RESIDENTIAL STEEL DOUBLE HUNG WINDOW

STANDARD DETAILS (Scale of Details—6"=1'-0")



Model 101, illustrated above, is identical in basic design to the Campbell Windows used in Rockefeller Center, The Waldorf-Astoria Hotel, The Empire State Building and hundreds of other outstanding buildings.

Correct architectural treatment of homes in the traditional American design requires the use of double hung windows. To meet the accepted standards of quality and still build a window within the price range of residential construction, Campbell has developed the Model 101. It is the direct result of the experience gained in furnishing over a million double hung windows for the world's outstanding buildings.

The time-proven, successful, basic design of these windows has been incorporated in a window which sells at a wood window price.

FEATURES

Weathertightness is assured by the 100% weatherstripping which permits a *guarantee* against excessive infiltration.

Ease of Operation is the result of an exclusive Campbell feature which reduces a friction as much as 80%.

Complete Assembly assures additional economies in installation. (Twin Windows are furnished as one unit.)

All-Metal Construction means greater daylight area, uniform size and quality—no warping, cracking or splitting.

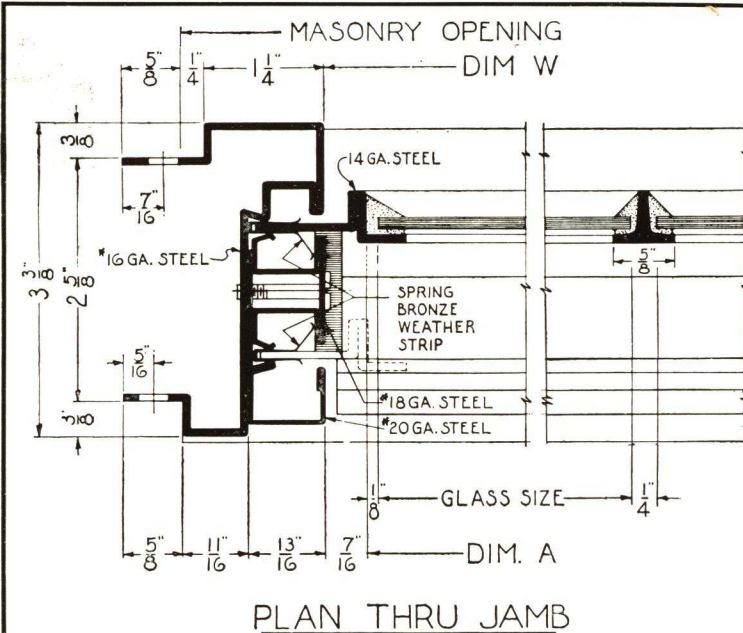
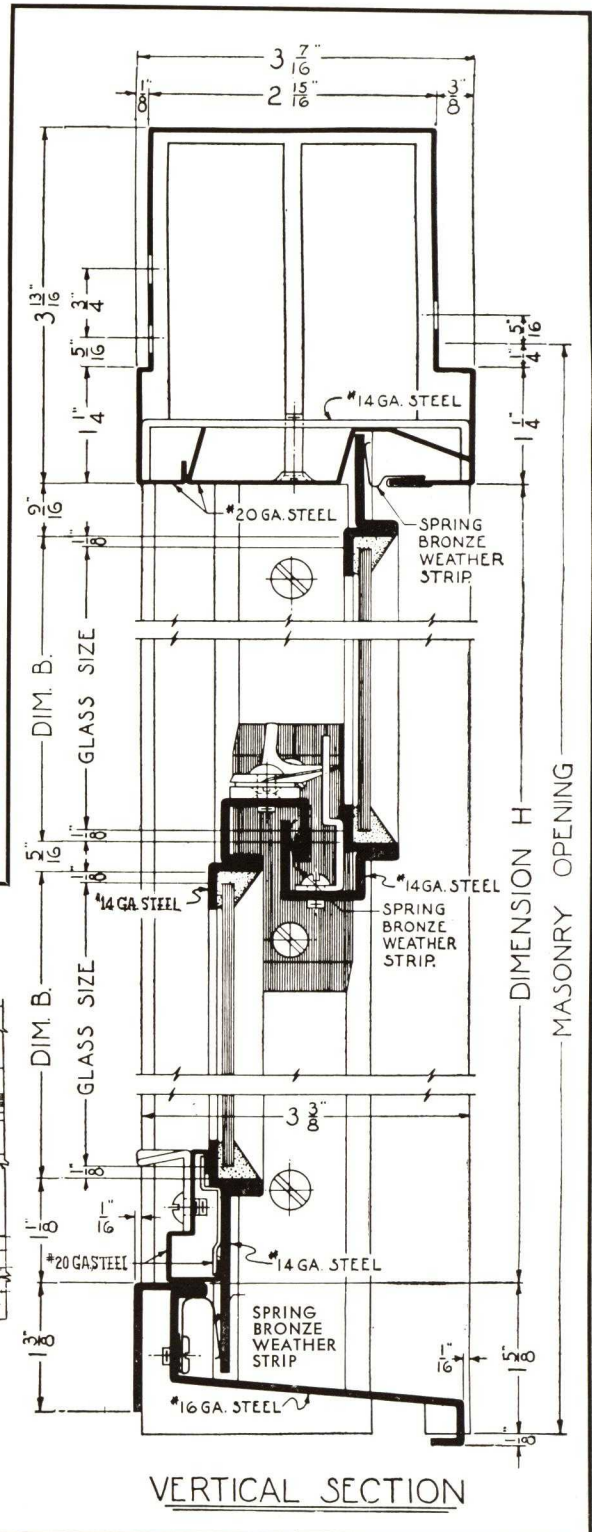
Low First Cost is the result of quantity production in a new, modern factory equipped with every possible facility for accurate yet economical manufacturing.

Long Life is inherent in the simplicity of design and sturdiness of construction.

Rustproofing by Bonderizing, after which a prime coat of rust-inhibitive paint is baked on for a half hour at 300° F., assures a minimum of maintenance cost.

Hardware comes with the window, ready to use.

Accessories are complete and include five types of screens and two kinds of storm sash; standard, corner and obtuse angle mullions, stools, casings, awning fixtures, cleaner anchors, shade and drapery brackets, and blind and shutter fixtures.



PLAN THRU JAMB

MODEL 101 RESIDENTIAL STEEL DOUBLE HUNG WINDOW

STOCK AND STANDARD TYPES AND SIZES

Sizes given are masonry opening dimensions.




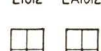

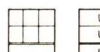
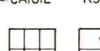


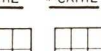

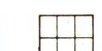

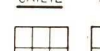
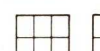
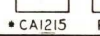




Units marked with an asterisk (*) are carried in warehouse stock.

Windows are viewed from the interior.

SASH ARE COUNTERBALANCED TO CARRY DOUBLE STRENGTH GLASS WEIGHING 26 OUNCES PER SQUARE FOOT. ONE-EIGHTH INCH GLASS NOT EXCEEDING 32 OUNCES PER SQUARE FOOT MAY BE USED IN STANDARD SIZE WINDOWS. ONE-EIGHTH INCH GLASS MUST BE USED IN ALL WINDOWS.









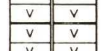
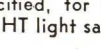
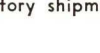
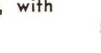















Standard muntin arrangements shown are furnished without extra charge. Partial or entire omission of muntins is available without increase in price. If partial, remaining muntins must be in standard positions.

SINGLE WINDOWS

2'-0 $\frac{3}{8}$ "		2'-10 $\frac{3}{8}$ "		3'-1 $\frac{5}{8}$ "		3'-4 $\frac{5}{8}$ "	
 *D1015 *DA1015 A		 *E1010 *EA1010 R2010 B		 *E1012 *EA1012 R2012 C		 *E1014 *EA1014 R2014 D	
 *C1010 *CA1010 R3010 E		 *C1012 *CA1012 R3012 F		 *C1014 *CA1014 R3014 G		 *C1110 *CA1110 R3310 H	
 *C1112 *CA1112 R3312 I		 *C1114 *CA1114 R3314 J		 *C1214 *CA1214 R3614 K		 *C1115 *CA1115 R3315 L	
 *C1212 *CA1212 R3612 M		 *C1214 *CA1214 R3614 N		 *C1215 *CA1215 R3615 O		 *C1215 *CA1215 R3615 P	
 *C1215 *CA1215 R3615 Q		 *C1215 *CA1215 R3615 R		 *C1215 *CA1215 R3615 S		 *C1215 *CA1215 R3615 T	

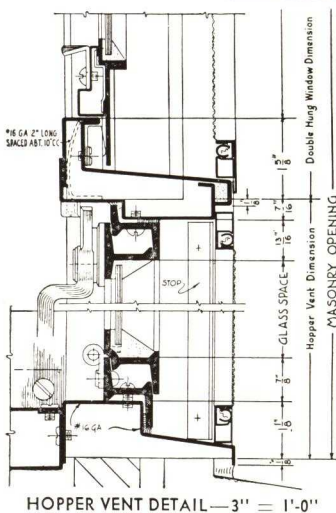
NOTE—Units underlined may be specified, for factory shipment, with EIGHT light sash.

TWIN WINDOWS

5'-8 $\frac{1}{4}$ "		6'-2 $\frac{1}{4}$ "		6'-8 $\frac{1}{4}$ "	
 *TC1010 TC1010		 *TC1012 TC1012		 *TC1014 TC1014	
 *TC1016 TC1016		 *TC1018 TC1018		 *TC1020 TC1020	
 *TC1022 TC1022		 *TC1024 TC1024		 *TC1026 TC1026	
 *TC1028 TC1028		 *TC1030 TC1030		 *TC1032 TC1032	
 *TC1034 TC1034		 *TC1036 TC1036		 *TC1038 TC1038	
 *TC1040 TC1040		 *TC1042 TC1042		 *TC1044 TC1044	
 *TC1046 TC1046		 *TC1048 TC1048		 *TC1050 TC1050	
 *TC1052 TC1052		 *TC1054 TC1054		 *TC1056 TC1056	
 *TC1058 TC1058		 *TC1060 TC1060		 *TC1062 TC1062	

NOTE—Units underlined may be specified, for factory shipment, with EIGHT light sash.

NOTE—Twin windows are furnished in one complete assembly including Twin Window Mullion between the two portions. Twin Window Mullions are not furnished separately.



MODEL 101 WINDOW WITH HOPPER VENT

The combination of the inexpensive Model 101 Window with a standard Hopper Vent offers draft-free ventilation in an economical window. It possesses advantages formerly obtainable only at much greater cost.

Hospitals, schools, office buildings, hotels, apartment houses and many other types of buildings are improved by the guaranteed weathertightness, ease of operation and the positive ventilation control which this window provides.

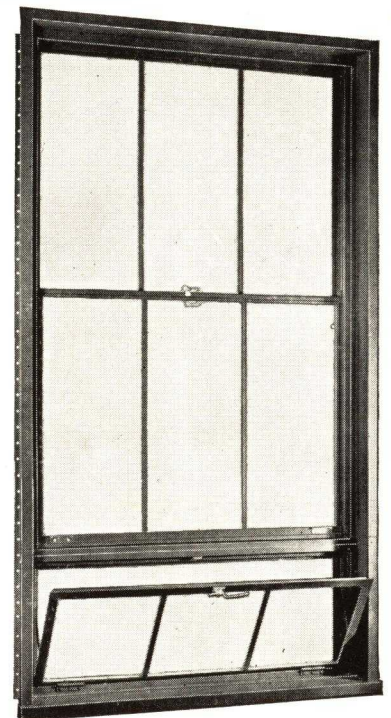
The entire unit is completely assembled, ready to set in the opening. A casing (which saves the cost of a plaster return) and stool may be included in the assembly. Four types of screens and a complete line of accessories are available. Bonderizing after fabrication assures long life and low maintenance costs.

STANDARD SIZES OF HOPPER VENTS

(for combination with Standard Model 101 Windows.)

2'-0 $\frac{3}{8}$ "	2'-10 $\frac{3}{8}$ "	3'-1 $\frac{5}{8}$ "	3'-4 $\frac{5}{8}$ "
HE 1015	HC 1015	HC 1115	HC 1215

To obtain masonry opening height of the standard hopper ventilated unit ADD 1'-6 $\frac{5}{8}$ " to height of standard Model 101 Window.



CAMPBELL RESIDENCE CASEMENTS

FEATURES

Sturdy construction, full 1/4" double weathering for all ventilators and solid bronze fasteners are typically superior features of Campbell Residence Casements.

Specially rolled sections for meeting rails, stiles, transom bars and for Tilt-In Ventilator units assure maximum strength, weathering and daylight area.

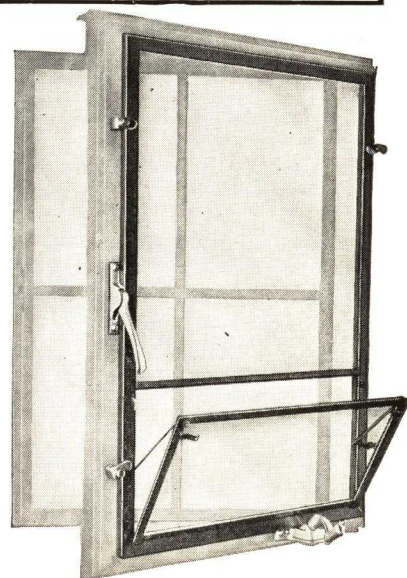
Stock and Standard types and sizes, shown here, include Side Hinged, Tilt-In and Transom Types as well as the Casement Door and Sidelights.

Half size typical sections are shown on the opposite page.

STOCK AND STANDARD TYPES AND SIZES

1'-1 1/8"		1'-7 3/8"		1'-21 1/8"		1'-27 1/8"		3'-1 1/8"	
1/8"	2 1/2"	1/8"	2 1/2"	NOTE: UNITS ARE VIEWED FROM EXTERIOR.				1/8"	2 1/2"
CH1		CH2						CH4	
GLASS SIZES									
A 11 1/4" X 11 3/8"		B 11 1/4" X 12 3/8"		C 11 1/4" X 12"		D 10 3/8" X 12"		E 11 1/4" X 11 7/8"	
F 11 1/4" X 10 7/8"		G 8 1/8" X 12 3/8"		H 8 1/8" X 12"		J 11 1/4" X 10 1/8"		K 8 1/8" X 10 7/8"	
L 8 1/8" X 11 7/8"		M 8 1/8" X 10 1/8"		N 8 1/8" X 11 3/8"		R 8 1/8" X 12 3/8"		S 8 1/8" X 12"	
T 8 1/8" X 11 7/8"		U 8 1/8" X 10 7/8"		V 8 1/8" X 10 1/8"		Y 8 1/8" X 11 3/8"		Z TO TEMPLATE	
NN 11 7/8" X 11 7/8"		NI 11 7/8" X 10 7/8"		N2 11 7/8" X 10 1/8"		N3 10 3/8" X 10 1/8"		N4 11 7/8" X 11 7/8"	
LIGHTS NOT MARKED: 8" X 12"									
14T 14 1/8" R/L		24T 24 1/8" R/L		34 1/8" R/L		44 1/8" R/L		54 1/8" R/L	
15 15 1/8" R/L		25 25 1/8" R/L		35 1/8" R/L		45 1/8" R/L		55 1/8" R/L	
16 16 1/8" R/L		26 26 1/8" R/L		36 1/8" R/L		46 1/8" R/L		56 1/8" R/L	
17 17 1/8" R/L		27 27 1/8" R/L		37 1/8" R/L		47 1/8" R/L		57 1/8" R/L	
18 18 1/8" R/L		28 28 1/8" R/L		38 1/8" R/L		48 1/8" R/L		58 1/8" R/L	
19 19 1/8" R/L		29 29 1/8" R/L		39 1/8" R/L		49 1/8" R/L		59 1/8" R/L	
20 20 1/8" R/L		30 30 1/8" R/L		40 40 1/8" R/L		50 50 1/8" R/L		60 60 1/8" R/L	
21 21 1/8" R/L		31 31 1/8" R/L		41 41 1/8" R/L		51 51 1/8" R/L		61 61 1/8" R/L	
22 22 1/8" R/L		32 32 1/8" R/L		42 42 1/8" R/L		52 52 1/8" R/L		62 62 1/8" R/L	
23 23 1/8" R/L		33 33 1/8" R/L		43 43 1/8" R/L		53 53 1/8" R/L		63 63 1/8" R/L	
24 24 1/8" R/L		34 34 1/8" R/L		44 44 1/8" R/L		54 54 1/8" R/L		64 64 1/8" R/L	
25 25 1/8" R/L		35 35 1/8" R/L		45 45 1/8" R/L		55 55 1/8" R/L		65 65 1/8" R/L	
26 26 1/8" R/L		36 36 1/8" R/L		46 46 1/8" R/L		56 56 1/8" R/L		66 66 1/8" R/L	
27 27 1/8" R/L		37 37 1/8" R/L		47 47 1/8" R/L		57 57 1/8" R/L		67 67 1/8" R/L	
28 28 1/8" R/L		38 38 1/8" R/L		48 48 1/8" R/L		58 58 1/8" R/L		68 68 1/8" R/L	
29 29 1/8" R/L		39 39 1/8" R/L		49 49 1/8" R/L		59 59 1/8" R/L		69 69 1/8" R/L	
30 30 1/8" R/L		40 40 1/8" R/L		50 50 1/8" R/L		60 60 1/8" R/L		70 70 1/8" R/L	
31 31 1/8" R/L		41 41 1/8" R/L		51 51 1/8" R/L		61 61 1/8" R/L		71 71 1/8" R/L	
32 32 1/8" R/L		42 42 1/8" R/L		52 52 1/8" R/L		62 62 1/8" R/L		72 72 1/8" R/L	
33 33 1/8" R/L		43 43 1/8" R/L		53 53 1/8" R/L		63 63 1/8" R/L		73 73 1/8" R/L	
34 34 1/8" R/L		44 44 1/8" R/L		54 54 1/8" R/L		64 64 1/8" R/L		74 74 1/8" R/L	
35 35 1/8" R/L		45 45 1/8" R/L		55 55 1/8" R/L		65 65 1/8" R/L		75 75 1/8" R/L	
36 36 1/8" R/L		46 46 1/8" R/L		56 56 1/8" R/L		66 66 1/8" R/L		76 76 1/8" R/L	
37 37 1/8" R/L		47 47 1/8" R/L		57 57 1/8" R/L		67 67 1/8" R/L		77 77 1/8" R/L	
38 38 1/8" R/L		48 48 1/8" R/L		58 58 1/8" R/L		68 68 1/8" R/L		78 78 1/8" R/L	
39 39 1/8" R/L		49 49 1/8" R/L		59 59 1/8" R/L		69 69 1/8" R/L		79 79 1/8" R/L	
40 40 1/8" R/L		50 50 1/8" R/L		60 60 1/8" R/L		70 70 1/8" R/L		80 80 1/8" R/L	
41 41 1/8" R/L		51 51 1/8" R/L		61 61 1/8" R/L		71 71 1/8" R/L		81 81 1/8" R/L	
42 42 1/8" R/L		52 52 1/8" R/L		62 62 1/8" R/L		72 72 1/8" R/L		82 82 1/8" R/L	
43 43 1/8" R/L		53 53 1/8" R/L		63 63 1/8" R/L		73 73 1/8" R/L		83 83 1/8" R/L	
44 44 1/8" R/L		54 54 1/8" R/L		64 64 1/8" R/L		74 74 1/8" R/L		84 84 1/8" R/L	
45 45 1/8" R/L		55 55 1/8" R/L		65 65 1/8" R/L		75 75 1/8" R/L		85 85 1/8" R/L	
46 46 1/8" R/L		56 56 1/8" R/L		66 66 1/8" R/L		76 76 1/8" R/L		86 86 1/8" R/L	
47 47 1/8" R/L		57 57 1/8" R/L		67 67 1/8" R/L		77 77 1/8" R/L		87 87 1/8" R/L	
48 48 1/8" R/L		58 58 1/8" R/L		68 68 1/8" R/L		78 78 1/8" R/L		88 88 1/8" R/L	
49 49 1/8" R/L		59 59 1/8" R/L		69 69 1/8" R/L		79 79 1/8" R/L		89 89 1/8" R/L	
50 50 1/8" R/L		60 60 1/8" R/L		70 70 1/8" R/L		80 80 1/8" R/L		90 90 1/8" R/L	
51 51 1/8" R/L		61 61 1/8" R/L		71 71 1/8" R/L		81 81 1/8" R/L		91 91 1/8" R/L	
52 52 1/8" R/L		62 62 1/8" R/L		72 72 1/8" R/L		82 82 1/8" R/L		92 92 1/8" R/L	
53 53 1/8" R/L		63 63 1/8" R/L		73 73 1/8" R/L		83 83 1/8" R/L		93 93 1/8" R/L	
54 54 1/8" R/L		64 64 1/8" R/L		74 74 1/8" R/L		84 84 1/8" R/L		94 94 1/8" R/L	
55 55 1/8" R/L		65 65 1/8" R/L		75 75 1/8" R/L		85 85 1/8" R/L		95 95 1/8" R/L	
56 56 1/8" R/L		66 66 1/8" R/L		76 76 1/8" R/L		86 86 1/8" R/L		96 96 1/8" R/L	
57 57 1/8" R/L		67 67 1/8" R/L		77 77 1/8" R/L		87 87 1/8" R/L		97 97 1/8" R/L	
58 58 1/8" R/L		68 68 1/8" R/L		78 78 1/8" R/L		88 88 1/8" R/L		98 98 1/8" R/L	
59 59 1/8" R/L		69 69 1/8" R/L		79 79 1/8" R/L		89 89 1/8" R/L		99 99 1/8" R/L	
60 60 1/8" R/L		70 70 1/8" R/L		80 80 1/8" R/L		90 90 1/8" R/L		100 100 1/8" R/L	
61 61 1/8" R/L		71 71 1/8" R/L		81 81 1/8" R/L		91 91 1/8" R/L		101 101 1/8" R/L	
62 62 1/8" R/L		72 72 1/8" R/L		82 82 1/8" R/L		92 92 1/8" R/L		102 102 1/8" R/L	
63 63 1/8" R/L		73 73 1/8" R/L		83 83 1/8" R/L		93 93 1/8" R/L		103 103 1/8" R/L	
64 64 1/8" R/L		74 74 1/8" R/L		84 84 1/8" R/L		94 94 1/8" R/L		104 104 1/8" R/L	
65 65 1/8" R/L		75 75 1/8" R/L		85 85 1/8" R/L		95 95 1/8" R/L		105 105 1/8" R/L	
66 66 1/8" R/L		76 76 1/8" R/L		86 86 1/8" R/L		96 96 1/8" R/L		106 106 1/8" R/L	
67 67 1/8" R/L		77 77 1/8" R/L		87 87 1/8" R/L		97 97 1/8" R/L		107 107 1/8" R/L	
68 68 1/8" R/L		78 78 1/8" R/L		88 88 1/8" R/L		98 98 1/8" R/L		108 108 1/8" R/L	
69 69 1/8" R/L		79 79 1/8" R/L		89 89 1/8" R/L		99 99 1/8" R/L		109 109 1/8" R/L	
70 70 1/8" R/L		80 80 1/8" R/L		90 90 1/8" R/L		100 100 1/8" R/L		110 110 1/8" R/L	
71 71 1/8" R/L		81 81 1/8" R/L		91 91 1/8" R/L		101 101 1/8" R/L		111 111 1/8" R/L	
72 72 1/8" R/L		82 82 1/8" R/L		92 92 1/8" R/L		102 102 1/8" R/L		112 112 1/8" R/L	
73 73 1/8" R/L		83 83 1/8" R/L		93 93 1/8" R/L		103 103 1/8" R/L		113 113 1/8" R/L	
74 74 1/8" R/L		84 84 1/8" R/L		94 94 1/8" R/L		104 104 1/8" R/L		114 114 1/8" R/L	
75 75 1/8" R/L		85 85 1/8" R/L		95 95 1/8" R/L		105 105 1/8" R/L		115 115 1/8" R/L	
76 76 1/8" R/L		86 86 1/8" R/L		96 96 1/8" R/L		106 106 1/8" R/L		116 116 1/8" R/L	
77 77 1/8" R/L		87 87 1/8" R/L		97 97 1/8" R/L		107 107 1/8" R/L		117 117 1/8" R/L	
78 78 1/8" R/L		88 88 1/8" R/L		98 98 1/8" R/L		108 108 1/8" R/L		118 118 1/8" R/L	
79 79 1/8" R/L		89 89 1/8" R/L		99 99 1/8" R/L		109 109 1/8" R/L		119 119 1/8" R/L	
80 80 1/8" R/L		90 90 1/8" R/L		100 100 1/8" R/L		110 110 1/8" R/L		120 120 1/8" R/L	
81 81 1/8" R/L		91 91 1/8" R/L		101 101 1/8" R/L		111 111 1/8" R/L		121 121 1/8" R/L	
82 82 1/8" R/L		92 92 1/8" R/L		102 102 1/8" R/L		112 112 1/8" R/L		122 122 1/8" R/L	
83 83 1/8" R/L		93 93 1/8" R/L		103 103 1/8" R/L		113 113 1/8" R/L		123 123 1/8" R/L	
84 84 1/8" R/L		94 94 1/8" R/L		104 104 1/8" R/L		114 114 1/8" R/L		124 124 1/8" R/L	
85 85 1/8" R/L		95 95 1/8" R/L		105 105 1/8" R/L		115 115 1/8" R/L		125 125 1/8" R/L	
86 86 1/8" R/L		96 96 1/8" R/L		106 106 1/8" R/L		116 116 1/8" R/L		126 126 1/8" R/L	
87 87 1/8" R/L		97 97 1/8" R/L		107 107 1/8" R/L		117 117 1/8" R/L		127 127 1/8" R/L	
88 88 1/8" R/L		98 98 1/8" R/L		108 108 1/8" R/L		118 118 1/8" R/L		128 128 1/8" R/L	
89 89 1/8" R/L		99 99 1/8" R/L		109 109 1/8" R/L		119 119 1/8" R/L		129 129 1/8" R/L	
90 90 1/8" R/L		100 100 1/8" R/L		110 110 1/8" R/L		120 120 1/8" R/L		130 130 1/8" R/L	
91 91 1/8" R/L		101 101 1/8" R/L		111 111 1/8" R/L		121 121 1/8" R/L		131 131 1/8" R/L	
92 92 1/8" R/L		102 102 1/8" R/L		112 112 1/8" R/L		122 122 1/8" R/L		132 132 1/8" R/L	
93 93 1/8" R/L		103 103 1/8" R/L		113 113 1/8" R/L		123 123 1/8" R/L		133 133 1/8" R/L	
94 94 1/8" R/L		104 104 1/8" R/L		114 114 1/8" R/L		124 124 1/8" R/L		134 134 1/8" R/L	
95 95 1/8" R/L		105 105 1/8" R/L		115 115 1/8" R/L		125 125 1/8" R/L		135 135 1/8" R/L	
96 96 1/8" R/L		106 106 1/8" R/L		116 116 1/8" R/L		126 126 1/8" R/L		136 136 1/8" R/L	
97 97 1/8" R/L		107 107 1/8" R/L		117 117 1/8" R/L		127 127 1/8" R/L		137 137 1/8" R/L	
98 98 1/8" R/L		108 108 1/8" R/L		118 118 1/8" R/L		128 128 1/8" R/L		138 138 1/8" R/L	
99 99 1/8" R/L		109 109 1/8" R/L		119 119 1/8" R/L		129 129 1/8" R/L		139 139 1/8" R/L	
100 100 1/8" R/L		110 110 1/8" R/L		120 120 1/8" R/L		130 130 1/8" R/L		140 140 1/8" R/L	
101 101 1/8" R/L		111 111 1/8" R/L		121 121 1/8" R/L		131 131 1/8" R/L		141 141 1/8" R/L	
102 102 1/8" R/L		112 112 1/8" R/L		122 122 1/8" R/L		132 132 1/8" R/L		142 142 1/8" R/L	
103 103 1/8" R/L		113 113 1/8" R/L		123 123 1/8" R/L		133 133 1/8" R/L		143 143 1/8" R/L	
104 104 1/8" R/L		114 114 1/8" R/L		124 124 1/8" R/L		134 134 1/8" R/L		144 144 1/8" R/L	
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106 106 1/8" R/L		116 116 1/8" R/L		126 126 1/8" R/L		136 136 1/8" R/L		146 146 1/8" R/L	
107 107 1/8" R/L		117 117 1/8" R/L		127 127 1/8" R/L		137 137 1/8" R/L		147 147 1/8" R/L	
108 108 1/8" R/L		118 118 1/8" R/L		128 128 1/8" R/L		138 138 1/8" R/L		148 148 1/8" R/L	
109 109 1/8" R/L		119 119 1/8" R/L		129 129 1/8" R/L		139 139 1/8" R/L		149 149 1/8" R/L	
110 110 1/8" R/L		120 120 1/8" R/L		130 130 1/8" R/L		140 140 1/8" R/L		150 150 1/8" R/L	
111 111 1/8" R/L		121 121 1/8" R/L		131 131 1/8" R/L		141 141 1/8" R/L		151 151 1/8" R/L	
112 112 1/8" R/L		122 122 1/8" R/L		132 132 1/8" R/L		142 142 1/8" R/L		152 152 1/8" R/L	
113 113 1/8" R/L		123 123 1/8" R/L		133 133 1/8" R/L		143 143 1/8" R/L		153 153 1/8" R/L	
114 114 1/8" R/L		124 124 1/8" R/L							

(Basement Utility Windows—Storm Sash)

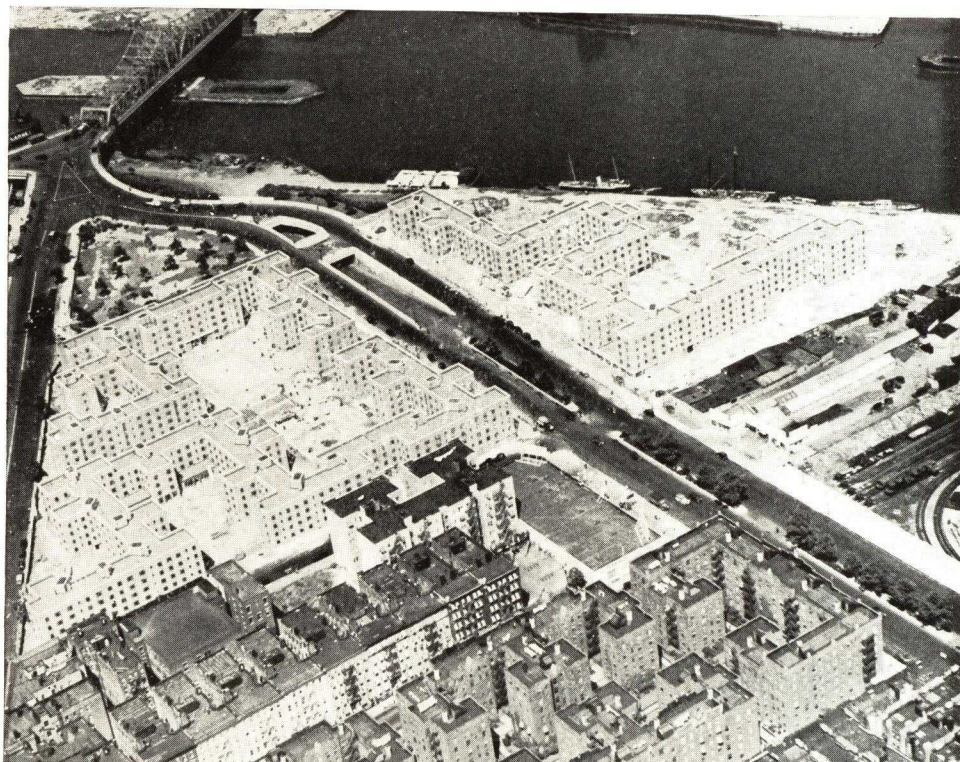


[9]

CAMPBELL HOUSING TYPE CASEMENTS

Preference for Campbell Housing Type Casements is indicated by the number of projects in which they have been used. The following list includes the principal developments requiring a large number of casements and account for about 45,000 of the more than 75,000 units furnished for housing work.

Atlanta, Ga.
University Homes
Birmingham, Ala.
Smithfield Court
Berwyn, Md.
Greenbelt Resettlement
Charleston, S. C.
Meeting St. Manor,
Cooper River Court
Chicago, Ill.
Jane Addams I
Chicago, Ill.
Jane Addams II
Chicago, Ill.
Julia C. Lathrop Homes
Columbia, S. C.
University Terrace
Dallas, Tex.
Lucas Drive
Detroit, Mich.
Parkside
Jacksonville, Fla.
Durkeeville
Louisville, Ky.
LaSalle Place
Memphis, Tenn.
Lauderdale Courts
Minneapolis, Minn.
Sumner Field
New York, N. Y.
Harlem River Houses
Toledo, Ohio
Brand Whitlock Homes
Washington, D. C.
Langston Terrace



(Aerial Photo by Rudy Arnold)

HARLEM RIVER HOUSING PROJECT

Associated Architects,
A. M. Brown, Chief Architect

Cauldwell-Wingate Co.
General Contractors

FEATURES

Campbell Housing Casements are now offered in an improved design which incorporates still further economies in first cost and in installation cost.

Integral Head and Jamb Fins are provided by the use of a specially rolled, long leg section which provides a bearing of 1" in the normal prepared masonry opening. This does away with separate sheet metal fins usually bolted to the casement section, insures a fully weathered condition around the sash perimeter and permits the direct attachment of the casing to the casement.

Full 1/4 Inch 2-Point Weathering Contact is provided around all ventilators, insuring greater weathertightness of casements.

Specially Rolled Sections provide integral drip members on Transom Bars and Horizontal Mullions, greater glass area at Stiles, full weathering at the Meeting Rail, and a flat glazing ledge and flush interior surface on all Casements.

Solid Bronze Fasteners last longer, are stronger and are more positive in action than the usual type furnished with Housing Casements.

Sturdy Hinges are of the extension type to permit cleaning the exterior of the windows from inside the room, have adjustable friction provisions and keep the ventilator in alignment for continuous weathertight service.

Sliding Panel Screens are attached directly to the casements, give easy access to the fastener for opening and closing vents and are less expensive than the usual hinged type which will be furnished, if specified.

Complete Unit. The Housing Type Casement includes the window, the operating hardware, the screen and the interior casing and stool, contributing to economy of installation.

SPECIFICATIONS

SPECIFY—Housing Type Residence Casement Windows manufactured by Campbell Metal Window Corporation, Baltimore, Md.

MATERIAL—Window members shall be solid section, hot rolled, new billet shapes, not less than 1/8" in scheduled thickness, nor less than 1" deep. **FRAME MEMBERS** at head and jambs shall be unequal leg zee sections not less than 2 1/2" in width, with long leg to provide not less than 1" bearing on adjacent masonry. Sill members shall be symmetrical zee sections. **VENT MEMBERS** shall be zee sections not less than 1" deep. **STILES** shall be specially rolled members for use adjacent to vents. **MEETING RAILS** shall be unequal leg H sections. **MUNTINS** shall be specially designed tee sections not less than 3/4" deep nor 5/8" across the face. Horizontal and vertical muntins shall be the same depth. **MULLIONS** between adjacent units set in the same opening shall be hot rolled tee sections. Window members shall not be less than the following minimum weights per foot:

Frame (Head & Jams).....	1.50 lbs.
Frame (Sill).....	1.06 lbs.
Vent Member or Stile.....	.94 lbs.
Meeting Rail.....	1.42 lbs.
Muntins (All).....	.50 lbs.
Transom Bar with Integral Drip.....	1.30 lbs.
Vertical Mullion.....	1.30 lbs.
Horizontal Mullion.....	2.00 lbs.

CONSTRUCTION—Corners of frames and vents shall be accurately mitred or coped and welded with all exposed or contact surfaces dressed flush. Frame and vent assemblies shall be true and square. Meeting Rails or Stiles shall be tenoned, mortised and riveted to frame members. Continuous, two point, flat contact weathering, not less than 1/4" wide, shall be provided between vents and frames. Muntins shall be continuous between vent members and between frame members, with inter-sections mechanically interlocked to provide a flush surface. Muntins shall be tenoned, mortised and riveted to frames and vents. Windows shall be designed for glazing from the exterior with spring wire glazing clips and putty.

HARDWARE—Side hinged ventilators shall be hung on steel, extension, friction hinges with bronze

bushed pins. One vent fastener and strike, of solid red bronze, sand tumbled and given a metallic lacquered finish of statuary bronze color, shall be provided for each ventilator. Projection of fastener shall not exceed 3/4" to permit screen wicket to close when vent is closed and locked.

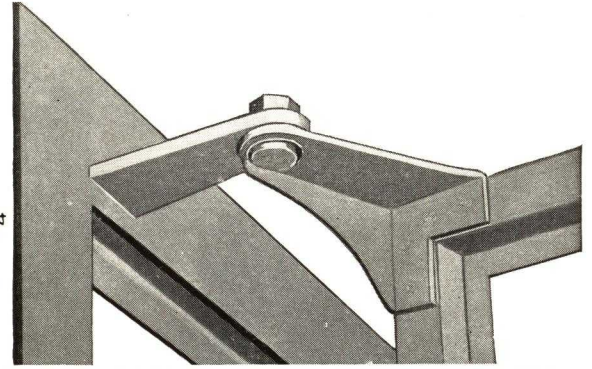
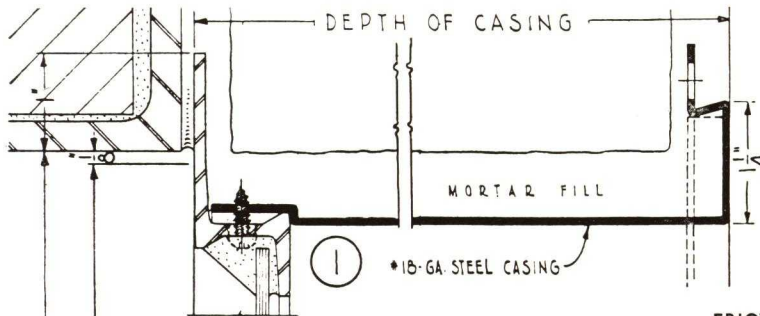
CASINGS—Provide steel casings to case the full depth of the window reveals. Head and jamb members shall be No. 18 U.S.S. gauge and sill member No. 16 U.S.S. gauge, low carbon steel. Stool members shall extend not less than 1/4" beyond the face of the jamb member and be provided with closed ends. Casings shall be assembled to the windows, in an approved manner, before installation. The sill joint between window and casing shall be sealed with mastic.

SCREENS—Screens shall be of the wicket type, with horizontally sliding panels to provide access to vent hardware. Screens shall be attached to windows with "C" clips, not less than four per screen, secured with knurled head bronze screws. Screen frames shall be of the formed or tubular rail type of cold rolled steel, heavily reinforced at the corners and fitted with removable splines. Screen frames shall receive one standard shop coat of gray enamel, baked on.

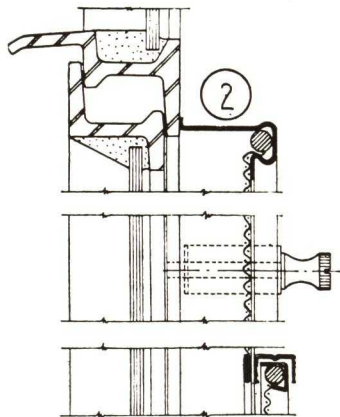
SHOP FINISH—After fabrication the windows and casings shall be thoroughly cleaned in a forced spray of hot alkali solution to remove all oil, grease and foreign matter followed by a hot water rinse insuring a clean, grease-free surface for chemical treatment. The windows shall then be immersed in a 20 point phosphate solution in not less than 180 degrees F., for from 3 to 5 minutes. Immediately after processing in the Rustproofing bath, the windows shall be rinsed for 1 minute in cold water following which they shall be given a final rinse for not over 1 minute in a hot dilute chromic acid solution. The windows shall then be dried, brought to a uniform temperature and given 1 dip coat of red oxide primer baked on for not less than 30 minutes at 300 degrees F., or an approved equivalent bake. The cleaning, processing, painting and baking procedure shall be carried out in the plant of the window manufacturer with a minimum time interval between operations.

CAMPBELL HOUSING TYPE CASEMENTS

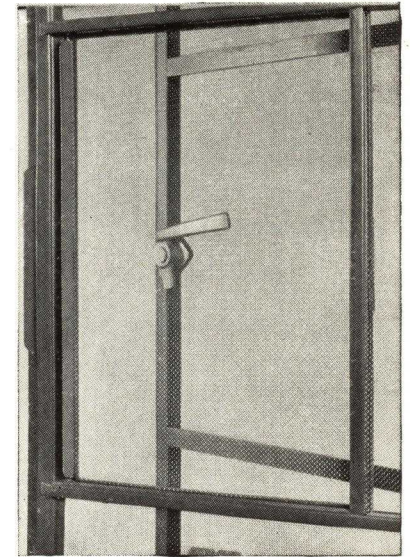
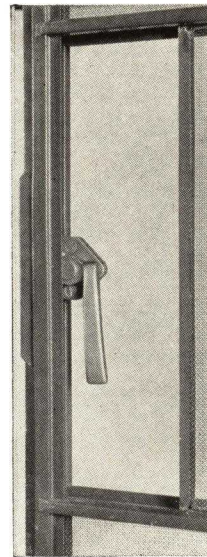
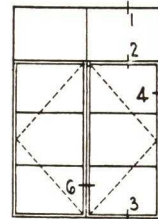
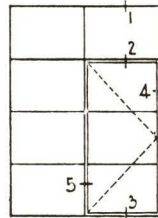
TYPICAL DETAILS (Scale of Details—6" = 1'-0")



FRICION TYPE EXTENSION HINGES permit cleaning the exterior of the window from inside the room. Sturdily built and rigidly attached, they assure ventilator alignment and operation.



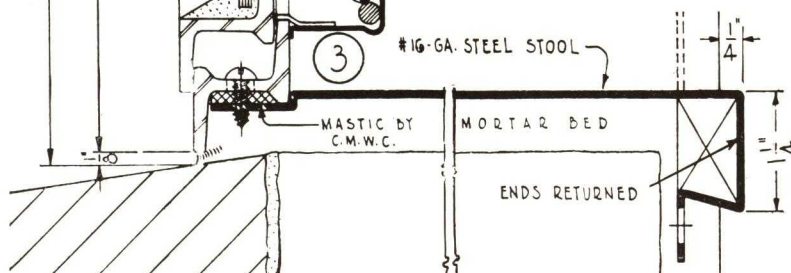
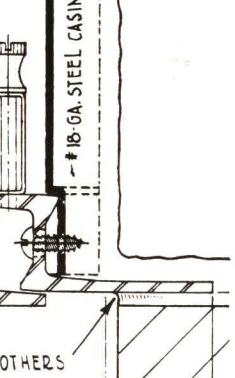
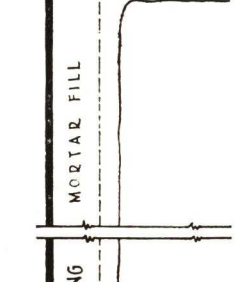
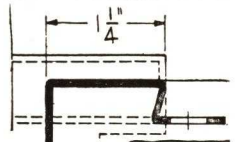
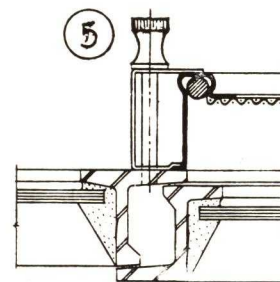
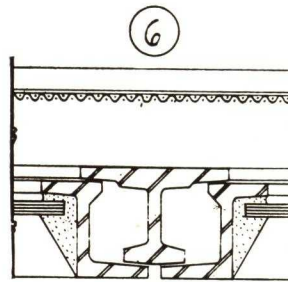
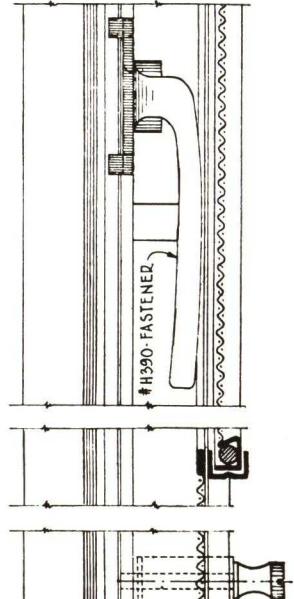
EXTERIOR ELEVATIONS



SLIDING PANEL SCREENS. Photo at left shows panel partly open to give access to fastener. View at right shows ventilator open, screen panel closed.

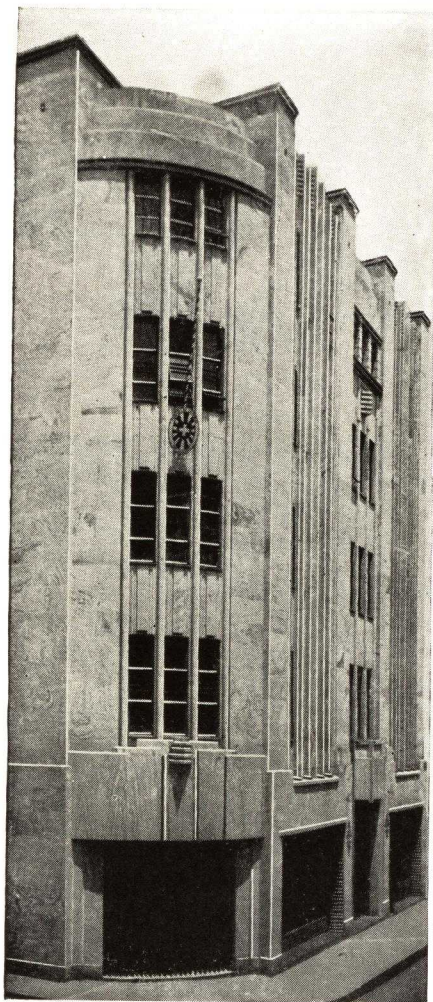
OPENING DIMENSION

WINDOW DIMENSION

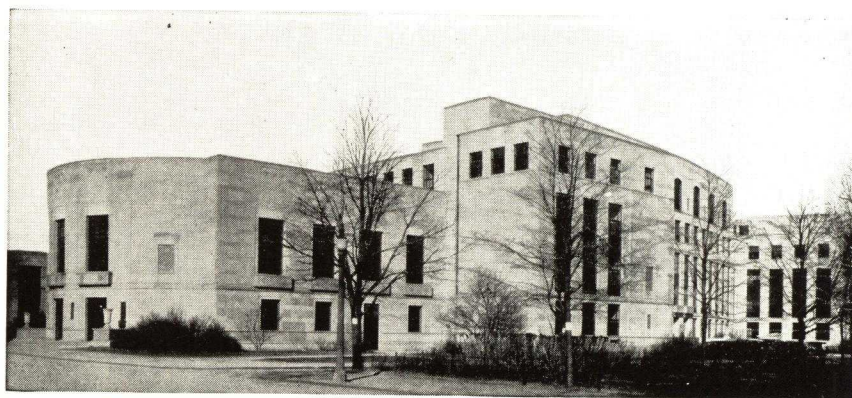


CAULKING BY OTHERS

CAMPBELL ORNAMENTAL PROJECTED WINDOWS



COMPANIA COLUMBIANA DE SEGUROS BUILD-
ING, Bogota, Columbia, S. A.



RINDGE TECHNICAL SCHOOL, Cambridge, Mass.
Ralph Harrington Doane, Architect
George A. Fuller Company, Builder

The Ornamental Projected Window is an exclusive Campbell design. It answers the demands of many architects for a better window of the projected type.

The window is fabricated from hot rolled members throughout. The frame section is 1½" deep and the vent section 1⅝" deep.

Wide baffle legs assure positive, flat contact between vents and frames.

The combined weight of frame and vent members is 4.66 lbs. per lineal foot.

Designers of fine buildings find that Ornamental Projected Windows meet their exacting requirements at a cost which, quality considered, represents a worthwhile saving over other types.

SPECIFICATIONS

SPECIFY

Ornamental Projected Windows manufactured by Campbell Metal Window Corporation, Baltimore, Md.

MATERIAL

Members shall be solid section hot rolled, new billet steel shapes, not less than ⅛" in scheduled thickness. Frame Members shall be unequal leg channel members not less than 1½" deep and providing not less than ¾" bearing against the adjacent building construction. Vent Members shall be especially designed shapes, not less than 1⅝" deep, incorporating integral baffle legs. THE COMBINED WEIGHT of Frame and Vent Members shall be not less than 4.66 lbs. per lineal foot. Muntins shall be Tee members not less than 1½" deep and not less than ⅞" across the table.

CONSTRUCTION

Joints of all abutting members shall be accurately coped, mortised, tenoned and air-hammer riveted. Corners of Frames and Vents shall be welded with exposed surfaces ground smooth. Muntins shall be continuous from head to sill and jamb to jamb except where vents occur. Muntins shall be coped flush and locked by a weld at the base of the stem at all intersections. Provide continuous, flat Weathering contact not less than 5/16" wide at baffle legs of ventilators. Ventilators shall be hung on sliding pivots having compression springs to equalize the friction between the bronze shoes and frame guides. They shall be balanced on two heavy steel arms which shall be securely riveted to frame and vent members with bronze rivets.

GLAZING PROVISION

Windows shall be designed for setting glass from the exterior. Glass shall be held in place with copper-plated steel wire glazing clips, not less than 4 per light.

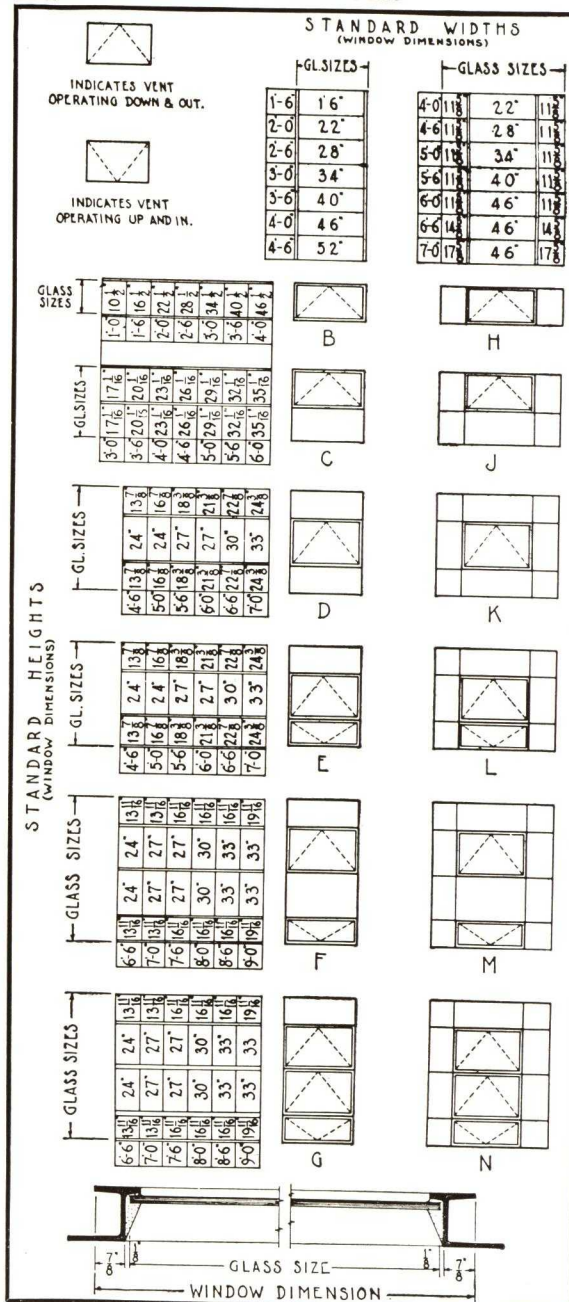
HARDWARE

Down-and-Out Vents shall be equipped with a solid bronze cam handle, and solid bronze pole ring located at the top of the vent. Up-and-In Vents within reach of floor shall be equipped with a solid bronze, hand operated spring catch and keeper. All other Up-and-In Vents shall be equipped with a solid bronze, pole operated, ring catch and keeper.

SCREENS—SHOP FINISH

(See Architectural Projected Specifications—Page 21.)

TYPES AND SIZES



TYPICAL DETAILS (Scale of Details—6" = 1'-0")



CAMPBELL CUSTOM CASEMENTS

At Right

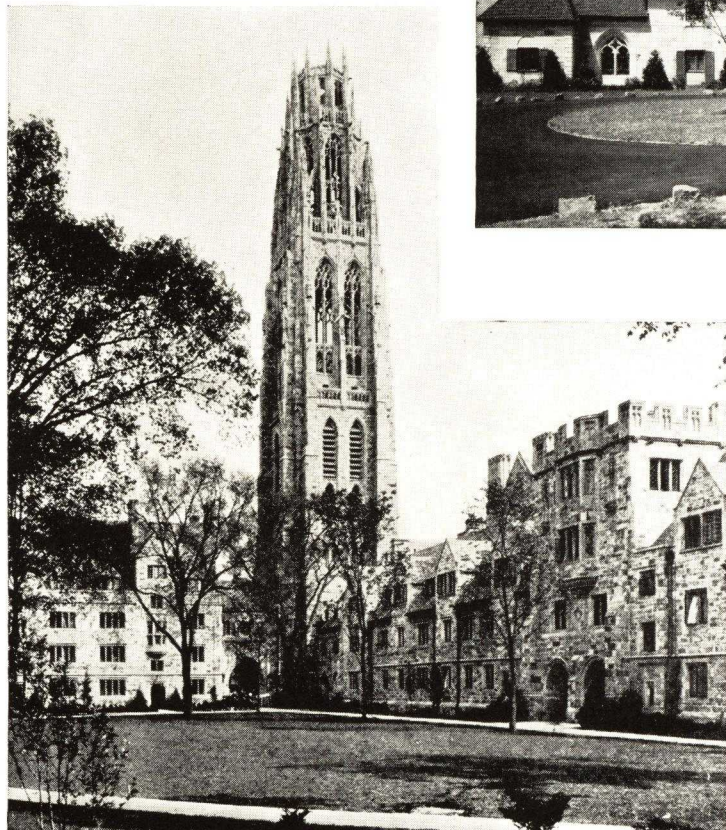
Residence of Mr. and Mrs. Lawrence H. Kyte, Cincinnati, Ohio. John Henri Deekin, Architect.

Below

Harkness Memorial Quadrangle—Yale University. James Gamble Rogers, Architect. Marc Eidlitz & Son, Inc., Builders. (3,300 special Iron Casements were installed in 1919.)

Lower Right

World War Memorial Building, Columbia, S. C. LaFaye & LaFaye, Architects. J. M. McDevitt Co., Builders.



TYPES AVAILABLE

1. Side Hinged Type (to swing out)
With or without muntins
With or without sidelights and transoms.
2. Side Hinged Type (to swing in).
3. Projected Type.
4. Casement Combination Type.
5. Horizontally Pivoted Type.
6. Vertically Pivoted Type.
7. Casement Doors, Sidelights and Transoms.
8. Any of the above types with Interior (Bead or Angle) Glazing.
9. Standard 4" and 6" Sub-Frames.
10. Stools and Casings.
11. Screens for Most Types.
12. Storm Sash for Most Types.

Campbell Custom Casements include the features of design and construction which are required of windows for the finer buildings—residential, monumental, public buildings and educational buildings.

The rugged strength of the heavy members, protected by the proper type of Campbell Rustproofing, assures long life. Weathertightness and long, trouble-free operation of ventilators guarantee a satisfactory installation.

The wide variety of types and virtually unlimited number of sizes permit great freedom in design without excessive window costs. And the wide acceptance of these windows over many years for outstanding building projects attests to their satisfactory performance.

Complete details and information on the many types of Custom Casements are available in an unusual catalogue which will be mailed on request. The first part of this catalogue contains sketches of interesting and historic buildings which show authentic casement treatment.

FEATURES

Heavy Sections $1\frac{7}{8}$ " Deep.

Combined Weight of Frame and Vent Sections 3.55 lbs. per lin. Ft.

Friction Type Extension Hinges or Half Surface Butt Hinges on Side-Hinged Type Vents.

All Fasteners, Bolts, Peg Stays, Pole Rings and Transom Bars Solid Bronze.

Flush Muntin Joints, welded for greater strength.

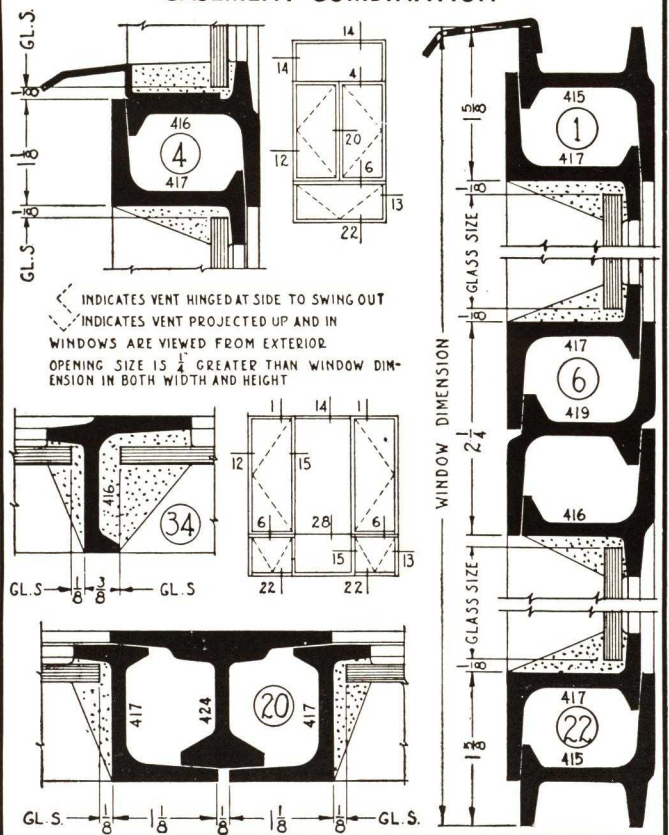
Double Weathering Contact, $\frac{3}{8}$ " wide, around all vents.

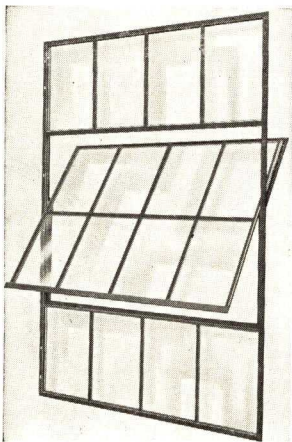
Wide Variety of Standard Sizes in All Types.

Masonry and Interior Sight Lines may be maintained.

Campbell Rustproofing is Available. (See Page 23.)

DETAILS SIDE HINGED TYPE (Scale of Details—6" = 1'-0")





TYPE 44181. Exterior view.

SPECIFICATIONS

Specify

Campbell Industrial Pivoted and Fixed Windows manufactured by Campbell Metal Window Corp., Baltimore, Md.

Material

Members shall be solid section, hot rolled, low carbon, open hearth steel bars not less than $\frac{1}{8}$ " in scheduled thickness. Applied weathering shall be of formed steel not less than No. 12 Gauge or of hot rolled angles.

Construction

Frames shall be constructed of members not less than $\frac{1}{2}$ " deep. Abutting members shall be accurately coped, tenoned, mortised and air hammer riveted.

Ventilators shall be hung on heavy stamped steel pivots located at sides $1\frac{15}{16}$ " above center. Pivot pins shall be STAINLESS STEEL, not less than $\frac{3}{8}$ " in diameter.

Continuous Two-Point Contact shall be provided between vents and frames.

Muntins shall be Tee members, not less than $\frac{1}{2}$ " deep nor less than $\frac{7}{8}$ " across table. Muntin intersections shall be coped flush and locked by a weld on the stem.

Glass Ledge shall be uniform and not less than $\frac{3}{8}$ " high nor less than $\frac{5}{32}$ " deep. Glass to be set from interior and to be held in place by copper plated steel wire clips.

Hardware. Vents located 6'-0" or less above the floor shall be equipped with a cam action, locking, painted steel Push Bar notched to hold vent open in several positions. Vents more than 6'-0" above floor shall be equipped with a Parkerized steel Spring Catch, Chain Operated.

Vertical Mullions. Shall be slotted to permit horizontal adjustment of windows.

Shop Finish

(Rustproofing specifications should be inserted at this point. See Page 23.)

Windows shall receive one coat of paint of special formula for dipping to provide rust inhibitive priming, baked on for one half hour at 300° F. or an equivalent bake.

Screens

Ring catch and keeper hardware shall be applied to all vents. Two complete screen frames shall be furnished for each vent. One frame shall be attached to the outside of window for upper half of vent, the other inside for lower half of vent, with curved contact plates at horizontal lines of pivot. Screen cloth shall be .0113" diameter, antique finish bronze wire, woven to 16 mesh and held in frames by removable splines.

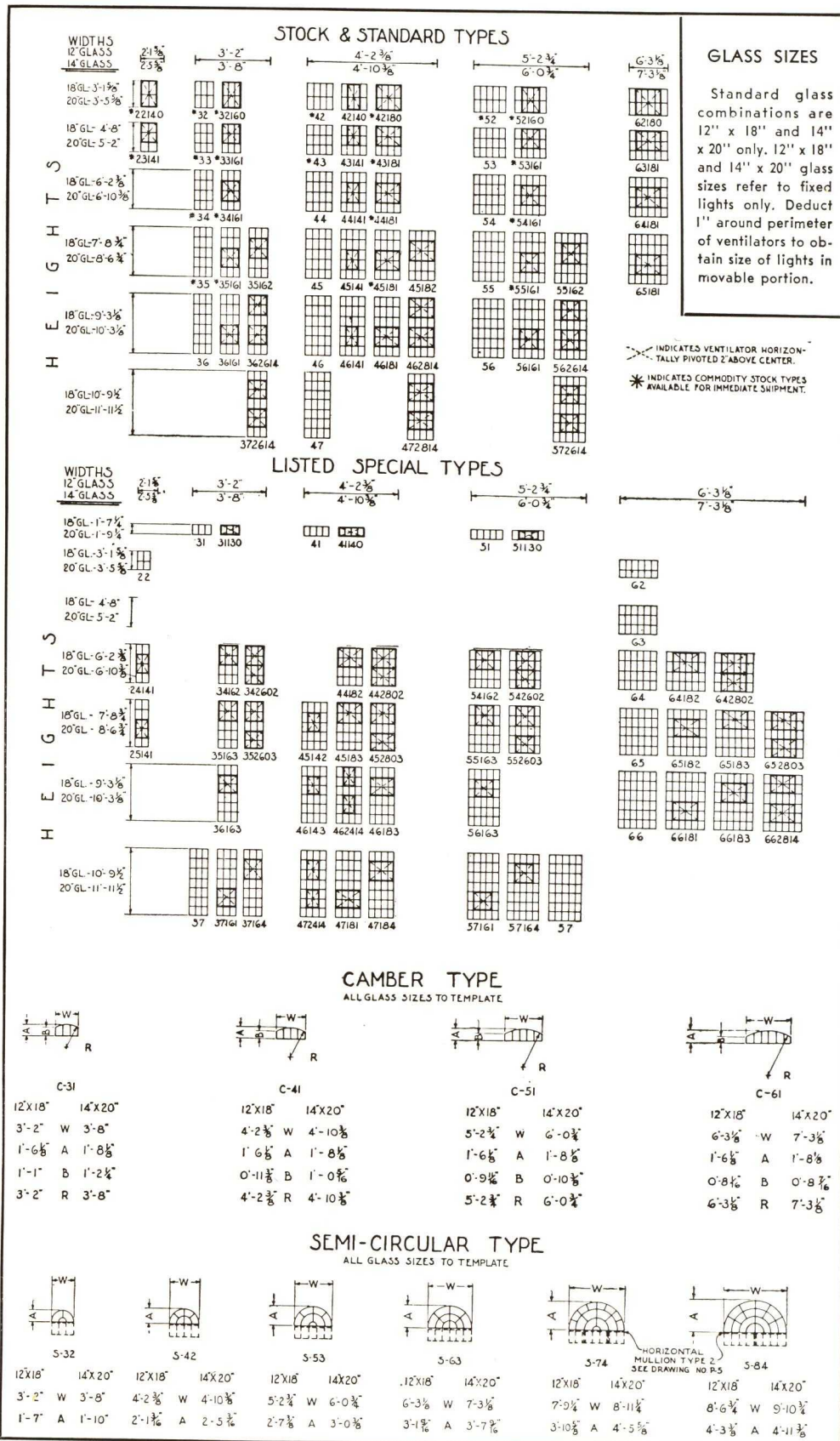
UNDERWRITERS LABELS

All rectangular types and sizes shown may be furnished with labels certifying approval of the Underwriters Laboratories. Labelled windows are equipped with glazing angles for glazing from interior.

CAMPBELL PIVOTED WINDOWS

TYPES AND SIZES

Sizes given are Window Dimensions. Window Opening sizes are identical. Windows are viewed from exterior.



TYPES AND SIZES

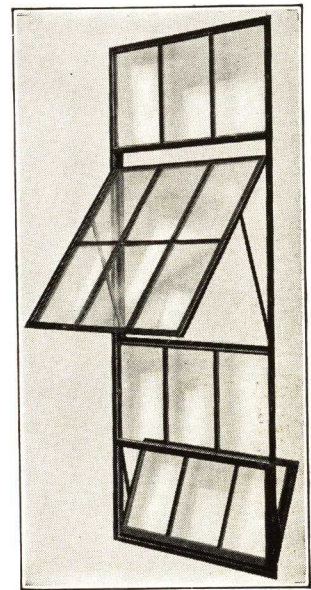
Sizes given below are window dimensions. Window opening sizes are identical. Windows are viewed from exterior.

Commercial Projected Windows are made of the same sturdy sections which give extra strength to Pivoted Windows.

They differ in the method of ventilator operation, hardware and screening. Commercial Projected Windows offer two types of ventilators. The projected down-and-out ventilator extends outward when open, giving an "awning" effect that makes it possible to admit air while deflecting rain. The projected up-and-in ventilator is usually used at the sill for draftless air control.

The types and sizes shown below provide for inside putty glazing. Outside putty glazing can be furnished if desired.

Ventilators may be projected opposite to direction shown when so specified on order.



TYPE 3523602

View showing ventilators open, indicating "awning" rain protection feature of upper, down-and-out ventilator and draftless air control of the hopper vent (up-and-in) at the sill.

SPECIFICATIONS

Specify—Commercial Projected Windows Manufactured by Campbell Metal Window Corp., Baltimore, Md.

USE SPECIFICATIONS OF PIVOTED
WINDOWS, OPPOSITE, SUBSTITUTING
THE FOLLOWING THREE PARAGRAPHS
FOR THOSE GIVEN:

Ventilators

Shall be hung on sliding pivots having compression springs to equalize the friction between the bronze shoes and the frame guides. They shall be balanced on two, heavy, steel arms which shall be securely riveted to frame and ventilator members with bronze pins. Removable stops shall be provided to limit opening of down-and-out ventilators to approximately 40 degrees, up-and-in ventilators to approximately 35 degrees.

Hardware

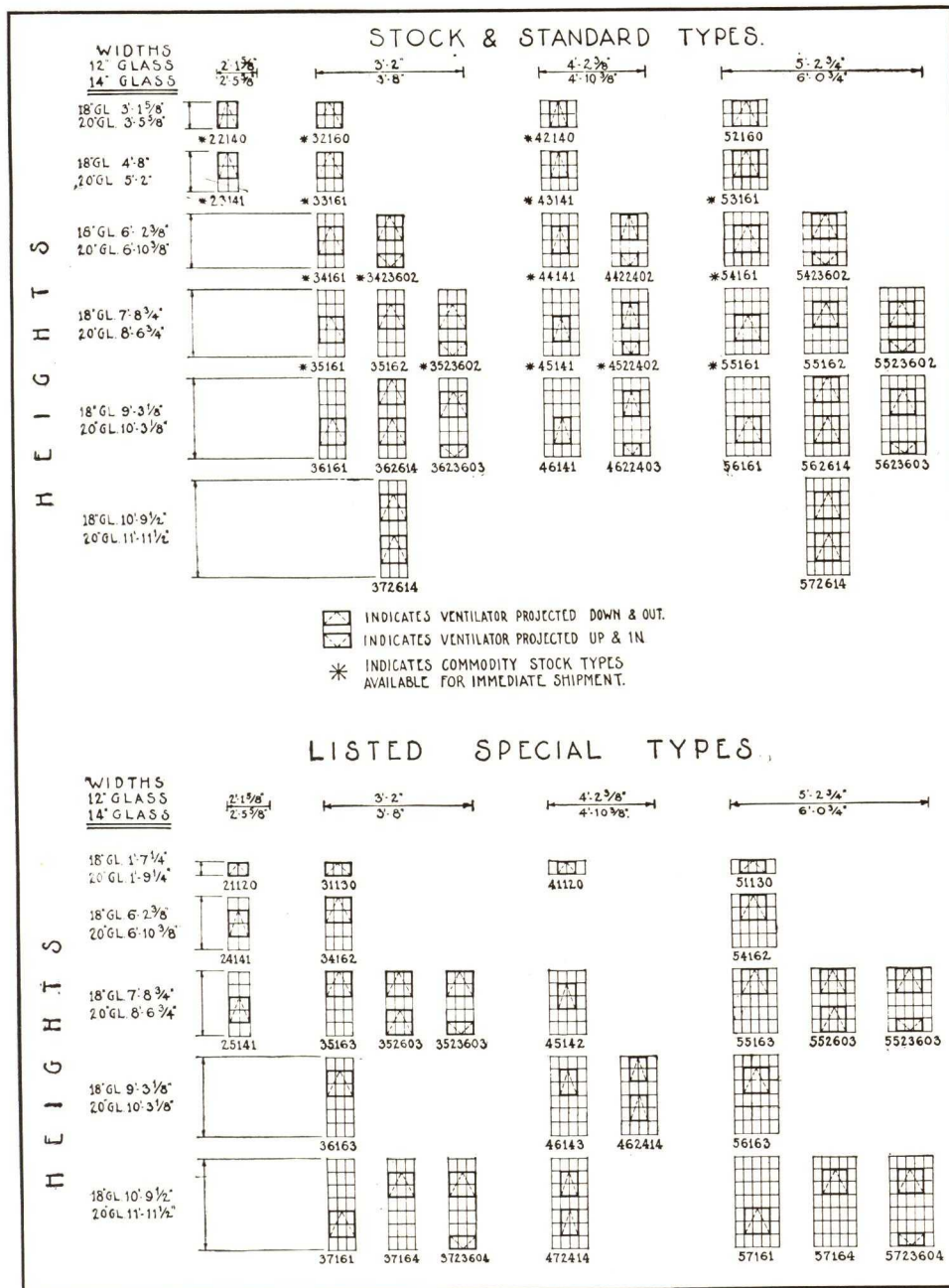
Down-and-out ventilators shall be equipped with a malleable iron cam handle and pole ring. Up-and-in ventilators, 1 light high and located at sill of window, shall be equipped with a malleable iron hand operated fastener. All other up-and-in ventilators shall be equipped with a malleable iron ring catch and keeper. All hardware to be Parkerized and given an oil finish.

Screens

Down-and-Out ventilators shall be provided with an extension box and screen, hinged at top of box to swing in at bottom. Screens for up-and-in ventilators shall be attached to outside face of windows and shall be removable from inside of building. Screen cloth shall be .0113" diameter antique finish bronze wire, woven to 16 mesh and held in frames by removable splines.

Underwriters Labels

All types and sizes shown may be furnished with labels certifying approval of the Underwriters Laboratories. Labelled windows are equipped with glazing angles for glazing from interior.



Glass Sizes—Standard glass combinations are 12" x 18" and 14" x 20" only. 12" x 18" and 14" x 20" glass size refer to fixed lights only. Deduct 1" around perimeter of ventilators to obtain size of lights in movable portion.

CAMPBELL PIVOTED AND COMMERCIAL PROJECTED WINDOWS

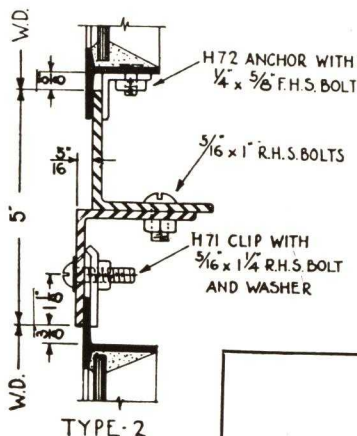
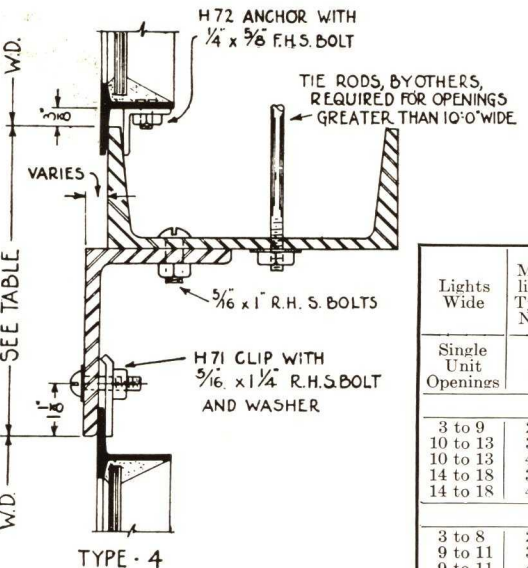
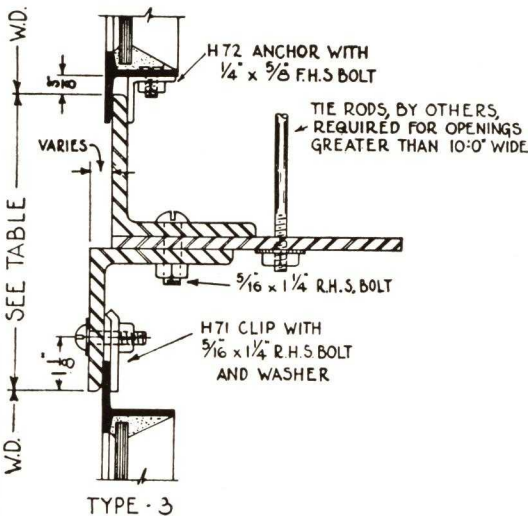
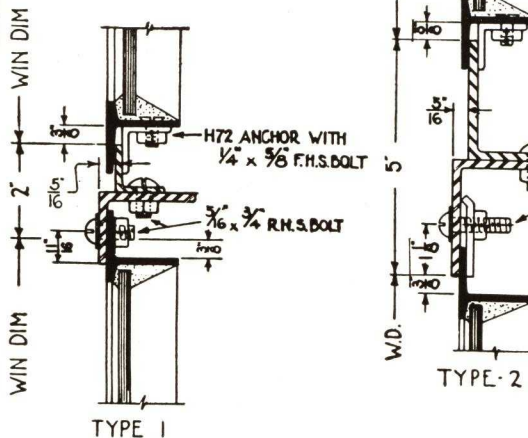
COMBINATION OPENINGS

(SCALE OF DETAILS 3"=1'0")

HORIZONTAL MULLIONS

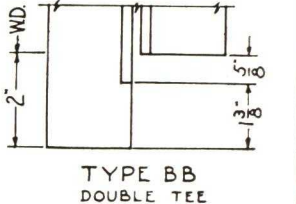
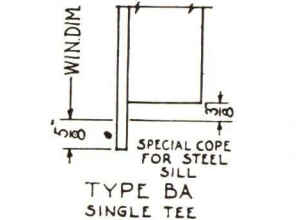
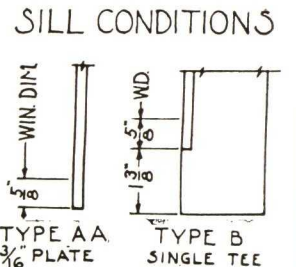
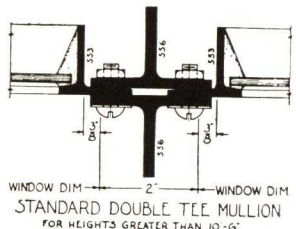
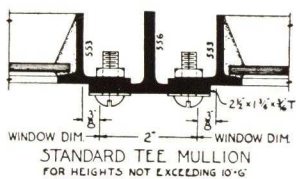
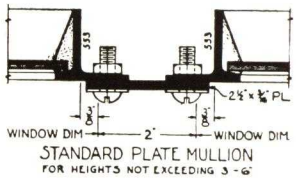
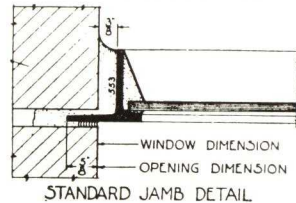
SYMMETRICAL COMBINATIONS

VERTICAL MULLIONS



OPENING DIMENSIONS	
18" HEIGHTS	
Lights	Dim.
2	3'-1 5/8"
3	4'-8"
4	6'-2 3/8"
5	7'-8 3/4"
6	9'-3 1/8"
7	10'-9 1/2"
20" HEIGHTS	
Lights	Dim.
2	3'-5 5/8"
3	5'-2"
4	6'-10 3/8"
5	8'-6 3/4"
6	10'-3 3/8"
7	11'-11 1/2"

OPENING DIMENSIONS		NO. UNITS IN OPENING		NO. LIGHTS IN OPENING		ARRANGEMENT OF UNITS IN OPENING Figures Indicate the Number of Lights in Width of Each Unit
12" Widths	14" Widths					
2'-1 5/8"	2'-5 5/8"	1	2	2		
3'-2"	3'-8"	1	3	3		
4'-2 3/8"	4'-10 3/8"	1	4	4		
4'-5 1/4"	5'-1 1/4"	1	2	2, 2		
5'-2 3/4"	6'-0 3/4"	1	5	5		
6'-3 1/8"	7'-3 1/8"	1	6	6		
6'-6"	7'-6"	1	6	3, 3		
8'-6 3/4"	9'-10 3/4"	1	8	4, 4		
9'-10"	11'-4"	1	9	3, 3, 3		
10'-7 1/2"	12'-3 1/2"	1	10	5, 5		
10'-10 3/8"	12'-6 3/8"	1	10	3, 4, 3		
11'-10 3/8"	13'-8 3/8"	1	11	3, 5, 3		
11'-10 3/8"	13'-8 3/8"	1	11	4, 3, 4		
12'-8 1/2"	14'-8 1/2"	1	12	6, 6		
12'-11 1/8"	14'-11 1/8"	1	12	4, 4, 4		
13'-2"	15'-2"	1	12	3, 3, 3, 3		
13'-11 1/8"	16'-1 1/8"	1	13	4, 5, 4		
13'-11 1/8"	16'-1 1/8"	1	13	5, 3, 5		
14'-11 7/8"	17'-3 7/8"	1	14	4, 6, 4		
14'-11 7/8"	17'-3 7/8"	1	14	5, 4, 5		
15'-2 3/8"	17'-6 3/8"	1	14	3, 4, 4, 3		
16'-0 1/4"	18'-6 1/4"	1	15	5, 5, 5		
16'-0 1/4"	18'-6 1/4"	1	15	6, 3, 6		
16'-6"	19'-0"	1	15	3, 3, 3, 3, 3		
17'-0 5/8"	19'-8 5/8"	1	16	5, 6, 5		
17'-0 5/8"	19'-8 5/8"	1	16	6, 4, 6		
17'-3 1/8"	19'-11 1/8"	1	16	4, 4, 4, 4		
17'-3 1/8"	19'-11 1/8"	1	16	3, 5, 5, 3		
17'-6 3/8"	20'-2 3/8"	1	16	3, 4, 4, 3, 3		
18'-1"	20'-11"	1	17	6, 5, 6		
18'-6 3/8"	21'-4 3/8"	1	17	3, 4, 3, 4, 3		
19'-1 1/8"	22'-1 1/8"	1	18	6, 6, 6		
19'-4 1/4"	22'-4 1/4"	1	18	3, 6, 6, 3		
19'-4 1/4"	22'-4 1/4"	1	18	4, 5, 5, 4		
19'-7 1/4"	22'-7 1/4"	1	18	3, 4, 4, 4, 3		
20'-7 1/4"	23'-9 1/4"	1	19	3, 5, 3, 5, 3		
21'-5"	24'-9"	1	20	5, 5, 5, 5		
21'-5"	24'-9"	1	20	4, 6, 6, 4		
21'-7 1/8"	24'-11 7/8"	1	20	4, 4, 4, 4, 4		
21'-10 3/4"	25'-2 3/4"	1	20	3, 3, 4, 4, 3, 3		

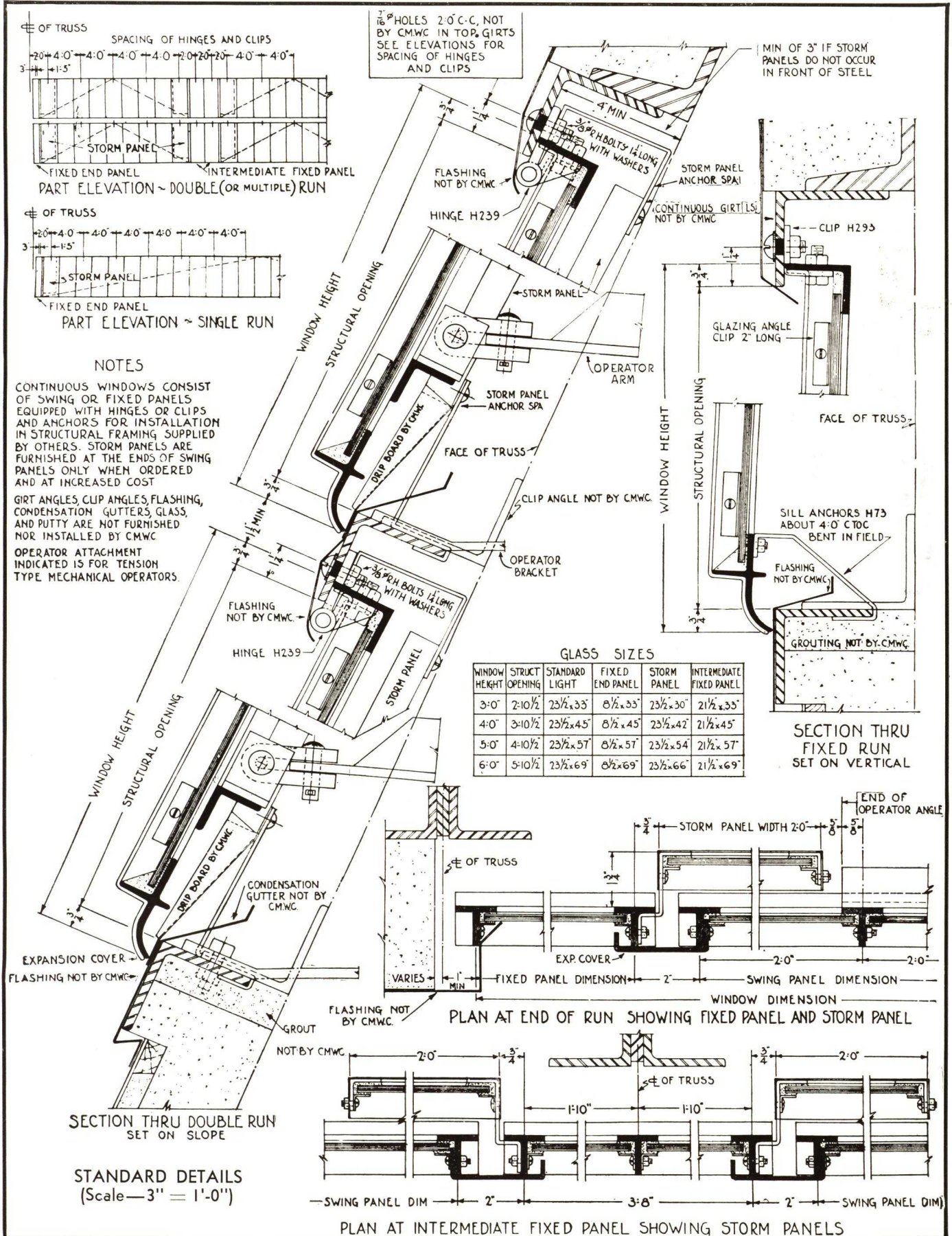


HORIZONTAL MULLION TYPES

Lights Wide	Mullion Type No.	ANGLES		Plate or Channel	Estimated Weight of Mull per Ft	Between Window Dimensions
		Req'd	Size			
Single Unit Openings	1	1	1"x1"x $\frac{1}{8}$ "	None	3.0 lbs.	2"
		1	2"x1 $\frac{1}{2}$ "x $\frac{3}{16}$ "			
12" x 18" SIZE GLASS						
3 to 9	2	2	2 $\frac{1}{2}$ "x2 $\frac{1}{2}$ "x $\frac{3}{16}$ "	None	6.2 lbs.	5"
10 to 13	3	2	2 $\frac{1}{2}$ "x2 $\frac{1}{2}$ "x $\frac{3}{16}$ "	6"x $\frac{1}{4}$ " Plt	11.3 lbs.	5 $\frac{1}{4}$ "
10 to 13	4	1	3 $\frac{1}{2}$ "x2 $\frac{1}{2}$ "x $\frac{3}{4}$ "	4" Channel	10.0 lbs.	5 $\frac{1}{4}$ "
14 to 18	3	2	3"x3"x $\frac{3}{16}$ "	6"x $\frac{1}{4}$ " Plt	17.2 lbs.	6 $\frac{1}{8}$ "
14 to 18	4	1	4"x3"x $\frac{3}{16}$ "	6" Channel	15.4 lbs.	6 $\frac{1}{8}$ "
14" x 20" SIZE GLASS						
3 to 8	2	2	2 $\frac{1}{2}$ "x2 $\frac{1}{2}$ "x $\frac{3}{16}$ "	None	6.2 lbs.	5"
9 to 11	3	2	2 $\frac{1}{2}$ "x2 $\frac{1}{2}$ "x $\frac{3}{16}$ "	6"x $\frac{1}{4}$ " Plt	11.3 lbs.	5 $\frac{1}{4}$ "
9 to 11	4	1	3 $\frac{1}{2}$ "x2 $\frac{1}{2}$ "x $\frac{3}{4}$ "	4" Channel	10.0 lbs.	5 $\frac{1}{4}$ "
12 to 16	3	2	3"x3"x $\frac{3}{16}$ "	6"x $\frac{1}{4}$ " Plt	17.2 lbs.	6 $\frac{1}{8}$ "
12 to 16	4	1	4"x3"x $\frac{3}{16}$ "	6" Channel	15.4 lbs.	6 $\frac{1}{8}$ "

CAMPBELL CONTINUOUS WINDOWS

CAMPBELL Mechanical Operators Hand or Motor Powered Are Available for Continuous and Other Types of Windows



CAMPBELL ARCHITECTURAL PROJECTED WINDOWS

TYPES AND SIZES - - - FIXED LIGHT GLASS SIZES



Exterior view of group of three Architectural Projected windows installed

The Projected method of ventilator operation which offers rain protection in Down-and-Out ventilators and draftless air control of sill vents opening Up-and-In, has been developed to a high point in the inexpensive Campbell Architectural Projected Window. It is particularly adaptable to use in schools, office buildings or offices of factories using Commercial Projected or Pivoted Windows in the rest of the building. In addition to their excellent method of ventilation Campbell Architectural Projected Windows offer an ease of screening because the ventilators operate completely inside or outside the frame.

The sections used in this window are $1\frac{1}{2}$ " deep and are especially rolled for Projected Window construction. Bronze hardware is standard on all windows in keeping with their high quality.

Standard screens are available for all types, either in hinged or sliding panel screens for the projected down-and-out ventilators and close up flat screens for projected up-and-in ventilators.

STANDARD HEIGHTS SHOWING GLASS SIZES FOR FIXED LIGHTS.

GL-SIZES	
Ht.	
1'-0"	10"
1'-6"	16"
2'-0"	22"
2'-6"	28"
3'-0"	34"
3'-6"	40"

GLASS-SIZES	
Ht.	
3'-0"	16 $\frac{1}{8}$ "
3'-6"	19 $\frac{1}{8}$ "
4'-0"	22 $\frac{1}{8}$ "
4'-6"	25 $\frac{1}{8}$ "
5'-0"	28 $\frac{1}{8}$ "
5'-6"	31 $\frac{1}{8}$ "
6'-0"	34 $\frac{1}{8}$ "

GLASS-SIZES	
Ht.	
3'-0"	16 $\frac{1}{8}$ "
3'-6"	19 $\frac{1}{8}$ "
4'-0"	22 $\frac{1}{8}$ "
4'-6"	25 $\frac{1}{8}$ "
5'-0"	28 $\frac{1}{8}$ "
5'-6"	31 $\frac{1}{8}$ "
6'-0"	34 $\frac{1}{8}$ "

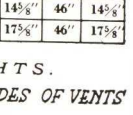
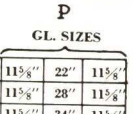
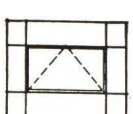
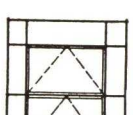
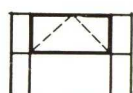
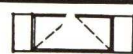
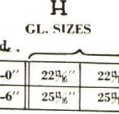
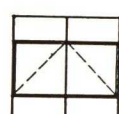
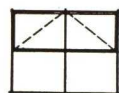
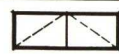
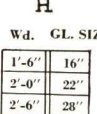
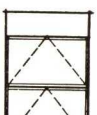
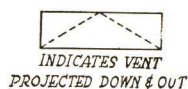
GLASS-SIZES	
Ht.	
4'-6"	13 $\frac{1}{8}$ "
5'-0"	16 $\frac{1}{8}$ "
5'-6"	18 $\frac{1}{8}$ "
6'-0"	21 $\frac{1}{8}$ "
6'-6"	23 $\frac{1}{8}$ "
7'-0"	26 $\frac{1}{8}$ "

GLASS-SIZES	
Ht.	
4'-6"	13 $\frac{1}{8}$ "
5'-0"	16 $\frac{1}{8}$ "
5'-6"	18 $\frac{1}{8}$ "
6'-0"	21 $\frac{1}{8}$ "
6'-6"	23 $\frac{1}{8}$ "
7'-0"	26 $\frac{1}{8}$ "

GLASS-SIZES	
Ht.	
6'-6"	13 $\frac{1}{8}$ "
7'-0"	16 $\frac{1}{8}$ "
7'-6"	18 $\frac{1}{8}$ "
8'-0"	21 $\frac{1}{8}$ "
8'-6"	23 $\frac{1}{8}$ "
9'-0"	26 $\frac{1}{8}$ "

GLASS-SIZES	
Ht.	
6'-6"	13 $\frac{1}{8}$ "
7'-0"	16 $\frac{1}{8}$ "
7'-6"	18 $\frac{1}{8}$ "
8'-0"	21 $\frac{1}{8}$ "
8'-6"	23 $\frac{1}{8}$ "
9'-0"	26 $\frac{1}{8}$ "

GLASS-SIZES	
Ht.	
8'-0"	13 $\frac{1}{8}$ "
8'-6"	16 $\frac{1}{8}$ "
9'-0"	18 $\frac{1}{8}$ "
9'-6"	21 $\frac{1}{8}$ "
10'-0"	23 $\frac{1}{8}$ "
10'-6"	26 $\frac{1}{8}$ "



Wd. GL-SIZES

1'-6"	16"
2'-0"	22"
2'-6"	28"
3'-0"	34"
3'-6"	40"

GL-SIZES

4'-0"	22 $\frac{1}{8}$ "	22 $\frac{1}{8}$ "
4'-6"	25 $\frac{1}{8}$ "	25 $\frac{1}{8}$ "

Wd. GL-SIZES

4'-0"	11 $\frac{3}{8}$ "	22"	11 $\frac{3}{8}$ "
4'-6"	11 $\frac{3}{8}$ "	28"	11 $\frac{3}{8}$ "
5'-0"	11 $\frac{3}{8}$ "	34"	11 $\frac{3}{8}$ "
5'-6"	11 $\frac{3}{8}$ "	40"	11 $\frac{3}{8}$ "
6'-0"	11 $\frac{3}{8}$ "	46"	11 $\frac{3}{8}$ "
6'-6"	14 $\frac{3}{8}$ "	46"	14 $\frac{3}{8}$ "
7'-0"	17 $\frac{3}{8}$ "	46"	17 $\frac{3}{8}$ "

STANDARD WIDTHS

SHOWING GLASS SIZES FOR FIXED LIGHTS.
TO OBTAIN VENTILATOR GLASS SIZES, DEDUCT 1" AT TOP, BOTTOM AND SIDES OF VENTS FROM DIMENSIONS SHOWN FOR FIXED LIGHTS.

CAMPBELL ARCHITECTURAL PROJECTED WINDOWS

TYPICAL DETAILS—(Scale 6"=1'-0")

The details shown below are for the inside angle glazed type of window which is standard.

The window may be built for outside putty glazing when required. Sight lines may be added where specified at slight additional cost.

In addition to the standard mullion shown, an alternate mullion of the double plate type is available for use in openings not exceeding 10' 6" in height.

Standard corner mullions can also be supplied where the windows are used with the cantilever type of floor construction.

SPECIFICATIONS

Specify

Architectural Projected Windows manufactured by the Campbell Metal Window Corporation, Baltimore, Md.

Material

Members shall be solid section hot rolled new billet steel shapes not less than $\frac{1}{8}$ " in scheduled thickness. They shall be specially designed with wide baffle legs rolled integrally with the ventilator members. Applied weathering shall be of formed low carbon steel not less than #12 U. S. Standard Gauge or hot rolled angles.

Frame Members shall be unequal leg channel members not less than $1\frac{1}{2}$ " deep and providing not less than $\frac{3}{4}$ " bearing against the adjacent building construction.

Ventilator Members shall be specially designed shapes incorporating integral baffle legs and not less than $1\frac{1}{8}$ " deep.

Glass Ledges shall be not less than $\frac{3}{8}$ " high nor less than $\frac{5}{32}$ " thick.

Muntins shall be especially designed Tee members not less than $1\frac{1}{2}$ " deep and not less than $\frac{7}{8}$ " across the table.

Construction

Corners of Frames and Vents shall be solidly welded with the exposed surfaces ground smooth. The joints of abutting members shall be accurately coped, mortised, tenoned and air hammer riveted. Continuous two point flat contact Weathering not less than $\frac{5}{16}$ " wide shall be provided at baffle legs of ventilators. Windows are to be designed for Glazing from the interior using $\frac{5}{8}$ " x $\frac{3}{8}$ " x 16 gauge steel continuous glazing angles applied with galvanized steel bolts and nuts. (Alternate glazing from the exterior, if specified, shall be with copper-plated steel wire glazing clips not less than four per light.) Ventilators shall be hung on sliding pivots having compression springs to equalize the friction between the bronze shoes and frame guides. They shall be balanced on two heavy steel arms which shall be securely riveted to the frames and ventilator members with bronze pins.

Hardware

Down-and-Out ventilators shall be equipped with a solid bronze cam handle, and a solid bronze pole ring. Up-and-In ventilators located within reach from the floor shall be equipped with solid bronze, hand operated spring catch and keeper. All other Up-and-In ventilators shall be equipped with solid bronze, pole operated ring catch and keeper.

Screens

Windows shall be prepared to receive insect screens.

Screens for Projected Down-and-Out ventilators shall be (a) of the close-up flat type. Each screen fitted with a built-in vertically sliding screen panel located in the center to provide access to the ventilator locking device, or (b) shall be of the top hinged type with extension box of sufficient depth to clear the ventilator locking device.

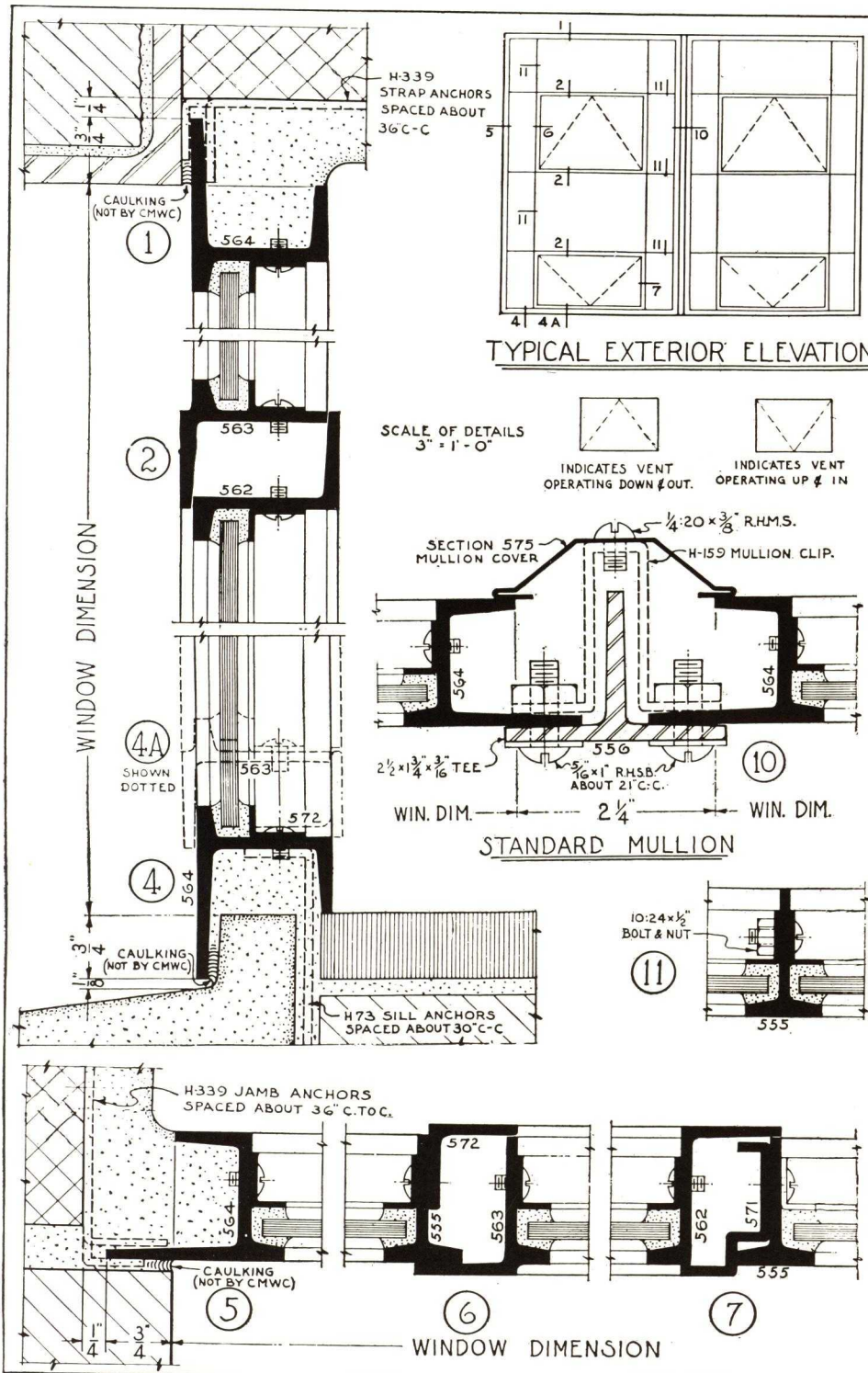
Screens for Projected Up-and-In ventilators shall be attached to the outside face of the windows and shall be removable from the inside of the building.

Shop Finish

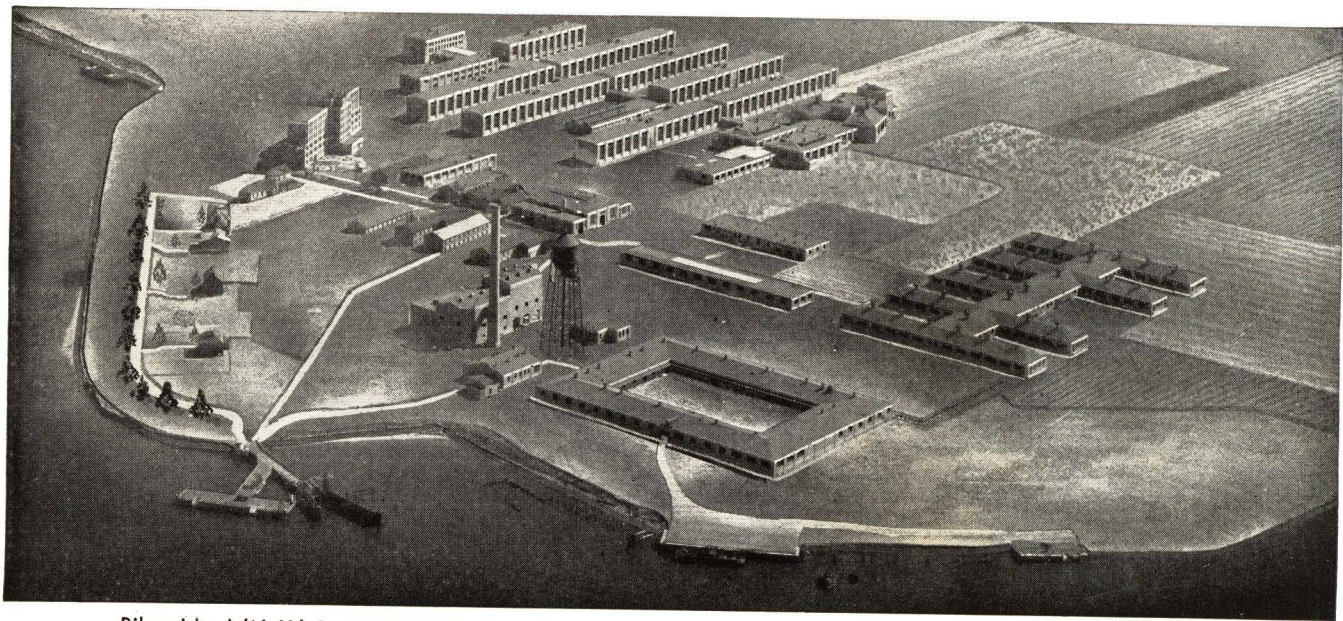
(Rustproofing specification should be inserted at this point. See page 23.)

Windows shall receive one coat of paint of special formula for rust inhibitive priming, baked on for one half hour at 300 degrees F. or an equivalent bake.

The cleaning, processing, painting and baking procedure shall be carried out in the plant of the window manufacturer with a minimum time interval between operations.



CAMPBELL DETENTION WINDOWS



Rikers Island (N. Y.) Penitentiary. Sloan and Robertson, Architects. The Builders, P. J. Carlin Construction Company. 3055 Campbell Detention Windows

SUPERBAR GUARD TYPE

INTERMEDIATE GUARD TYPE

To meet the most exacting demands for restraint, these windows are built of extremely heavy sections 1¾" deep. Muntins and frame members are designed with modified bulb shapes which make the weight of each 2.04 lbs. per lineal foot. They effectively resist hand sawing. Tool proof bars may be added where specified.

All joints and corners are welded. Ventilators are securely welded to the interior of the main frame and may be either projected up-and-in or bottom hinged. All exposed screws are interrupted slot detention type. Bolts for hardware attachment are peined over.

Intermediate Guard Type Windows are similar to the Superbar Type except that the sections are 1½" deep and do not have the bulb-type muntins and frame members. Frame sections weigh 1.34 lbs. per lineal foot and muntins 1.16 lbs. per lineal foot.

The same all-welded construction and ventilator arrangement provides a sturdy assembly which is adequate for most detention requirements.

Glazing is from the exterior and ventilators are attached to the interior. Glass size in the main frame calls for 6" x 9" lights (as in the case of Superbar Type) and glass is omitted from the portion of the frame covered by the ventilator.

PROTECTION TYPE

SECURITY TYPE

For maximum protection, specify main frame members 1½" deep, weighing 1.26 lbs. per lineal foot.

Protection Type Windows are made of the extra heavy Campbell Industrial Window sections which mean greater protection against unauthorized entry, yet without a corresponding increase in price.

Glass lights are approximately 6" x 9" as in the case of the heavier types, but glazing is from the interior. Ventilators are welded to the unglazed portions of the frames and may be attached either to the exterior, where they would be projected down-and-out or to the interior, projected up-and-in. The latter is the usual practice and will be furnished unless otherwise specified.

Removable stops are furnished which limit the opening of all vents.

Campbell Protection Windows conform to the Treasury Department Regulations for Windows in U. S. Government Bonded Warehouses.

These windows have been used in many outstanding penal institutions among which are Rikers Island, (N. Y.) Penitentiary (pictured above) Sing Sing (N. Y.) Prison, Fort Worth (Texas) Narcotic Farm, Attica (N. Y.) State Prison, Harrisburg (Pa.) Insane Hospital, Randolph County (Ala.) Jail, Auburn (N. Y.) State Prison, Illinois State Penitentiary (Menard, Ill.), Dixon (Ill.) State Hospital, El Reno (Okla.) Reformatory, Sandstone (Minn.) Federal Jail, Tallahassee (Fla.) Federal Jail, Hillsville (Va.) Jail and many others.

For maximum security, specify main frame members 1½" deep, weighing 1.26 lbs. per lineal foot.

Security Type Windows offer a sturdy window for ordinary use at an extremely low price. The extra heavy Campbell Sections are used and the glass size of

the lights in the main frame is 5½" wide by 18" high. Glazing is from the interior.

Ventilators may be applied in a manner similar to those for Protection Windows.

Many buildings require a few windows for preventing unauthorized entry in alleys and areaways. Security Windows not only answer these requirements at a minimum cost, but eight standard sizes are carried in stock for immediate shipment, for the following masonry opening sizes:

STOCK SIZES								
Widths	2'-1½"	3'-2"	3'-2"	4'-2¾"	5'-2¾"	3'-2"	4'-2¾"	5'-2¾"
Heights	3'-1½"	3'-1½"	4'-8"	4'-8"	4'-8"	6'-2¾"	6'-2¾"	6'-2¾"

RUSTPROOFING CAMPBELL METAL WINDOWS

FLEXIBILITY

Protection of steel window surfaces is vital to the long life and usefulness of the windows themselves. But conditions vary in different buildings and the architect is the logical person to select the type and extent of surface protection.

Campbell's finishing equipment is designed for flexibility. When the architect has determined his finishing requirements, Campbell can meet them at an extremely low cost.

Two complete Bonderizing Plants—one in Baltimore and one in Bremen, facilities for Pickling, Cleaning, Galvanizing, Parkerizing and Bonderizing on Electro-Galvanizing are all available, together with dip and spray painting and baking equipment.

FOR COMPLETE, UNBIASED AND AUTHORITATIVE DATA ON THE VALUE OF THESE VARIOUS PROCESSES, SEND FOR "THE RUSTPROOFING OF STEEL WINDOWS," SUPPLIED ON REQUEST TO ARCHITECTS.

PICKLING

Where complete removal of oil, dirt and loose and tight scale is essential specify pickling as follows:

After fabrication and before painting, all windows shall be cleaned to remove grease, oil and dirt and shall be pickled in a dilute solution of sulphuric acid to remove mill scale and other foreign matter, after which they shall be thoroughly rinsed and dried.

GALVANIZING

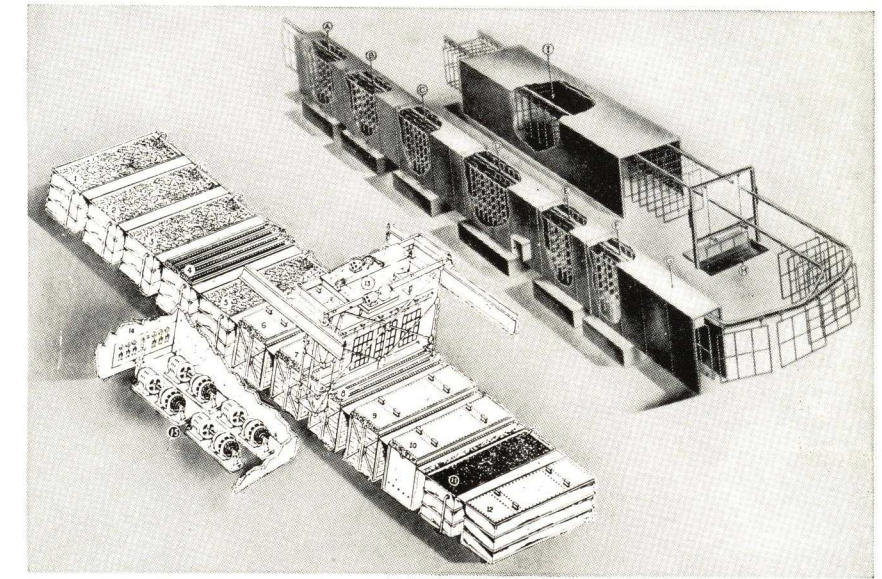
The application of a zinc coating to the windows by means of an electrolytic deposit provides the protection of the zinc coating and a good base for the final paint finish. This process should be specified as follows:

Windows shall be cleaned to remove grease, oil and dirt and shall be pickled in a dilute solution of sulphuric acid, after fabrication, and before painting, to insure removal of mill scale and other foreign matter, following which there shall be successive dips in cold water rinse, zinc cyanide strike, cold water rinse, and zinc sulphate plating solution of sufficient duration to provide a continuous zinc coating not less than one-third ounce per square foot of surface. Windows shall then be given a hot water rinse and be oven dried.

PARKERIZING

Where a heavy coating of phosphates is desired for protection of the surface from which all mill scale has been removed, Parkerizing should be specified, as follows:

After fabrication and before painting, the windows shall be cleaned to remove grease, oil and dirt and shall be pickled in a hot dilute solution of sulphuric acid to insure removal of mill scale and other foreign matter, followed by a thorough rinse in clean water. They shall then be Parkerized,



Upper Right Diagrammatic view of one of Campbell's TWO complete Bonderizing installations.

Lower Left Drawing showing arrangement of equipment for Electro Galvanizing, Parkerizing, Pickling and Cleaning.

the treatment to continue until chemical action ceases. After Parkerizing they shall be rinsed in clean hot water and thoroughly dried.

BONDERIZING

Bonderizing provides a light coating of phosphates on clean steel. It offers not only good protection against rust, but an excellent base for paint. It is particularly effective on the Campbell 101 Window which is made of scale-free, cold rolled steel throughout and Bonderizing, therefore, is part of the standard finish of this window.

The specification for Bonderizing follows:

After fabrication and before painting, the windows shall be thoroughly cleaned in hot alkali solution to remove all oil, grease and foreign matter, insuring a clean grease-free surface for chemical treatment.

They shall then be rinsed in hot water and processed by Bonderizing, followed by a rinse in water and a final rinse in a dilute solution of chromic acid. The windows shall then be immediately dried and brought to a uniform temperature.

BONDERIZING ON ELECTRO-GALVANIZING

This combination process is particularly effective on hot rolled windows. The Electro-Galvanizing provides a zinc protective coating on thoroughly clean, scale-free metal. The Bonderizing coating applied on top of this not only supplements the already effective rust resistance of the zinc but provides an improved base for paint.

To secure this maximum protection, the following specification should be used:

After fabricating and before painting, the windows shall be cleaned to remove grease, oil and dirt and shall be pickled in a dilute solution of

sulphuric acid to insure removal of mill scale and other foreign matter, following which there shall be successive dips in cold water rinse, zinc cyanide strike, cold water rinse, and zinc sulphate plating solution of sufficient duration to provide a continuous zinc coating not less than one-third ounce per square foot of surface.

Windows shall then be given hot water rinse and be oven dried.

They shall then be processed by Bonderizing, followed by a rinse in water and a final rinse in a dilute solution of chromic acid. The windows shall then be immediately dried and brought to a uniform temperature.

SHOP PAINTING

All of the processes for which specifications have been given above, are preparatory to the final finish which should be applied as part of a continuous process. To every specification for rust-proofing, the following painting specification should be added:

Paint shall be of special formula for dipping to provide rust-inhibitive priming.

Paint shall be baked on for one-half hour at a temperature of 300 degrees F. or an equivalent bake.

IMPORTANT

One of the essential elements of the proper finishing of steel windows is CONTINUITY. A delay between processes invites corrosion. Consequently EVERY finishing specification should carry the following paragraph:

The cleaning, processing, painting and baking procedure shall be carried out in the plant of the window manufacturer with a minimum time interval between operations.

CAMPBELL MAKES THE RIGHT WINDOW FOR EVERY TYPE OF BUILDING

PRODUCTS

PAGE

CAMPBELL DOUBLE
HUNG WINDOWS 2 & 3

SPRING BALANCED
WINDOWS 4

VOIGTMANN TYPE
DOUBLE HUNG
WINDOWS 5

MODEL 101 RESIDENTIAL
DOUBLE HUNG
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RESIDENCE
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HOUSING TYPE
CASEMENTS 10 & 11

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CUSTOM CASEMENTS 14 & 15

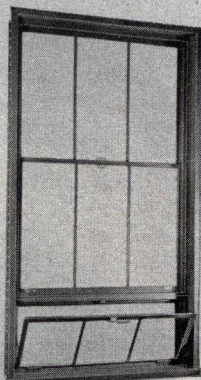
INDUSTRIAL
WINDOWS 16 to 19

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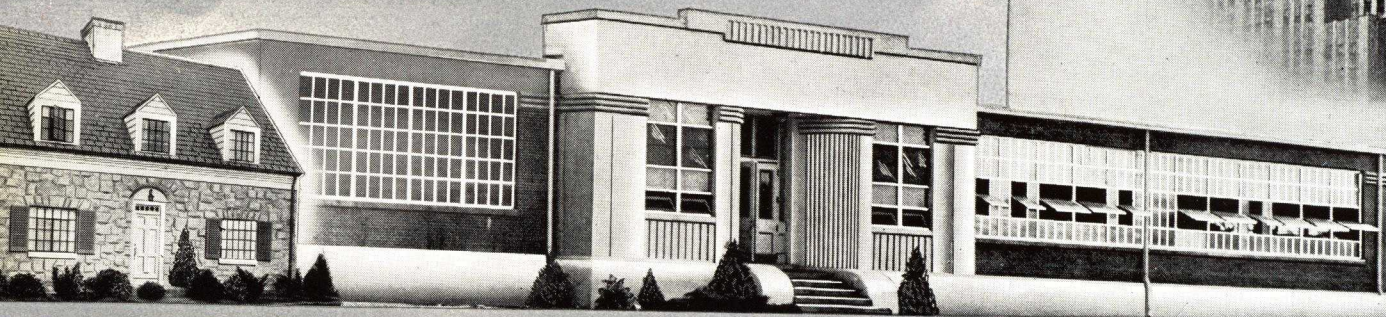
DETENTION WINDOWS 22

RUSTPROOFING 23

CAMPBELL METAL WINDOWS



DRAFTLESS VENTILA-
TION AND ECONOMY
See Pages 6 and 7



CAMPBELL METAL WINDOW CORP.

DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

Main Office: Bush & Hamburg Streets, Baltimore, Maryland

District Sales Offices: New York, Boston, Philadelphia, Chicago

Factories: Baltimore, Maryland, Bremen, Indiana

STEEL BUILDING PRODUCTS MANUFACTURED

by

Ceco

RESIDENCE CASEMENTS

CASEMENT DOORS

ARCHITECTURAL PROJECTED WINDOWS

COMMERCIAL PROJECTED WINDOWS

PIVOTED WINDOWS

BASEMENT WINDOWS

INDUSTRIAL DOORS

CONTINUOUS WINDOWS

MECHANICAL OPERATORS

WINDOW SCREENS

***Ceco* STEEL PRODUCTS CORPORATION**

Formerly CONCRETE ENGINEERING COMPANY • INC.

Manufacturing Division Headquarters • 5701 West 26th St., Chicago

General Offices • OMAHA

Ceco Steel Windows & Steel Doors for Architectural Use

This catalog contains a wide and varied selection of Ceco Steel Windows, Doors, Screens, and other products for your inspection.

These products are made by a highly specialized division of CECO STEEL PRODUCTS CORPORATION. This organization, which has been closely allied with the building industry for nearly thirty years, possesses complete facilities: design, engineering, and manufacturing, to meet the production requirements of your largest building project.

In this catalog you will find information, drawings, and specifications to assist you in selecting and specifying.

Wide Range and Adaptability for Every Type of Building—

You will find that the products included here are in no sense restricted or unduly specialized. Every type of building, from the small residence to the largest commercial or institutional building, may be equipped with Ceco Steel Windows, Steel Doors, Screens or other Ceco Products. The whole line may be used. The line is so designed that it can be in complete harmony with the building's architectural character, irrespective of the construction material you may have selected.

We Shall Be Happy to Cooperate with You—You are invited to utilize the services offered by the design, engineering and manufacturing facilities of CECO STEEL PRODUCTS COR-

PORATION. The Ceco Organization has applied intensive study to the design and construction of steel windows and doors. This experience we shall be happy to place at your disposal in any way that will assist you in your work.

Branches in All Principal Cities (see back cover)—Ceco Branch offices are maintained in all the principal cities from coast to coast. In each branch there are competent Ceco sales engineers ready to assist you. These technicians are exclusive factory representatives, specialists in their line, and may be called upon at any time.

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Specifications . . . FOR RESIDENCE CASEMENTS

General—All windows shall be the Residence Type Casement windows as manufactured by the CECO STEEL PRODUCTS CORPORATION, of Chicago, Illinois, or approved equal, as per written approval of the architect and shall be of sizes and types as shown on architect's drawings.

Material—All sections shall be especially designed, hot-rolled, new billet steel.

All frame and ventilator members shall be special Z shaped sections and shall be of 1½ in. depth from front to back and have a combined weight of not less than 2 lbs. per lineal foot, exclusive of fins or anchors.

Ventilator members to be rolled with a baffle providing a continuous two point weathering contact, with frame members, throughout the entire perimeter of the ventilator without the aid of loose or applied linings.

Corners of frame and ventilator members shall be mitred and electrically butt welded.

All muntins shall be especially rolled T's with ⅝ in. face and a depth of ⅞ in. and shall be continuous between rails and stiles.

Head Drips shall be especially formed members.

Construction—At muntin intersections there shall be a mechanical joint rigidly interlocking the muntins flush with inside face.

A continuous drip shall be provided at transom bar and at head of all openings where the swing leaves extend the full height of opening.

Horizontal and vertical mullions to be provided where necessary to be of hot-rolled T shape members.

Side hinged ventilators to open out shall be hung on extension cleaning hinges of mild rolled steel sections. One hinge leaf securely welded to frame, the other leaf riveted to ventilator. Transom ventilator shall be hinged at top to open out and shall be equipped with close-up hinges. Sill ventilators shall be bottom hinged to open in and shall be equipped with butt hinges and friction slides.

All casements to be provided with open holes in both jambs near head for standard shade and drapery brackets. (Brackets not furnished by CECO STEEL PRODUCTS CORPORATION.)

Hardware—All hardware shall be Bronze Lacquer finish, attractively and accurately designed for the operation required. (Optional) All styles and types of handles and operating hardware may be obtained in solid bronze at a slight increase in cost. Where screens

are specified, Rotary (worm and gear) under-screen type operators shall be furnished.

Erection—Casements shall be set plumb and true, and mastic applied to provide weather-tight union between building construction, mullions and casement frames. (Window manufacturer to provide 1 lb. of mastic for each 10 ft. of casement perimeter.) Locking handle, Rotary operator and channel guide shall be shipped unattached, to be applied after erection in accordance with manufacturer's directions.

The locking handle keeper shall be attached by the manufacturer before shipment.

Provide either clip anchors, wood screws, continuous fins or redwood surrounds for anchoring casement frames to building construction as shown by architect's drawings.

Painting—All casements shall receive one coat of gray mineral paint by the manufacturer before shipment.

Note: Include in the painting specifications that all windows should be given one additional coat after erection, but before glazing. Further painting should be deferred until at least three weeks after glazing, to allow putty to set.

Note: Windows erected by the CECO STEEL PRODUCTS CORPORATION will be field painted by them if specified.

Glass and Glazing—Note: Glass and glazing should be furnished under glass and glazing specifications and not as part of window specifications.

All windows shall be glazed from the outside, all glass being set in a bed of putty and secured by glazing clips furnished by the window manufacturer. Face putty shall be applied in a neat, clean-cut, smooth manner.

Putty shall be a high grade of steel window putty.

Note: Specify types of glass, single strength glass is not recommended.

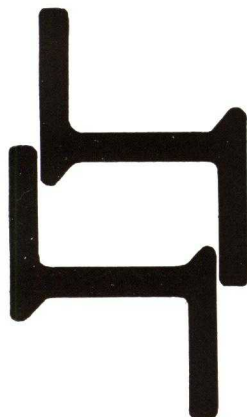
Screens—Screens for all open out ventilators shall be flat type applied on the inside of window frame. Each screen shall be easily attached or removed from the inside and shall permit complete operation (Opening, Closing, Locking) of ventilators without touching screen. Screens for open in ventilators shall be flat type applied on the outside of frame and shall be readily attached or removed.

Ceco 1 & 2 RESIDENCE CASEMENTS

PLATES SECTIONS HARDWARE



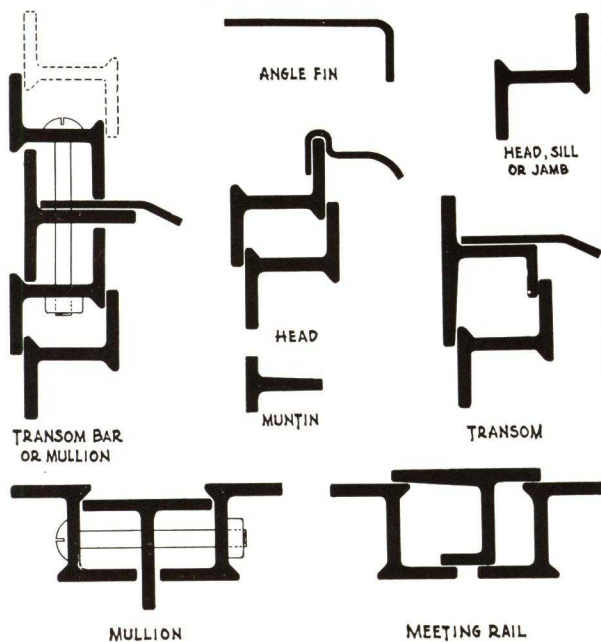
The Flexibility in the design of Ceco Steel Casements meets the modern demand of architects for distinction and close harmony in the appearance of the finished building.



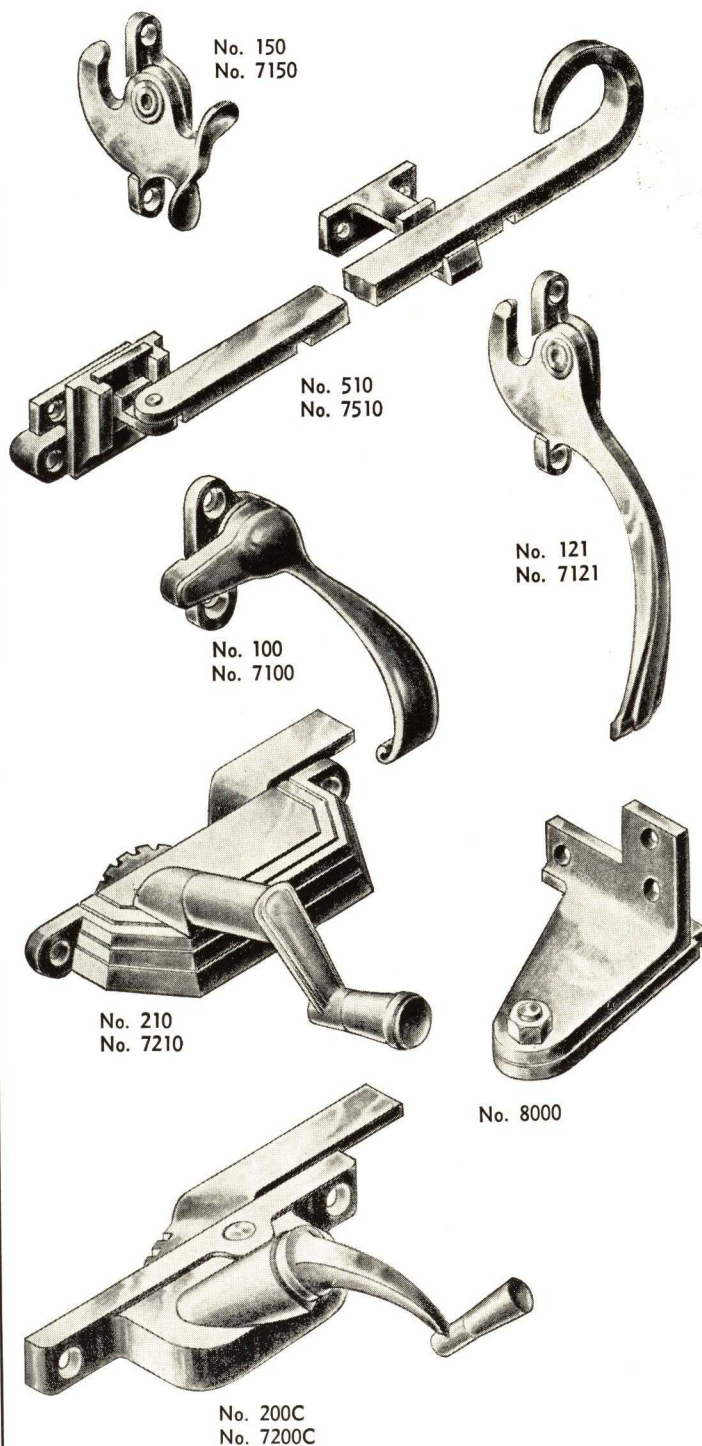
SILL OR JAMB

In Ceco Steel Casements, muntins may be omitted when it is desired to use leaded glass of any pattern or for the use of single lights of polished plate or other glass.

Sections Below 1/2 Full Size

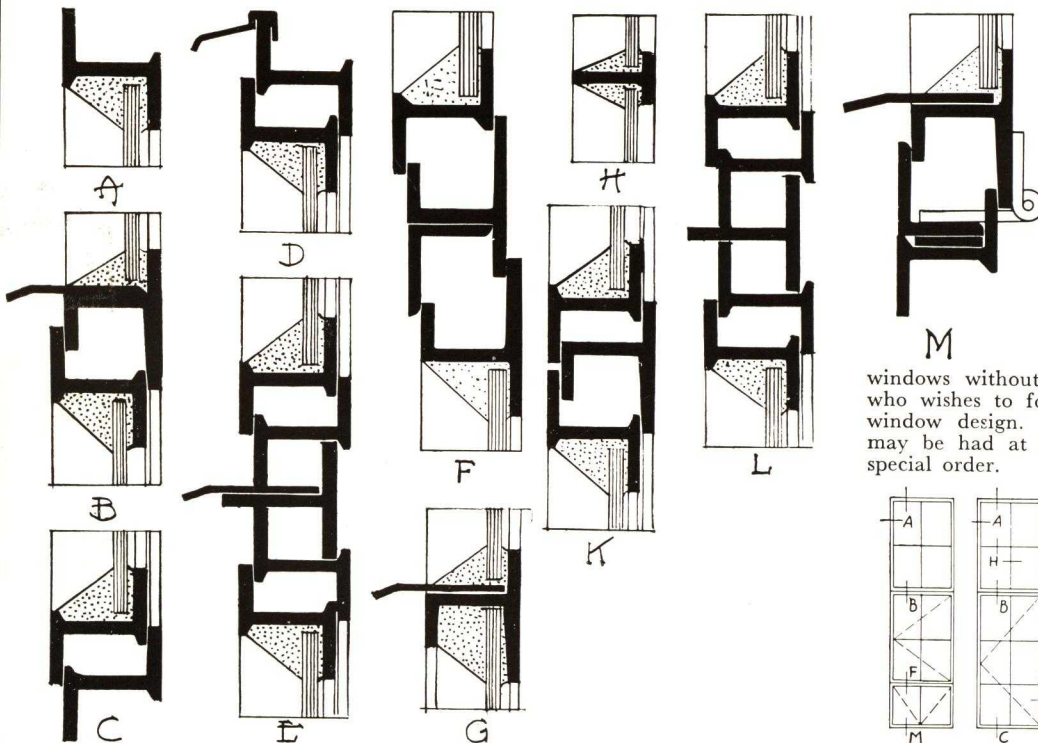
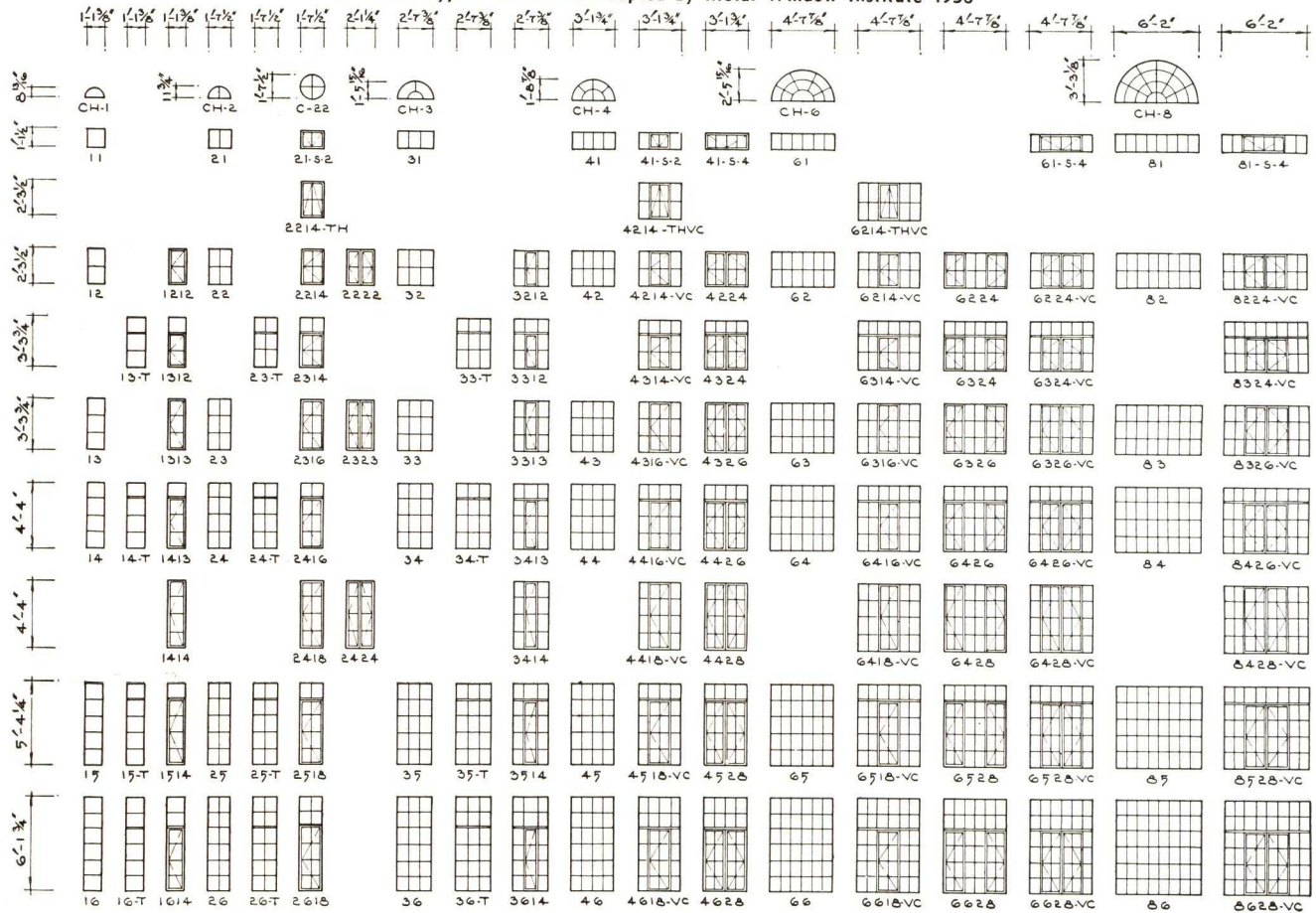


NOTES—Handles Nos. 100, 121 and 150 Worm Gear Operator Nos. 210 and 200C and Transom Stay No. 510 are furnished in solid bronze, coinage finish. Handles Nos. 7100, 7150 and 7121 and Operators Nos. 7210 and 7200C and Transom Stay No. 7510 are furnished as standard in water-rolled finish. Extension Hinge No. 8000 is made of steel.



RESIDENCE CASEMENTS
STANDARD TYPES & SECTIONAL DETAILS

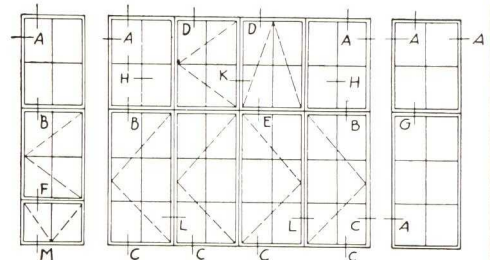
Standard Types: Sizes—As Adopted by Metal Window Institute 1938

**Combination Details—**

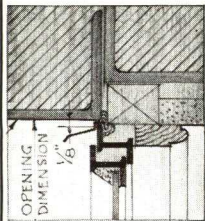
The typical elevations and details shown above are submitted to show various combinations made possible by using Ceco sections. All types are available with or without muntins.

Windows without Muntins

Muntins may be omitted in windows up to certain size. Ceco engineers have met the increasing demand for windows without muntins by the designer who wishes to follow the modern trend in window design. Special types of windows may be had at a slightly extra cost upon special order.

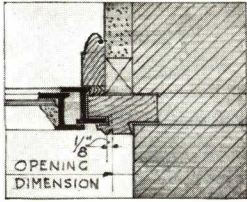


Ceco 4 **RESIDENCE CASEMENTS**
PLATE **INSTALLATION DETAILS**

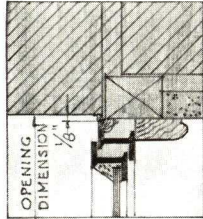


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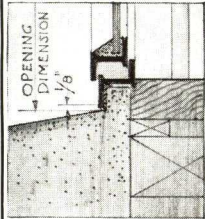
**SOLID
BRICK
DETAILS**



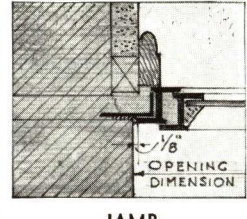
JAMB
Wood Surround



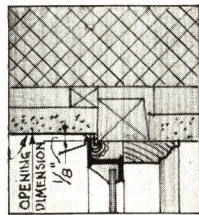
JAMB



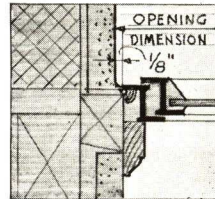
SILL



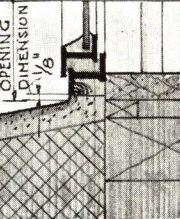
JAMB
Continuous Angle



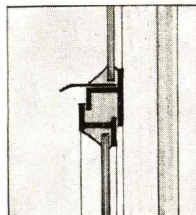
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JAMB

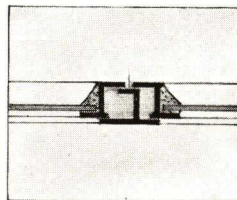


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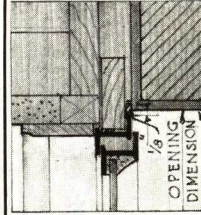


TRANSOM

**STUCCO
DETAILS**

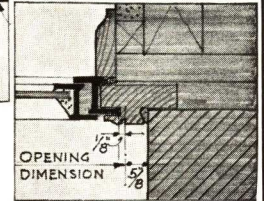


MEETING RAIL

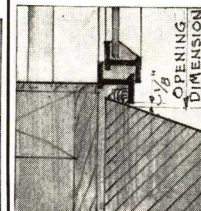


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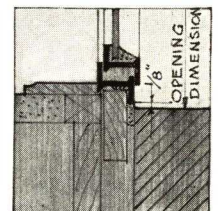
**BRICK
VENEER
DETAILS**



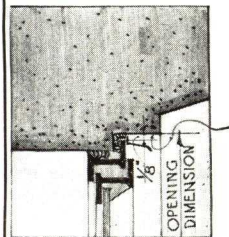
JAMB



SILL

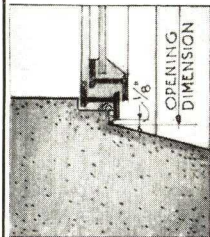


JAMB

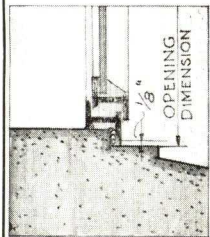


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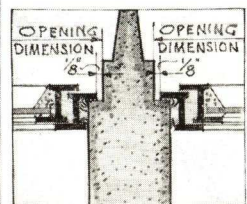
**STONE
DETAILS**



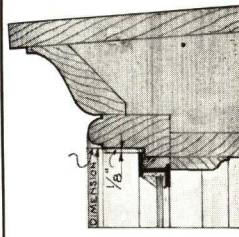
JAMB



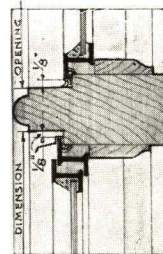
SILL



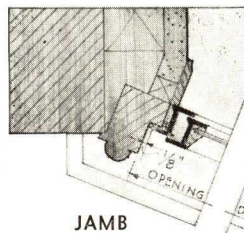
MULLION



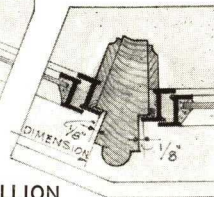
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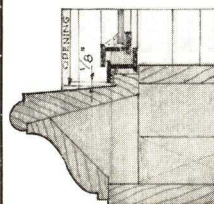
TRANSOM



JAMB

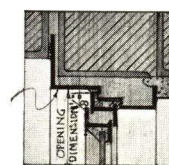


MULLION



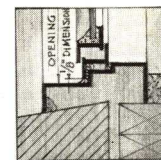
SILL

**WOOD
DETAILS**

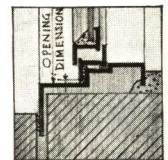


HEAD

**SUBFRAME
DETAILS**



SILL



JAMB

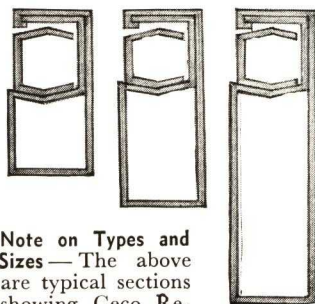


MULLION & JAMB

Ceco 5
 PLATE

METAL FRAME SCREENS CASEMENT DOORS

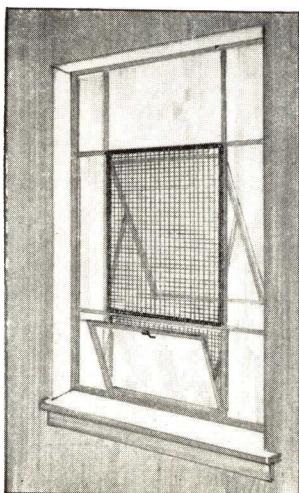
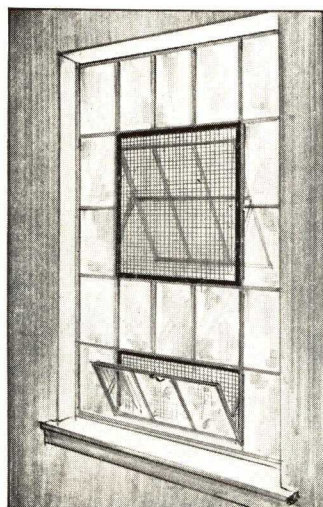
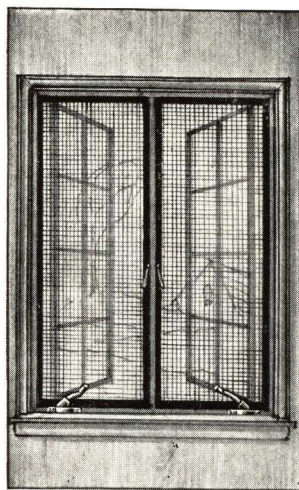
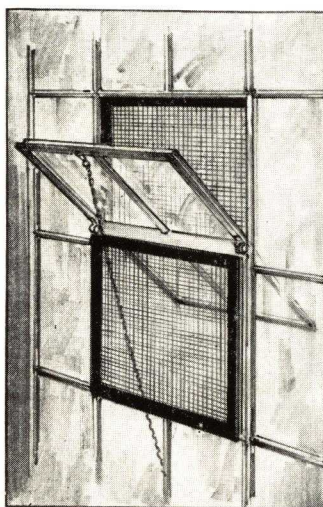
GENERAL DESCRIPTION



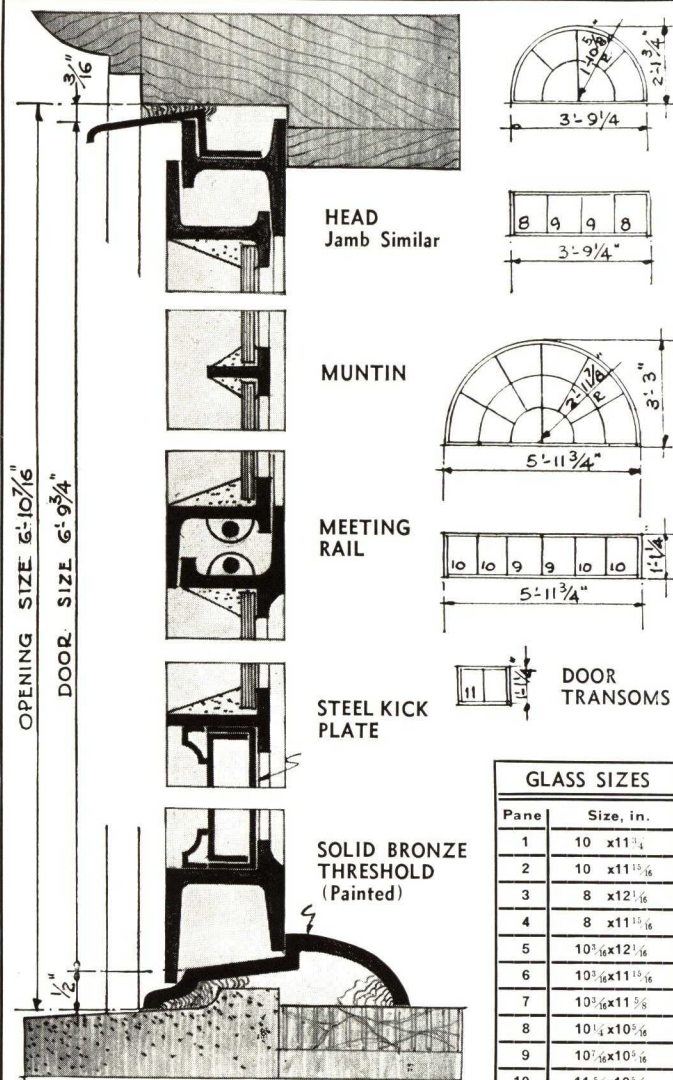
Note on Types and Sizes—The above are typical sections showing Ceco Rewirable Metal Frame Screens, which are manufactured with electro-galvanized steel, bronze, or aluminum frames. Sixteen mesh bronze or aluminum wire screen cloth is used. Ceco Metal Frame Screens are available for all types of window and door openings.

Please write for the Ceco Screen Catalog, which gives complete information on Metal Frame Insect Screens.

5/8 in. type—5/8x1 7/16 in.; 1 in. type—1 1/16x1 7/16 in.; 1 1/2 in. type—1 1/2x1 7/16 in.



SECTION & INSTALLATION DETAILS

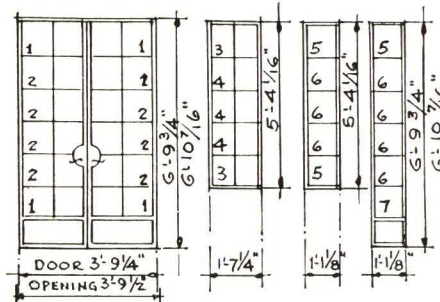


Section—Detail above shows standard out-swinging doors. Doors swinging inward may be had on special order with double rabbeted threshold furnished. The scale of this detail is one-half of full size.

NOTE

Casement Doors are made of Intermediate Casement sections; door side lights and transoms are made of Residence Casement sections. Door muntins are arranged to line up with standard casements when used as side lights. Thresholds are

not required for interior doors between rooms having the same floor level. Doors swing out only. Muntins may be omitted with the exception of those framing the lock sets. Bronze butt hinges, cylinders for mortise lock, bronze threshold, dummy lock sets for inactive leaf and panic bolt hardware will be furnished at extra cost.



Ceco 6 STANDARD WINDOW SECTIONS—1/2 Size



Ceco Architectural Projected Windows are ideally suited for all public, commercial, or institutional buildings. They are designed so that weather protection is possible when they are open. Ease of screening is made possible because ventilators either project fully toward the interior or exterior of the normal plane.

NO. 21

NO. 9

NO. 1

NO. 22

NO. 7

NO. 39

NO. 37

NO. 66

NO. 6

NO. 2

NO. 55

NO. 3

NO. 10

NO. 8

Specifications . . FOR ARCHITECTURAL PROJECTED WINDOWS

General—All windows shall be the Architectural Projected Type as manufactured by the CECO STEEL PRODUCTS CORPORATION, of Chicago, Illinois, or approved equal, as per written approval of the architect, and shall be of sizes and types as shown on architect's drawings.

Material—All sections shall be especially designed, hot-rolled, new billet steel. All frame members shall be unequal leg channel section and allow 3/4 in. continuous anchorage. Mullions shall be special rolled T Sections. Mullions and transom bars shall be Standard CECO, hot-rolled, solid steel T Sections.

Construction—Frames and ventilators shall be mortise and tenon, air-hammer riveted at all corners. After assembling, all four corners of the frame and ventilator shall be solidly welded.

Muntins shall be continuous from head to sill and from jamb to jamb and all muntins shall be interwoven and welded on the inside face of the cross-joint to increase their strength at the point of intersection. Joints at frames shall be mortise and tenon air-hammer riveted.

Ventilators shall have double contact weathering continuous around all four sides. Each ventilator shall be accurately balanced on two supporting arms of solid steel accurately riveted to the frame and ventilator and concealed when the ventilator is closed. Ventilators shall be operated by means of fully enclosed bronze friction shoes, suspended from the hinged point of the ventilator with an adjustable bolt backed by a compression spring, assuring constant friction at all times. Bronze shoes are to slide vertically in a channel guide especially adapted and applied properly to assure easy operation. All weathering members shall be securely welded to the frame and ventilator members.

Where two or more windows are placed side by side in the same opening, provide CECO Vertical Mullions. Mullions shall extend 2 in. into sills for anchorage. Where two or more windows are placed one above another in the same opening, provide CECO Horizontal Mullions. Provide mullion covers for mullions where called for on plans. Furnish necessary clips, anchors and bolts for installing the windows.

Note: Include in steel specifications punching to accommodate clips.

Hardware—All hardware shall be bronze throughout.

All ventilators opening out shall be equipped with a bronze cam lock (No. 130) and pole ring (No. 700) of standard CECO design. All ventilators opening in and within reach of the floor shall be equipped with bronze cam handle (No. 110.) All ventilators opening in and not easily accessible shall be equipped with automatic spring lock (No. 800.)

Erection—All windows shall be erected by the CECO STEEL PRODUCTS CORPORATION in openings prepared by others. All windows shall be set plumb and true, properly aligned and securely anchored before glazing. Apply unattached hardware in accordance with the manufacturer's directions.

Note: All structural work for the support of steel windows shall be provided by another contractor.

Note: Include in masonry specifications, that all mortar, grouting, pointing, etc., shall be done by the masonry contractor after the windows are erected.

Painting—All windows shall be given one coat of gray mineral paint before shipment.

Note: Include in the painting specifications that all windows should be given one additional coat after erection, but before glazing. Further painting should be deferred until at least three weeks after glazing to allow putty to set.

Note: Windows erected by the CECO STEEL PRODUCTS CORPORATION will be field painted by them if specified.

Glass and Glazing—**Note:** Glass and glazing should be furnished under glass and glazing specifications and not as part of window specifications.

All windows glazed from the inside shall be glazed with glazing angles, continuous around lights, attached with screws and hexagon nuts. Also inside putty glazed. Windows glazed from outside shall be putty glazed.

Note: Always specify glass thickness.

Glass shall be bedded and face puttied and shall be applied in a neat, cleancut, smooth manner. Putty shall be a high grade of steel window putty.

Screens—**Note:** Screens and preparation for screens are not part of the window contract, but windows can be prepared and screens furnished by the CECO STEEL PRODUCTS CORPORATION.

Note: Flat screens applied to outside of window for Projected-In ventilators, inside for the Projected-Out ventilators.

Note: Underscreen hardware (No. 550) can be furnished for Projected-Out ventilators at a slight additional cost.

Ceco
PLATE

7

ARCHITECTURAL PROJECTED WINDOWS
TYPES & SIZES
HARDWARESTANDARD TYPES AND SIZES
As Adopted by Metal Window Institute—1938STANDARD
WIDTHS

1-6 2-6 3-6 4-6 5-6 6-6 7-0

1-0 2-6 3-0 4-0 5-0 6-0 7-0

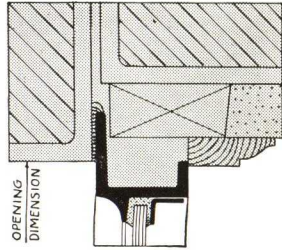
STANDARD
HEIGHTSSTANDARD
HEIGHTSSTANDARD
HEIGHTS

Ceco
PLATE

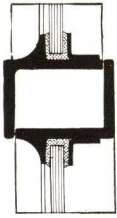
8

ARCHITECTURAL PROJECTED WINDOWS INSTALLATION DETAILS

BRICK DETAILS



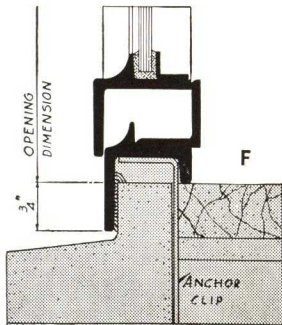
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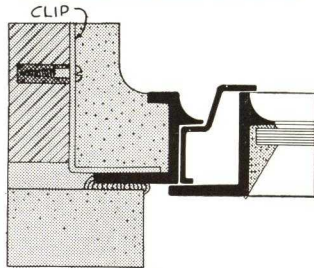
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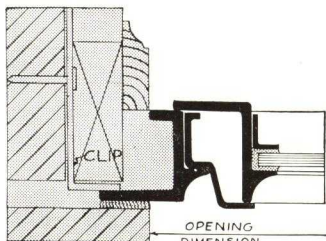
C



F

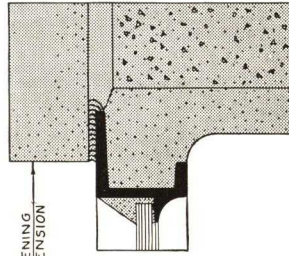


G



H

STONE DETAILS



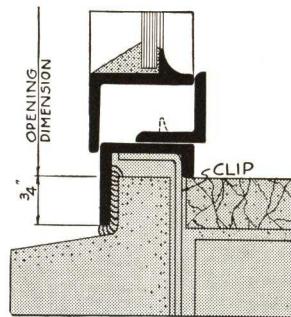
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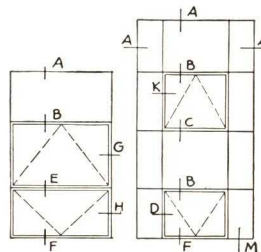
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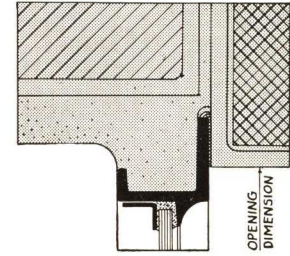
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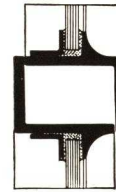
F



TERRA COTTA DETAILS



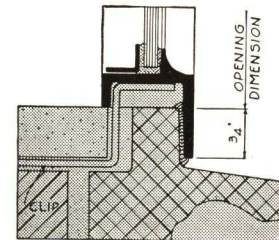
A



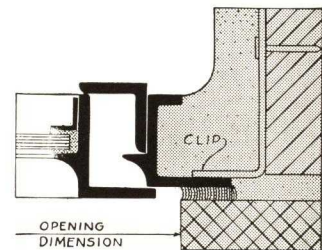
C



E



M



G



D



K

Note on Brick—These details show the various combinations as used in the manufacture of CECO Architectural Projected Windows. Points of dimensions for sizes of openings are also shown. Caulking between window frame and building construction shall be supplied and applied by others.



Ceco Commercial Projected Windows—For use in such commercial and industrial buildings when shading and screening are very necessary. These windows are offered in a full range of Standard Types and Sizes.

Specifications FOR COMMERCIAL PROJECTED WINDOWS

General—All windows shall be the Commercial Projected Type as manufactured by the CECO STEEL PRODUCTS CORPORATION, of Chicago, Illinois, or approved equal, as per written approval of the architect, and shall be of sizes and types as shown on architect's drawings.

Material—All sections shall be especially designed, hot-rolled, new billet steel.

All frame members shall be special angle section and shall allow $\frac{3}{4}$ in. Continuous anchorage.

Muntins shall be especially rolled T sections.

Mullions and transom bars shall be standard CECO, hot-rolled, solid steel T sections.

Construction—Frames and ventilators shall be mortise and tenon, air-hammer riveted at all corners. After assembling, all four corners of the frame and ventilator shall be solidly welded.

Muntins shall be continuous from head to sill and from jamb to jamb and all muntins shall be interwoven and welded on the inside face of the cross-joint to increase their strength at the point of intersection. Joints at frames shall be mortise and tenon, air-hammer riveted.

Ventilators shall have double contact weathering continuously around entire perimeter.

Each ventilator shall be accurately balanced on two supporting arms of solid steel accurately riveted to the frame and ventilator and concealed when the ventilator is closed. Ventilators shall be operated by means of fully enclosed bronze friction shoes suspended from the hinged point of the ventilator with an adjustable bolt backed by a compression spring, assuring constant friction at all times.

Bronze shoes are to slide vertically in a channel guide especially adapted and applied properly to assure easy operation.

All weathering members shall be securely welded to the frame and ventilator members.

Where two or more windows are placed side by side in the same opening, provide CECO Vertical Mullions.

Mullions shall extend two inches into sills for anchorage.

Where two or more windows are placed one above another in the same opening, provide CECO Horizontal Mullions.

Provide mullion covers for mullions where called for on plans.

Furnish necessary clips, anchors and bolts for installing the windows.

Note: Include in steel specifications punching to accommodate clips.

Hardware—All hardware shall be bronze lacquer finish throughout.

All ventilators opening out shall be equipped with a bronze cam lock (No. 7130) and pole ring (No. 7700) of standard CECO design.

All ventilators opening in and within reach of the floor shall be equipped with bronze cam handle (No. 7110).

All ventilators opening in and not easily accessible shall be equipped with automatic spring lock (No. 7800).

Erection—All windows shall be erected by the CECO STEEL PRODUCTS CORPORATION in openings prepared by others.

All windows shall be set plumb and true, properly aligned and securely anchored before glazing.

Apply unattached hardware in accordance with the manufacturer's directions.

Note: Include in masonry specifications that all mortar, grouting, pointing, etc., shall be done by the mason contractor after the windows are erected.

Note: All structural work for the support of steel windows shall be provided by another contractor.

Painting—All windows shall be given one coat of gray mineral paint before shipment.

Note: Include in the painting specifications that all windows should be given one additional coat after erection, but before glazing. Further painting should be deferred until at least three weeks after glazing, to allow putty to set.

Note: Windows erected by the CECO STEEL PRODUCTS CORPORATION will be field painted by them if specified.

Glass and Glazing—**Note:** Glass and glazing should be furnished under glass and glazing specifications and not as part of window specifications.

All windows shall be glazed from the inside, all glass being set in a bed of putty and secured by glazing clips furnished by the window manufacturer. Face putty shall be applied in a neat, clean-cut, smooth manner.

Putty shall be a high grade of steel window putty.

Note: Specify types of glass; single strength glass is not recommended.

Note: Do not paint until putty has thoroughly hardened.

Screens—**Note:** Screens and preparation for screens are not part of the window contract, but windows can be prepared and screens furnished by the CECO STEEL PRODUCTS CORPORATION.

Note: Flat screens applied to the outside of window for the Projected-In ventilators and inside for the Projected-Out ventilators.

Note: Underscreen hardware (No. 7550) can be furnished for Projected-Out ventilators at a slight additional cost.

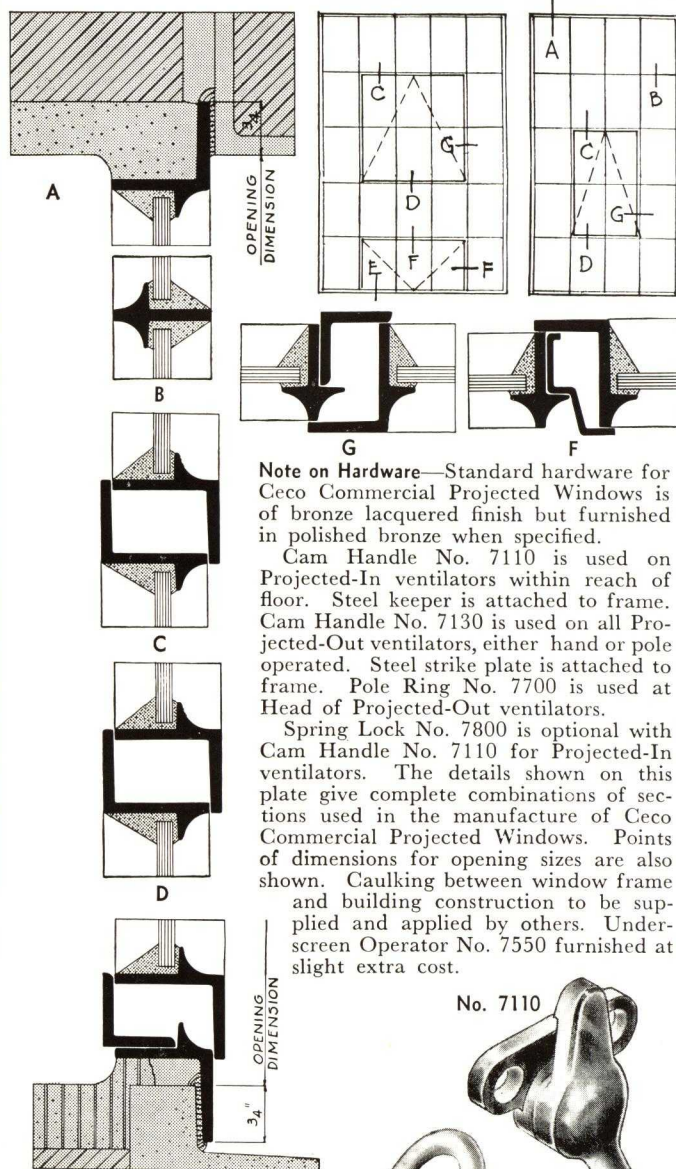
Underwriters—Underwriters' label of approval may be specified for all standard sizes shown and special sizes up to 7 ft. 0 in. in width by 12 ft. 0 in. in height. These windows must be inside angle glazed. The maximum glass size is 350 sq. in.

Ceco
PLATE

9

COMMERCIAL PROJECTED WINDOWS

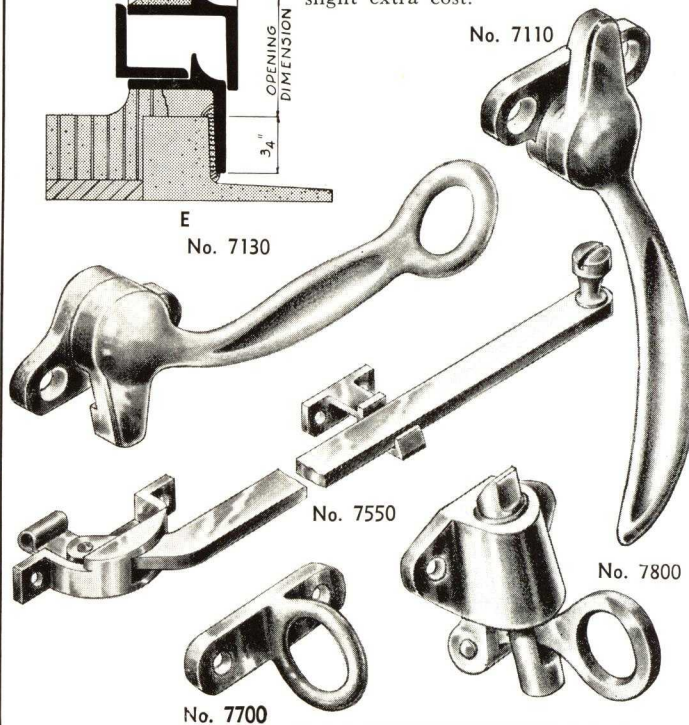
INSTALLATION DETAILS & HARDWARE



Note on Hardware—Standard hardware for Ceco Commercial Projected Windows is of bronze lacquered finish but furnished in polished bronze when specified.

Cam Handle No. 7110 is used on Projected-In ventilators within reach of floor. Steel keeper is attached to frame. Cam Handle No. 7130 is used on all Projected-Out ventilators, either hand or pole operated. Steel strike plate is attached to frame. Pole Ring No. 7700 is used at Head of Projected-Out ventilators.

Spring Lock No. 7800 is optional with Cam Handle No. 7110 for Projected-In ventilators. The details shown on this plate give complete combinations of sections used in the manufacture of Ceco Commercial Projected Windows. Points of dimensions for opening sizes are also shown. Caulking between window frame and building construction to be supplied and applied by others. Underscreen Operator No. 7550 furnished at slight extra cost.



Ceco 10 COMMERCIAL PROJECTED WINDOWS PLATE STOCK AND STANDARD TYPES

As Adopted by Metal Window Institute—1938

STOCK & STANDARD TYPE

WIDTH	12" GLA	14" GLA	18" GL	20" GL	2" GLA	2" GLA	3'-2"	3'-8"	4'-2 3/8"	4'-10 3/8"	5'-2 3/4"	6'-0 3/4"
12" GLA	2'-1 3/8"	2'-1 3/8"	2'-1 3/8"	2'-1 3/8"	2'-1 3/8"	2'-1 3/8"						
14" GLA	2'-5 3/8"	2'-5 3/8"	2'-5 3/8"	2'-5 3/8"	2'-5 3/8"	2'-5 3/8"						
18" GL	3'-1 3/8"	3'-1 3/8"	3'-1 3/8"	3'-1 3/8"	3'-1 3/8"	3'-1 3/8"						
20" GL	3'-5 3/8"	3'-5 3/8"	3'-5 3/8"	3'-5 3/8"	3'-5 3/8"	3'-5 3/8"						
18" GL	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"						
20" GL	4'-4"	4'-4"	4'-4"	4'-4"	4'-4"	4'-4"						
18" GL	6'-2 3/8"	6'-2 3/8"	6'-2 3/8"	6'-2 3/8"	6'-2 3/8"	6'-2 3/8"						
20" GL	6'-6 3/8"	6'-6 3/8"	6'-6 3/8"	6'-6 3/8"	6'-6 3/8"	6'-6 3/8"						
18" GL	7'-8 3/8"	7'-8 3/8"	7'-8 3/8"	7'-8 3/8"	7'-8 3/8"	7'-8 3/8"						
20" GL	8'-6 3/8"	8'-6 3/8"	8'-6 3/8"	8'-6 3/8"	8'-6 3/8"	8'-6 3/8"						
18" GL	9'-3 3/8"	9'-3 3/8"	9'-3 3/8"	9'-3 3/8"	9'-3 3/8"	9'-3 3/8"						
20" GL	10'-3 3/8"	10'-3 3/8"	10'-3 3/8"	10'-3 3/8"	10'-3 3/8"	10'-3 3/8"						
18" GL	10'-9 1/2"	10'-9 1/2"	10'-9 1/2"	10'-9 1/2"	10'-9 1/2"	10'-9 1/2"						
20" GL	11'-1 1/2"	11'-1 1/2"	11'-1 1/2"	11'-1 1/2"	11'-1 1/2"	11'-1 1/2"						
INDICATE												
PROJECTED OUT												
VENTILATOR												
PROJECTED IN												
VENTILATOR												

* INDICATE COMMODITY STOCK TYPE READY FOR IMMEDIATE SHIPMENT

INDICATE

PROJECTED OUT

VENTILATOR

PROJECTED IN

VENTILATOR

LISTED SPECIAL TYPE

WIDTH	12" GLA	14" GLA	18" GL	20" GL	2" GLA	2" GLA	3'-2"	3'-8"	4'-2 3/8"	4'-10 3/8"	5'-2 3/4"	6'-0 3/4"
12" GLA	2'-1 3/8"	2'-1 3/8"	2'-1 3/8"	2'-1 3/8"	2'-1 3/8"	2'-1 3/8"						
14" GLA	2'-5 3/8"	2'-5 3/8"	2'-5 3/8"	2'-5 3/8"	2'-5 3/8"	2'-5 3/8"						
18" GL	3'-1 3/8"	3'-1 3/8"	3'-1 3/8"	3'-1 3/8"	3'-1 3/8"	3'-1 3/8"						
20" GL	3'-5 3/8"	3'-5 3/8"	3'-5 3/8"	3'-5 3/8"	3'-5 3/8"	3'-5 3/8"						
18" GL	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"	4'-0"						
20" GL	4'-4"	4'-4"	4'-4"	4'-4"	4'-4"	4'-4"						
18" GL	6'-2 3/8"	6'-2 3/8"	6'-2 3/8"	6'-2 3/8"	6'-2 3/8"	6'-2 3/8"						
20" GL	6'-6 3/8"	6'-6 3/8"	6'-6 3/8"	6'-6 3/8"	6'-6 3/8"	6'-6 3/8"						
18" GL	7'-8 3/8"	7'-8 3/8"	7'-8 3/8"	7'-8 3/8"	7'-8 3/8"	7'-8 3/8"						
20" GL	8'-6 3/8"	8'-6 3/8"	8'-6 3/8"	8'-6 3/8"	8'-6 3/8"	8'-6 3/8"						
18" GL	9'-3 3/8"	9'-3 3/8"	9'-3 3/8"	9'-3 3/8"	9'-3 3/8"	9'-3 3/8"						
20" GL	10'-3 3/8"	10'-3 3/8"	10'-3 3/8"	10'-3 3/8"	10'-3 3/8"	10'-3 3/8"						
18" GL	10'-9 1/2"	10'-9 1/2"	10'-9 1/2"	10'-9 1/2"	10'-9 1/2"	10'-9 1/2"						
20" GL	11'-1 1/2"	11'-1 1/2"	11'-1 1/2"	11'-1 1/2"	11'-1 1/2"	11'-1 1/2"						
INDICATE												
PROJECTED OUT												
VENTILATOR												
PROJECTED IN												
VENTILATOR												



Pivoted Window

Muntins shall be continuous from head to sill and from jamb to jamb interwoven and welded on the inside face of cross-joint to increase their strength at point of intersection. Joint at frames shall be mortise and tenon, air-hammer riveted. Ventilators shall have double contact weathering continuously around entire perimeter. All ventilators shall be horizontally pivoted and supported by special solid rolled steel external butts, double riveted through the weathering and window members. All weathering members shall be securely welded to the frame and ventilator members. Where two or more windows are placed side by side in the same opening, provide CECO Vertical Mullions. Mullions shall extend two inches into sills for anchorage. Where two or more windows are placed one above another in the same opening, provide CECO Horizontal Mullions. Furnish necessary clips, anchors and bolts for installing windows.

Note: Include in steel specifications punching to accommodate clips.

Hardware—All ventilators shall be equipped with either push-bar, cam lock or spring lock and chain, as marked on drawings.

Mechanical Operators—All runs of ventilators shown on drawings as "Mechanically Controlled" shall be equipped with an approved type of operator as manufactured by CECO STEEL PRODUCTS CORPORATION.

Erection—All windows shall be erected by the CECO STEEL PRODUCTS CORPORATION in openings prepared by others. All windows shall

be set plumb and true, properly aligned and securely anchored before glazing. Apply unattached hardware in accordance with the manufacturer's directions.

Note: Include in masonry specifications that all mortar, grouting, pointing, etc., shall be done by the mason contractor after the windows are erected. All structural work for the support of steel windows shall be provided for by another contractor.

Painting—All windows shall be given one shop coat of gray mineral paint.

Note: Include in the painting specifications that all windows should be given one additional coat after erection, but before glazing. Further painting should be deferred until at least three weeks after glazing to allow putty to set.

(Continued on Page 12)

Specifications FOR PIVOTED WINDOWS

General—All windows shall be the Horizontal Pivoted Type as manufactured by the CECO STEEL PRODUCTS CORPORATION, of Chicago, Illinois, or approved equal, as per written approval of the architect and shall be of sizes and types as shown on architect's drawing.

Material—All sections shall be especially designed, hot rolled, new billet steel. All frame members shall be special angle section and shall allow 3/4 in. continuous anchorage. Muntins shall be especially rolled T sections. Mullions and transom bars shall be standard CECO hot rolled, solid steel T sections.

Construction—Frames and ventilators shall be mortise and tenon, air-hammer riveted at all corners.

SPECIFICATIONS FOR PIVOTED WINDOWS (Continued)

Note: Windows erected by the CECO STEEL PRODUCTS CORPORATION will be field painted by them if specified.

Glass and Glazing—Note: Glass and glazing should be furnished under glass and glazing and not as part of window specifications.

All windows shall be glazed from the inside, all glass being set in a bed of putty secured by glazing clips furnished by the window manufacturer. Face putty shall be applied in a neat, clean-cut, smooth manner.

Putty shall be a high grade of steel window putty.

Note: Specify types of glass. Single strength glass not recommended.

Note: Do not paint until putty has thoroughly hardened.

Screens—Note: Screens and preparation for screens are not part of the window contract, but windows can be prepared and screens furnished by the CECO STEEL PRODUCTS CORPORATION.

Note: Metal screens may be so arranged that the upper half of the screen is outside of the ventilator and the lower half on the inside.

Underwriters'—Underwriters' label of approval may be specified for all standard sizes shown and special sizes up to 7 ft. in width by 12 ft. in height. These windows must be inside angle glazed. The maximum glass is 350 sq. in.

SIZES—OPENINGS, ETC.—Note on Standard Dimensions—Standard sizes and openings are shown below and by referring to height and width dimensions, sizes close to those needed can be easily ascertained. The number of units necessary to fill the opening is also given. When two or more units are placed together two inches have been added to the width dimensions as shown in the table for each mullion used.

12" x 18" Glass				14" x 20" Glass			
Widths of openings	Total Number of Units	No. of lights per Unit	Position of each number indicates position of unit in opening	Widths of openings	Total Number of Units	No. of lights per Unit	Position of each number indicates position of unit in opening
2' 1 1/8"	1	1	1	2' 5 3/8"	1	1	1
3' 2"	1	2	2	3' 8"	1	2	2
4' 2 1/8"	1	3	3	4' 10 3/8"	1	3	3
5' 2 1/8"	1	4	4	5' 10 3/8"	1	4	4
6' 2 1/8"	1	5	5	6' 10 3/8"	1	5	5
7' 2 1/8"	1	6	6	7' 10 3/8"	1	6	6
8' 2 1/8"	2	3, 3	3, 3	8' 10 3/8"	2	7	7
9' 2 1/8"	2	4, 4	4, 4	9' 10 3/8"	2	8	8
10' 2 1/8"	2	5, 5	5, 5	10' 10 3/8"	2	9	9
11' 2 1/8"	3	3, 4, 3	3, 4, 3	11' 10 3/8"	3	10	10
12' 2 1/8"	3	4, 3, 4	4, 3, 4	12' 10 3/8"	3	11	11
13' 2 1/8"	3	5, 3, 5	5, 3, 5	13' 10 3/8"	3	12	12
14' 2 1/8"	3	6, 4, 6	6, 4, 6	14' 10 3/8"	3	13	13
15' 2 1/8"	4	3, 4, 4, 3	3, 4, 4, 3	15' 10 3/8"	4	14	14
16' 2 1/8"	4	5, 5, 5	5, 5, 5	16' 10 3/8"	4	15	15
17' 2 1/8"	4	6, 3, 6	6, 3, 6	17' 10 3/8"	4	16	16
18' 2 1/8"	5	5, 6, 5	5, 6, 5	18' 10 3/8"	5	17	17
19' 2 1/8"	5	6, 4, 6	6, 4, 6	19' 10 3/8"	5	18	18
20' 2 1/8"	5	4, 4, 4, 4	4, 4, 4, 4	20' 10 3/8"	5	19	19
21' 2 1/8"	5	5, 5, 5, 5	5, 5, 5, 5	21' 10 3/8"	5	20	20
22' 2 1/8"	5	6, 6, 6, 6	6, 6, 6, 6	22' 10 3/8"	5	21	21
23' 2 1/8"	6	3, 6, 6, 3	3, 6, 6, 3	23' 10 3/8"	6	22	22
24' 2 1/8"	6	4, 5, 5, 4	4, 5, 5, 4	24' 10 3/8"	6	23	23
25' 2 1/8"	6	5, 3, 3, 5	5, 3, 3, 5	25' 10 3/8"	6	24	24
26' 2 1/8"	6	6, 4, 4, 6	6, 4, 4, 6	26' 10 3/8"	6	25	25
27' 2 1/8"	7	4, 6, 6, 4	4, 6, 6, 4	27' 10 3/8"	7	26	26
28' 2 1/8"	7	5, 5, 5, 5	5, 5, 5, 5	28' 10 3/8"	7	27	27
29' 2 1/8"	7	6, 5, 5, 6	6, 5, 5, 6	29' 10 3/8"	7	28	28
30' 2 1/8"	7	7, 6, 6, 7	7, 6, 6, 7	30' 10 3/8"	7	29	29
31' 2 1/8"	8	4, 7, 7, 4	4, 7, 7, 4	31' 10 3/8"	8	30	30
32' 2 1/8"	8	5, 6, 6, 5	5, 6, 6, 5	32' 10 3/8"	8	31	31
33' 2 1/8"	8	6, 5, 5, 6	6, 5, 5, 6	33' 10 3/8"	8	32	32
34' 2 1/8"	9	5, 7, 7, 5	5, 7, 7, 5	34' 10 3/8"	9	33	33
35' 2 1/8"	9	6, 6, 6, 6	6, 6, 6, 6	35' 10 3/8"	9	34	34
36' 2 1/8"	9	7, 7, 7, 7	7, 7, 7, 7	36' 10 3/8"	9	35	35
37' 2 1/8"	10	5, 8, 8, 5	5, 8, 8, 5	37' 10 3/8"	10	36	36
38' 2 1/8"	10	6, 7, 7, 6	6, 7, 7, 6	38' 10 3/8"	10	37	37
39' 2 1/8"	10	7, 6, 6, 7	7, 6, 6, 7	39' 10 3/8"	10	38	38
40' 2 1/8"	11	6, 8, 8, 6	6, 8, 8, 6	40' 10 3/8"	11	39	39
41' 2 1/8"	11	7, 7, 7, 7	7, 7, 7, 7	41' 10 3/8"	11	40	40
42' 2 1/8"	11	8, 6, 6, 8	8, 6, 6, 8	42' 10 3/8"	11	41	41
43' 2 1/8"	12	7, 8, 8, 7	7, 8, 8, 7	43' 10 3/8"	12	42	42
44' 2 1/8"	12	8, 7, 7, 8	8, 7, 7, 8	44' 10 3/8"	12	43	43
45' 2 1/8"	12	9, 8, 8, 9	9, 8, 8, 9	45' 10 3/8"	12	44	44
46' 2 1/8"	13	8, 9, 9, 8	8, 9, 9, 8	46' 10 3/8"	13	45	45
47' 2 1/8"	13	9, 8, 8, 9	9, 8, 8, 9	47' 10 3/8"	13	46	46
48' 2 1/8"	13	10, 7, 7, 10	10, 7, 7, 10	48' 10 3/8"	13	47	47
49' 2 1/8"	14	9, 9, 9, 9	9, 9, 9, 9	49' 10 3/8"	14	48	48
50' 2 1/8"	14	10, 8, 8, 10	10, 8, 8, 10	50' 10 3/8"	14	49	49
51' 2 1/8"	14	11, 7, 7, 11	11, 7, 7, 11	51' 10 3/8"	14	50	50
52' 2 1/8"	15	10, 9, 9, 10	10, 9, 9, 10	52' 10 3/8"	15	51	51
53' 2 1/8"	15	11, 8, 8, 11	11, 8, 8, 11	53' 10 3/8"	15	52	52
54' 2 1/8"	15	12, 9, 9, 12	12, 9, 9, 12	54' 10 3/8"	15	53	53
55' 2 1/8"	16	11, 10, 10, 11	11, 10, 10, 11	55' 10 3/8"	16	54	54
56' 2 1/8"	16	12, 11, 11, 12	12, 11, 11, 12	56' 10 3/8"	16	55	55
57' 2 1/8"	17	12, 12, 12, 12	12, 12, 12, 12	57' 10 3/8"	17	56	56
58' 2 1/8"	17	13, 11, 11, 13	13, 11, 11, 13	58' 10 3/8"	17	57	57
59' 2 1/8"	18	13, 12, 12, 13	13, 12, 12, 13	59' 10 3/8"	18	58	58
60' 2 1/8"	18	14, 13, 13, 14	14, 13, 13, 14	60' 10 3/8"	18	59	59
61' 2 1/8"	19	13, 14, 14, 13	13, 14, 14, 13	61' 10 3/8"	19	60	60
62' 2 1/8"	19	14, 13, 13, 14	14, 13, 13, 14	62' 10 3/8"	19	61	61
63' 2 1/8"	19	15, 12, 12, 15	15, 12, 12, 15	63' 10 3/8"	19	62	62
64' 2 1/8"	20	14, 14, 14, 14	14, 14, 14, 14	64' 10 3/8"	20	63	63
65' 2 1/8"	20	15, 13, 13, 15	15, 13, 13, 15	65' 10 3/8"	20	64	64
66' 2 1/8"	20	16, 14, 14, 16	16, 14, 14, 16	66' 10 3/8"	20	65	65
67' 2 1/8"	21	15, 15, 15, 15	15, 15, 15, 15	67' 10 3/8"	21	66	66
68' 2 1/8"	21	16, 14, 14, 16	16, 14, 14, 16	68' 10 3/8"	21	67	67
69' 2 1/8"	21	17, 15, 15, 17	17, 15, 15, 17	69' 10 3/8"	21	68	68
70' 2 1/8"	22	16, 16, 16, 16	16, 16, 16, 16	70' 10 3/8"	22	69	69
71' 2 1/8"	22	17, 16, 16, 17	17, 16, 16, 17	71' 10 3/8"	22	70	70
72' 2 1/8"	22	18, 17, 17, 18	18, 17, 17, 18	72' 10 3/8"	22	71	71
73' 2 1/8"	23	17, 18, 18, 17	17, 18, 18, 17	73' 10 3/8"	23	72	72
74' 2 1/8"	23	18, 17, 17, 18	18, 17, 17, 18	74' 10 3/8"	23	73	73
75' 2 1/8"	23	19, 18, 18, 19	19, 18, 18, 19	75' 10 3/8"	23	74	74
76' 2 1/8"	24	18, 19, 19, 18	18, 19, 19, 18	76' 10 3/8"	24	75	75
77' 2 1/8"	24	19, 18, 18, 19	19, 18, 18, 19	77' 10 3/8"	24	76	76
78' 2 1/8"	24	20, 19, 19, 20	20, 19, 19, 20	78' 10 3/8"	24	77	77
79' 2 1/8"	25	19, 20, 20, 19	19, 20, 20, 19	79' 10 3/8"	25	78	78
80' 2 1/8"	25	20, 19, 19, 20	20, 19, 19, 20	80' 10 3/8"	25	79	79
81' 2 1/8"	25	21, 20, 20, 21	21, 20, 20, 21	81' 10 3/8"	25	80	80
82' 2 1/8"	26	20, 21, 21, 20	20, 21, 21, 20	82' 10 3/8"	26	81	81
83' 2 1/8"	26	21, 20, 20, 21	21, 20, 20, 21	83' 10 3/8"	26	82	82
84' 2 1/8"	26	22, 21, 21, 22	22, 21, 21, 22	84' 10 3/8"	26	83	83
85' 2 1/8"	27	21, 22, 22, 21	21, 22, 22, 21	85' 10 3/8"	27	84	84
86' 2 1/8"	27	22, 21, 21, 22	22, 21, 21, 22	86' 10 3/8"	27	85	85
87' 2 1/8"	27	23, 22, 22, 23	23, 22, 22, 23	87' 10 3/8"	27	86	86
88' 2 1/8"	28	22, 23, 23, 22	22, 23, 23, 22	88' 10 3/8"	28	87	87
89' 2 1/8"	28	23, 22, 22, 23	23, 22, 22, 23	89' 10 3/8"	28	88	88
90' 2 1/8"	28	24, 23, 23, 24	24, 23, 23, 24	90' 10 3/8"	28	89	89
91' 2 1/8"	29	23, 24, 24, 23	23, 24, 24, 23	91' 10 3/8"	29	90	90
92' 2 1/8"	29	24, 23, 23, 24	24, 23, 23, 24	92' 10 3/8"	29	91	91
93' 2 1/8"	29	25, 24, 24, 25	25, 24, 24, 25	93' 10 3/8"	29	92	92
94' 2 1/8"	30	24, 25, 25, 24	24, 25, 25, 24	94' 10 3/8"	30	93	93
95' 2 1/8"	30	25, 24, 24, 25	25, 24, 24, 25	95' 10 3/8"	30	94	94
96' 2 1/8"	30	26, 25, 25, 26	26, 25, 25, 26	96' 10 3/8"	30	95	95
97' 2 1/8"	31	25, 26, 26, 25	25, 26, 26, 25	97' 10 3/8"	31	96	96
98' 2 1/8"	31	26, 25, 25, 26	26, 25, 25, 26	98' 10 3/8"	31	97	97
99' 2 1/8"	31	27, 26, 26, 27	27, 26, 26, 27	99' 10 3/8"	31	98	98
100' 2 1/8"	32	26, 27, 27, 26	26, 27, 27, 26	100' 10 3/8"	32	99	99

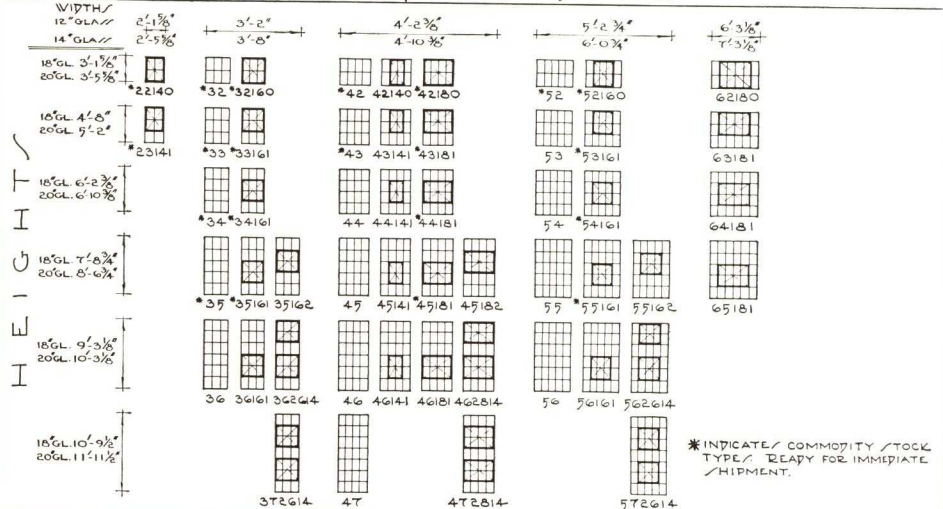
HEIGHTS OF OPENINGS

Lights high	12" x 18" Glass		Lights high	14" x 20" Glass	
	Height of openings			Height of openings	
1	1'	7 1/8"	1	1'	9 1/8"
2	3'	1 1/8"	2	3'	2 1/8"
3	4'	8"	3	5'	5 1/8"
4	6'	2 3/8"	4	6'	10 3/8"
5	7'	3 1/8"	5	8'	6 3/8"
6	9'	3 1/8"	6	10'	3 1/8"
7	10'	9 1/8"	7	11'	11 1/8"

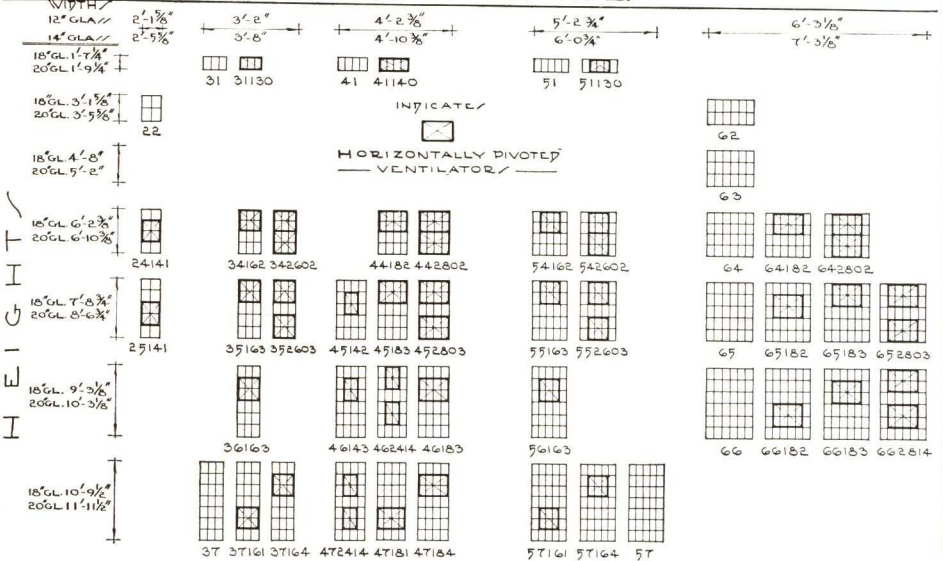
Ceco 11 PIVOTED WINDOWS STOCK & STANDARD TYPES

As Adopted by Metal Window Institute—1938

STOCK & STANDARD TYPE

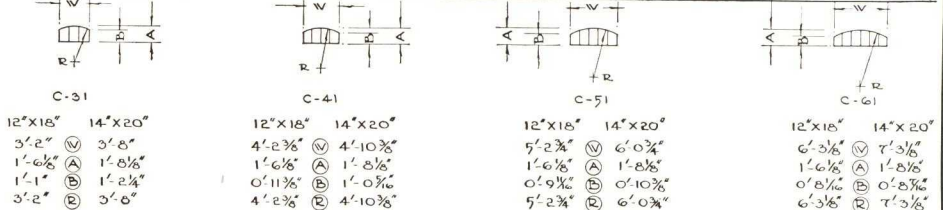


LIMITED SPECIAL TYPE



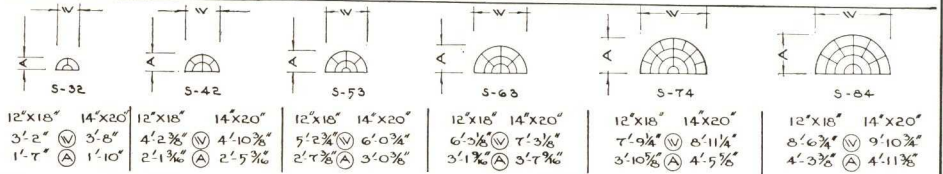
CAMBER TYPE

ALL CLASS SIZES TO TEMPLATE



SEMI-CIRCULAR TYPE

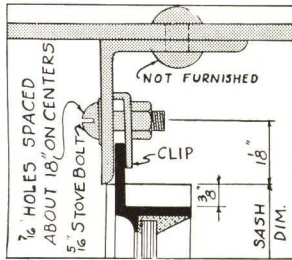
ALL CLASS SIZES TO TEMPLATE



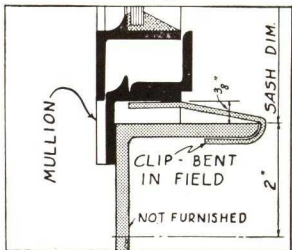
Ceco
PLATE

12 PIVOTED WINDOWS INSTALLATION & MISCELLANEOUS DETAILS

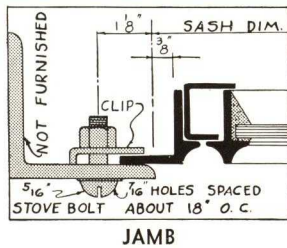
STEEL ANGLE DETAILS



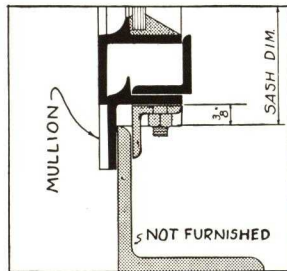
HEAD



SILL

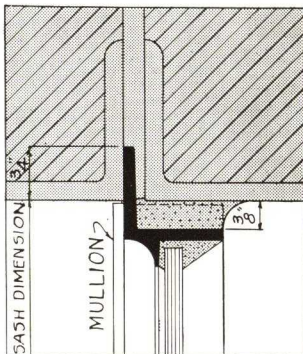


JAMB

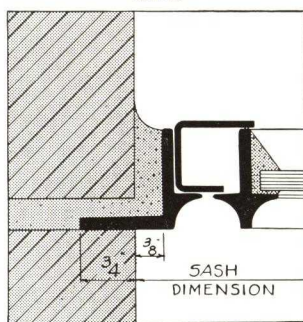


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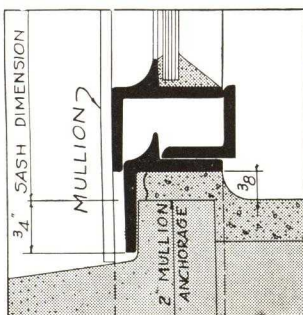
BRICK DETAILS



HEAD

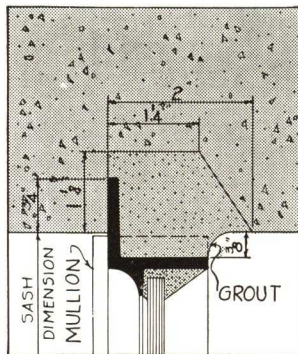


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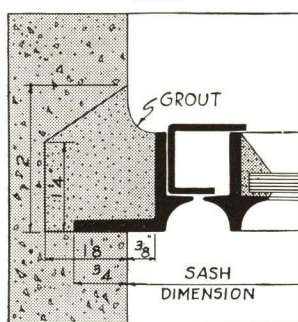


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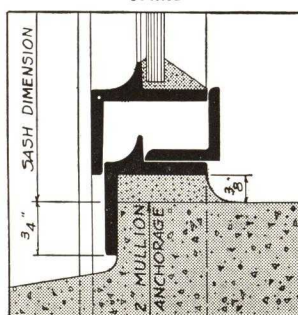
CONCRETE DETAILS



HEAD

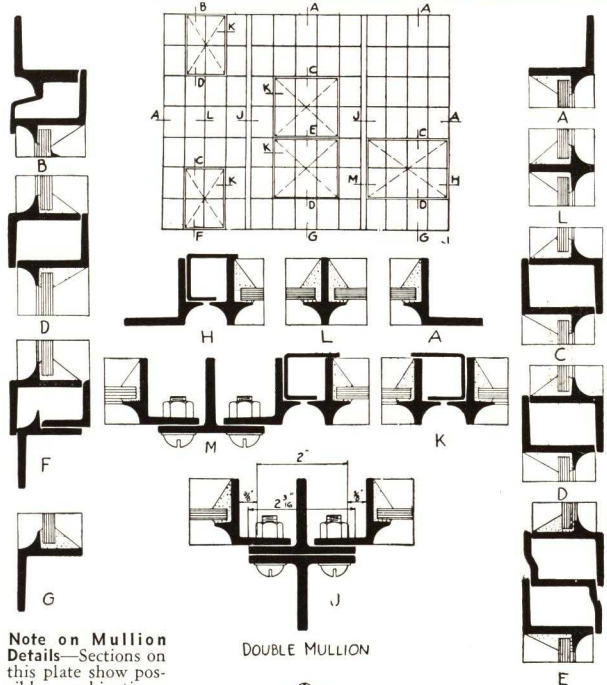


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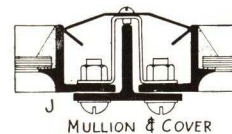


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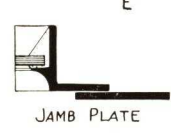
COMBINATIONS & DETAILS



Note on Mullion Details—Sections on this plate show possible combinations. Diagram at top incorporates all details obtainable. For details of horizontal mullions for large units, see plate below; for types and sizes, see pages 11 and 12. See unit schedule on page 12 for standard widths and heights. Where design requires higher openings see Horizontal mullions plate below.

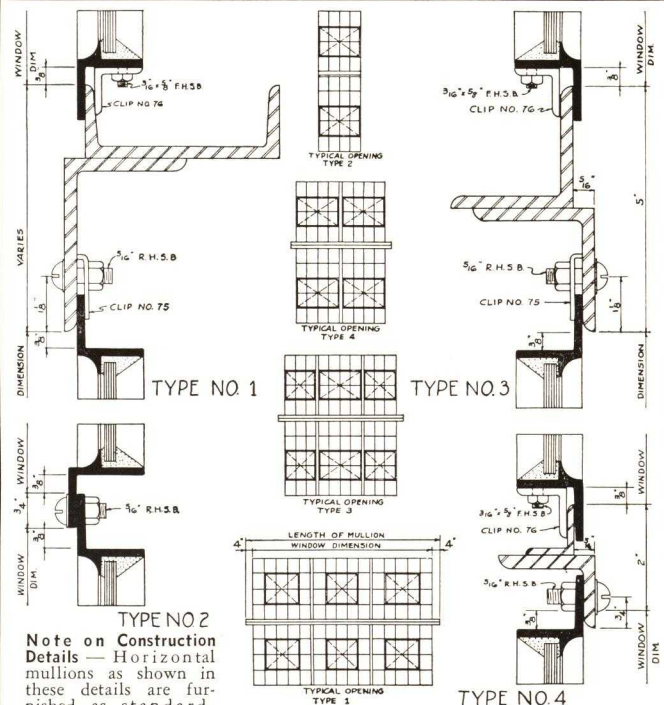


MULLION & COVER



JAMB PLATE

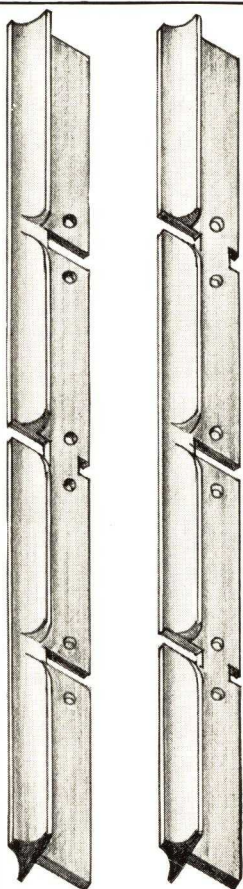
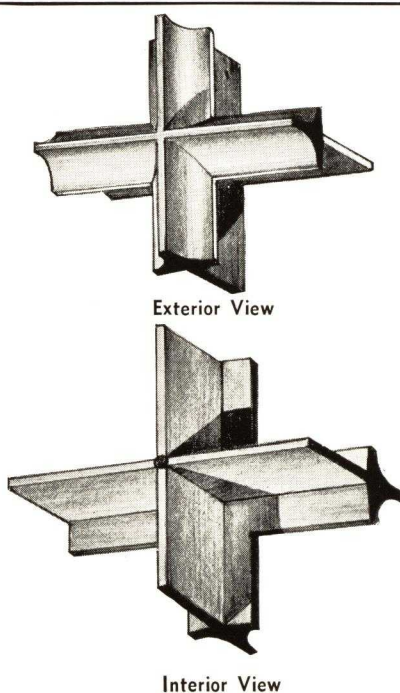
HORIZONTAL MULLION DETAILS



Note on Construction Details—Horizontal mullions as shown in these details are furnished as standard. Special designs and special types will be furnished upon specification.

Ceco
PLATE

13

PIVOTED WINDOWS
MUNTINSMUNTIN BARS
Vertical and Horizontal

Exterior View

Interior View

THE STRONG, NEAT JOINT

The finished appearance of the CECO muntin cross joint, with all bars running uniformly and no projections to mar the straight line effect, is shown by the drawings of the interior and exterior views of the completed muntin joint.

The interior view of the joint shows where the muntin bars are welded as illustrated above.

INTERWOVEN MUNTINS—AN EXCLUSIVE FEATURE

CECO windows are noted for their strength and rigidity. This feature is worth considering, for strength is necessary to withstand shipment, to retain their shape during erection and withstand the heavy wind pressure to which steel windows are often subjected.

How Extra Strength and Rigidity Are Secured—The drawings on this page show how the bars are cut. Note that the cuts alternate, first in the web of the muntin and then in the face. The cut in the horizontal bar is an opposite cut to the one in the vertical bar. This plan is carried out throughout the bars.

The method of joining the bars is to force the muntins together, and the bars are woven through to form a basket weave, one bar pressing against the other.

Every Muntin Joint Is Welded—After the window has been assembled, each cross muntin joint is welded. This process delivers practically a one-piece window because each bar is rigidly tied to the other.

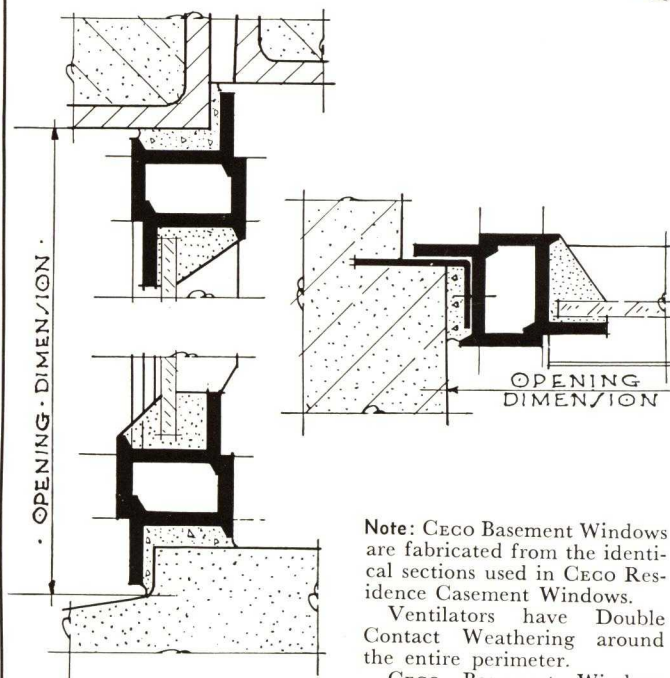
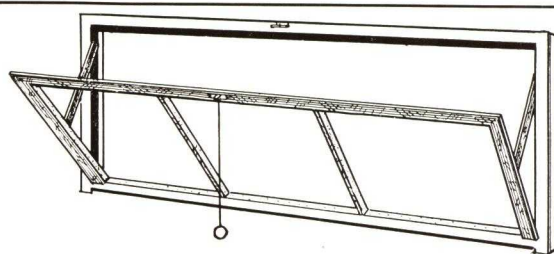
Muntin bars are riveted to frame by air riveting.

All bars are cut and punched in one operation on large multiple punch presses. Each bar is identical as to location of notches in the bars, so that each window is always true to size and shape.

Each unit is carefully inspected by placing the window in a specially designed frame. Ventilator is fitted and inspected to insure a weather-tight yet easily operated ventilator.

Ceco
PLATE

14

BASEMENT WINDOWS
DETAILS & DESCRIPTION

Note: CECO Basement Windows are fabricated from the identical sections used in CECO Residence Casement Windows.

Ventilators have Double Contact Weathering around the entire perimeter.

CECO Basement Windows can be furnished either to open

in from top or open in at bottom.

Ventilators can be partly opened for indirect ventilation or can be completely opened for full ventilation.

The ventilator can be easily removed for glazing if so desired or can be glazed in the wall.

This window can be furnished of either puttyless or putty glazed type.

The ventilator is held securely in position by two side arms securely riveted to frame, and can be easily operated from the floor due to the rod attachment to the locking device.

CECO Basement Windows are furnished complete with all necessary hardware and glazing clips. No glass is included.

Sizes	Masonry Opening in Size		
	Glass Size	Width	Height
3 Lights	10" x 12"	2' 9 1/8" x 1' 3"	
2 Lights	14" x 20"	2' 6 3/4" x 1' 11"	
3 Lights	10" x 20"	2' 9 1/8" x 1' 11"	
3 Lights	12" x 18"	3' 3 1/8" x 1' 9"	

CECO also furnishes a less expensive Basement Window to meet the requirements where circumstances demand a combination of excellent service and rigid economy.

CECO Tee Bar Windows are manufactured from solid steel sections.

The frame bar is one piece with corners mitered, which makes a very rigid frame.

The ventilators are hinged at the frame. Effective weathering is secured by the use of flat sections and formed drip at sill of sash.

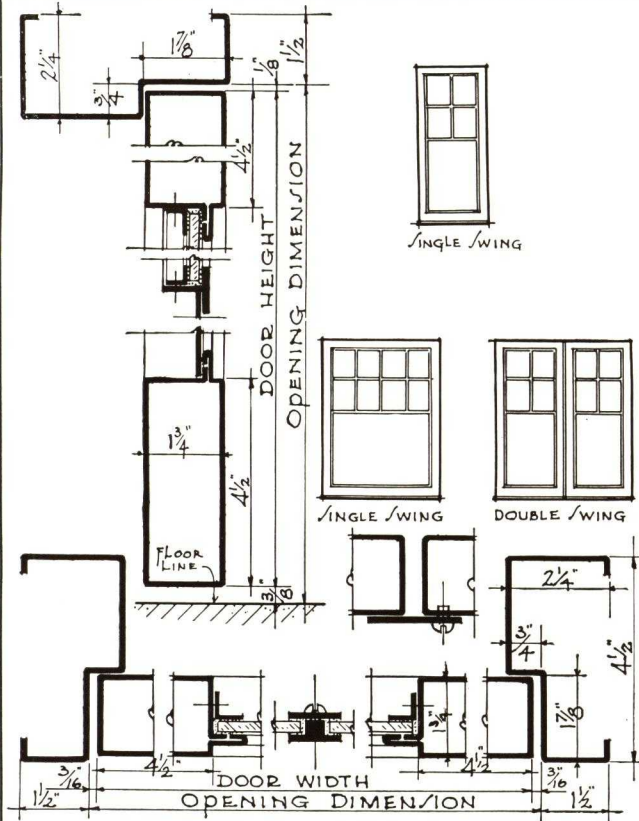
CECO Tee Bar Basement Windows are furnished complete with hinges, locking device and glazing clips. No glass is included.

Size	Glass Size		
	Glass Size	Width	Height
3 Lights	10" x 12"	2' 8 5/8" x 1' 2"	
2 Lights	14" x 20"	2' 6 1/4" x 1' 10"	
3 Lights	10" x 20"	2' 8 5/8" x 1' 10"	
3 Lights	12" x 18"	3' 2 5/8" x 1' 8"	

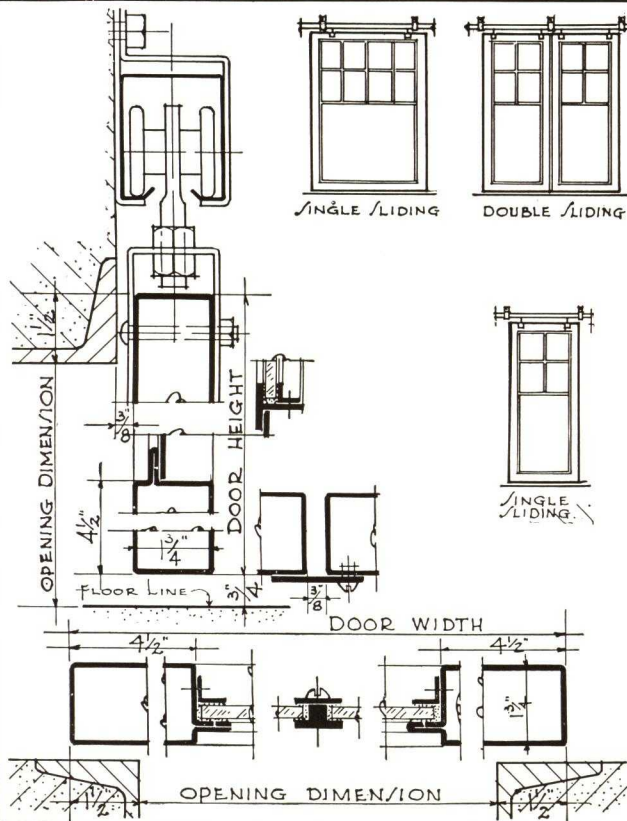
Ceco 15 INDUSTRIAL STEEL DOORS

PLATE

SWING TYPE DOORS



SLIDE TYPE DOORS



Specifications FOR INDUSTRIAL STEEL DOORS

General—All doors shall be the industrial type as manufactured by the CECO STEEL PRODUCTS CORPORATION, of Chicago, Illinois, or approved equal as per written approval of the architect, and shall be of sizes and types as shown on architect's drawings.

Material—The stiles and rails shall be 14 gauge sheet steel to be formed and welded into 1 3/4 in. by 4 1/2 in. tubes.

Muntins and astragals shall be solid rolled steel sections.

Lower panels to be 14 gauge sheet steel.

Sash panels shall be an integral part of the door leaf, securely welded to the door rail.

Construction—Door corners shall be mitered and joints shall be welded around the entire mitre and ground smooth.

Steel panels shall be spot welded to stiles and rails.

The upper portion of the door shall be fitted with a sash panel, all members of which shall be welded in place. The glass shall be held in place with putty and metal strips.

All double doors shall have astragals, rigidly attached to active leaf.

Doors shall be reinforced where required to eliminate any racking or sagging.

Hardware—Swing Doors—Supply Half Surface, Steel Hinges.

Note: Two Hinges for each leaf are supplied for all doors up to 8 ft. high. For Doors higher than 8 ft., three hinges are supplied.

Steel Hasps and Staples shall be supplied as standard on all Single and Double Swing Doors.

Note: Mortise cylinder locks, master-keyed if desired, may be had at extra cost.

One Steel Chain Bolt and one Foot Bolt shall be supplied on the inactive leaf of each double swing door.

Sliding doors—Pressed steel clevises shall be supplied for attachment at upper reinforced corners to accommodate trolley hangers.

Supply Steel Safety Hasp for attachment to each active leaf with staple for inactive leaf or door frame.

Note: We do not supply padlocks.

Supply two Steel Pulls for attachment one on either side of each sliding door leaf.

Supply standard deep channel tracks, balanced and supported on 2 ft. centers by U-shaped track brackets of heavy gauge steel. Supply heavy duty four wheel roller bearing trolleys with adjustable trolley hangers for attachment to clevises.

Guides—Shall be solid rolled steel angles with flaring edges. Center stops on double sliding doors shall be malleable iron castings.

Door Frames—Door frames shall be 14 gauge steel formed into specially designed 1 1/2 in x 4 in. channels with self-contained rebate.

All door frames shall extend 2 in. below the finished floor line for anchorage.

All door frames shall be anchored to structural steel or shall be equipped with adjustable corrugated steel anchors placed approximately 36 in. apart and extending into the masonry.

Erection—**Note:** The Ceco Steel Products Corporation will erect doors and frames if called for in specifications.

Painting—The manufacturer shall give all doors and frames one coat of gray mineral paint before shipment.

Note: Include in the Painting Specifications that all doors and frames should be given one additional coat after erection.

Note: Doors erected by the Ceco Steel Products Corporation will be field painted by them if specified.

Note: Caulking shall be furnished and applied under caulking specifications and not as part of door specifications.

Glass and Glazing—**Note:** Glass and glazing shall be furnished under glass and glazing specifications and not as part of door specifications.

Glass shall be 1/4 in. rough wire, 1/4 in. factory ribbed.

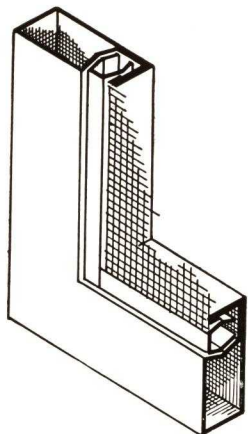
Note: 1/4 in. glass is recommended. Single or double strength glass should not be used. Glass is not furnished by the CECO STEEL PRODUCTS CORPORATION.

Putty shall be a high grade of steel window putty.

All glass shall be set in a bed of putty and held in place by metal strips.

Ceco

COMMERCIAL AND ARCHITECTURAL WINDOW SCREENS



Note on Types and Sizes

Illustrated is a typical section of the CECO Rewirable Metal Frame Screen line. CECO Metal Frame Screens are available for all types of window and door openings.

Please write for the CECO Screen Catalog, which gives complete information on Metal Frame Insect Screens.

CECO Steel Frame Members:

- CECO Light Weight
 $\frac{7}{16}$ " x $\frac{5}{8}$ " cold rolled electro-galvanized steel .032 thick.
- CECO Intermediate
 $\frac{7}{16}$ " x 1" cold rolled electro-galvanized steel .032 thick.
- CECO Heavy Duty
 $\frac{7}{16}$ " x $1\frac{1}{2}$ " cold rolled electro-galvanized steel .032 thick.

Ceco SCREEN CONSTRUCTION

Steel:

Joints all welded, forming frame into one complete unit.

Spline:

Cold rolled electro-galvanized steel .028 thick.

Screen Cloth:

- Bronze Antique Finish
- Copper Antique Finish
- Aluminum Natural Finish
- Aluminum Dark Finish
- Stainless Steel Natural Finish

16 mesh cloth furnished as a standard .0113 in. diameter*

*Screen cloth of .015 in. diameter 16 mesh and 18 mesh .0113 in. diameter is carried as a stock item; cloth of other materials and finer mesh can be furnished when desired.

Hardware:

Various types to meet specific job requirements.

Fittings:

All clips, bolts, etc., cadmium plated.

Cross Braces:

Rewirable type $\frac{7}{16}$ " x $1\frac{1}{16}$ " electro-galvanized steel .032 thick welded into frame.

Finish:

Two coats of best baking enamel of color selected, baked $1\frac{1}{2}$ to 2 hours at 300°.

A FULL LINE OF WINDOW SCREENS WITH DISTINCTIVE CONSTRUCTION FEATURES

Many architects and responsible builders know that the CECO line of Metal Frame Screens represents the product of specialists—of an organization versed in architectural engineering and possessing ample manufacturing facilities of the most modern type. Behind the CECO line there is also a nation-wide service by factory representatives for technical consultation and installation.

The CECO line comprises a complete selection of rolled tubular and extruded metal frames that fully anticipates the demand for an individual type of screen for each type of opening . . . taking into consideration the elements of effectiveness, convenience and appearance, as well as the cost of installation warranted for the particular project.

Architectural harmony demands that screen installations, whether on the inside or outside of openings, should be inconspicuous to avoid detracting from the character or design of the building. CECO Metal Frames meet this requirement in an unusual degree simply because they represent the combined product of architectural skill and the science of engineering.

All CECO frames occupy the safest minimum of space, which contributes not only to neatness of appearance and the need for strength but also to a maximum of ventilation and vision. Yet another important factor in the CECO frame designs is lightness of weight for easy handling when the seasons require movement of screens between service and storage.

Only the highest grades of steel, copper, bronze, and aluminum are used for these screens.

Durability is all important for the economy of long, trouble-free service.

CECO steel frames are made of a superior, rust-resisting, copper bearing steel, processed by electro-galvanizing and finished with the best grade of baked-on enamel for extra protection.

CECO bronze frames are made from a commercial bronze alloy containing not less than 90% copper and having all the rust-resisting qualities of copper with 50% more strength than copper.

CECO aluminum frames are constructed from a specially developed alloy which furnishes a frame of exceptional tensile strength and rigidity combined with lightness of weight. This type of frame is available in either extruded or rolled tubular sections.

CECO accessories are furnished to meet every requirement in screening. These are manufactured from the same metals and with the same care that go into the production of CECO Metal Frame Screens.

CECO Bronze Frame Members:

Bronze frame screens are constructed similar to steel, using bronze material throughout. Sizes and thickness of frame are as described under "Steel."

Finish:

Natural or Statuary.

CECO Aluminum Extruded Frame Members:

Aluminum frame screens are furnished in the same frame sizes as steel and bronze, .0625 ($\frac{1}{16}$ ") with .125 ($\frac{1}{8}$ ") cross web.

Finish:

Satin Brush finish.

CECO METAL FRAME SCREEN DOORS:

Steel, Bronze, or Aluminum frame Screen Doors are available in many types and designs to meet specific requirements. Standard hardware is furnished as regular equipment.

Grilles and special hardware furnished when specified.

CECO Screen Doors are constructed with removable and rewirable screen panels.

CECO PORCH SCREENS:

Metal Frame Screens in many designs and styles for covered porches and open terraces.

SUGGESTED Specifications . . .

Metal Insect Screens shall be of . . .

- (a) Electro-galvanized steel frame
- (b) Bronze frame
- (c) Extruded Aluminum frame construction

as manufactured by the CECO STEEL PRODUCTS CORPORATION.

All screen frames shall be of the rewirable type. Frame shall be at least $\frac{1}{8}$ " x 1". Screens more than 6 ft. in length, or containing more than 20 sq. ft. in area, shall have frames not less than $\frac{1}{8}$ " x 1½". Cross braces shall be $\frac{1}{8}$ " x 1" and rewirable.

Screen cloth shall be held in groove in frame member with suitable spline held in place without the use of screws or rivets. Spline to be readily removed and replaced without distorting the spline or frame, and without cutting the wire cloth.

Corners shall be electrically welded and all joints ground to a smooth finish.

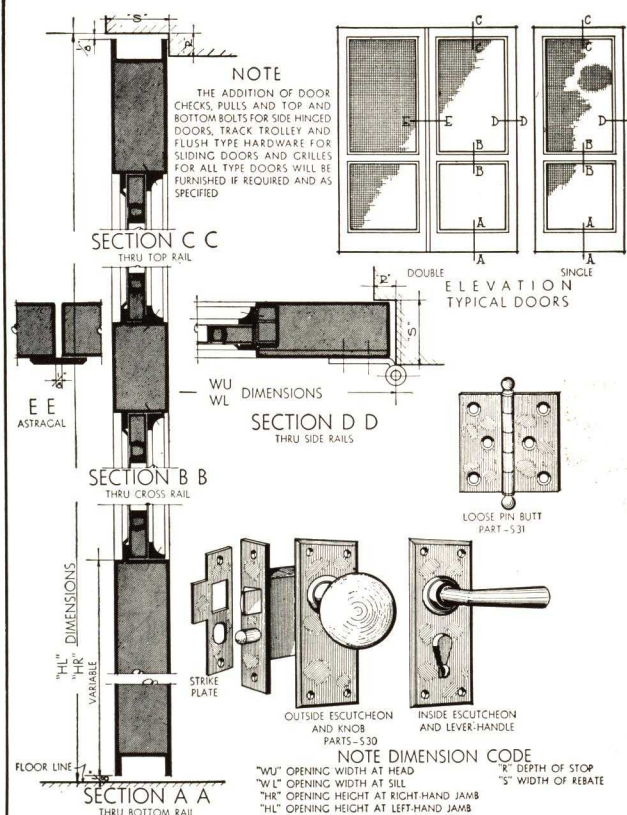
All hardware shall be cadmium plated, or of solid brass or bronze.

FINISH—Screen frames shall be chemically cleaned so that all surfaces are free from oil or other sediment. Steel Frame Screens shall be finished with two coats of baked-on enamel (baked at least 1½ hours each coat) of a color to harmonize with the standing finish of sash. The Architect shall direct the painting contractor to furnish the screen contractor with sample of color selected. Bronze Frame Screens shall have natural or statuary finish. Aluminum Frame Screens shall be natural or wire brushed to a satin finish.

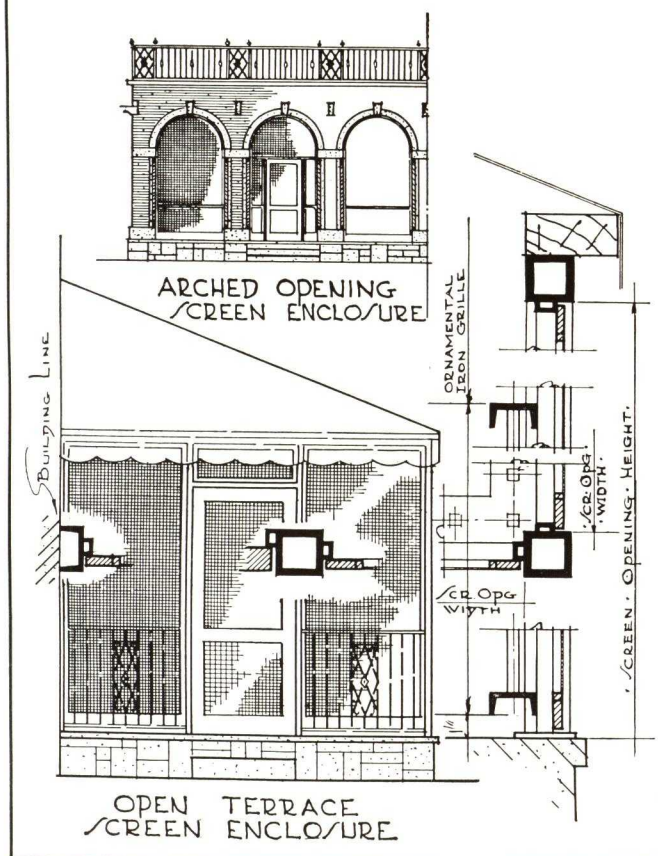
Numbering: Duplicate suitable numbers shall be placed on screens and on window openings.

Accessories: Whether definitely specified or not, all screens are furnished complete with the necessary accessories for convenient attachment and operation. Accessories include identification numbers (on screen and window), guides, pivots, handles, lifts, springs, and so forth. The Architect should specify any out-of-the-ordinary conditions that are to be met, requiring special or additional accessories. Shop drawings and samples will be submitted for approval when necessary.

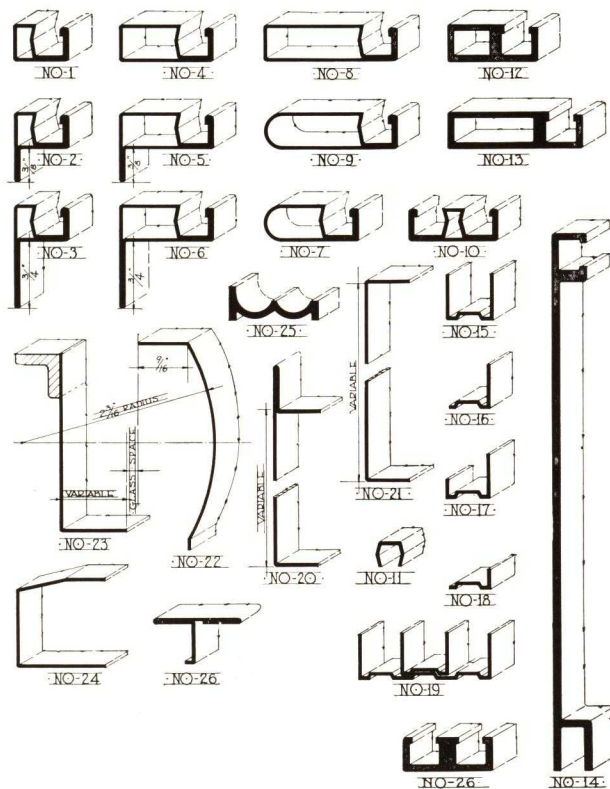
CUSTOM BUILT SCREEN DOORS STANDARD DETAILS—HARDWARE



PORCH SCREENING METHODS

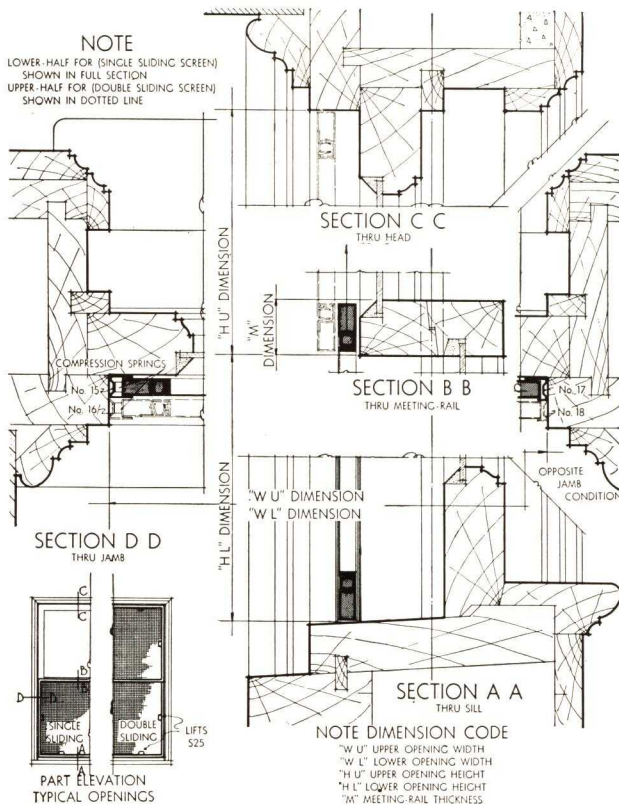


STANDARD SCREEN SHAPES

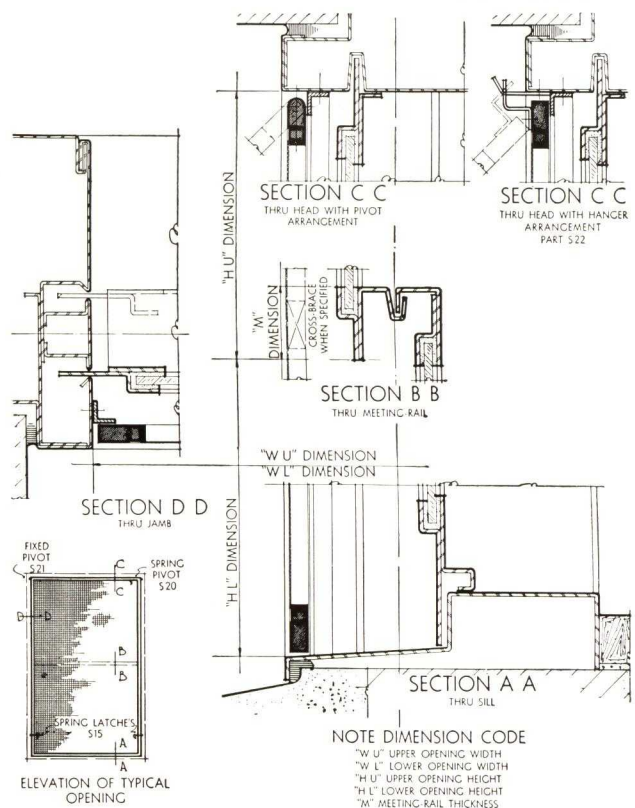


Ceco SINGLE & DOUBLE VERTICAL SLIDING SCREEN FOR DOUBLE-HUNG WOOD WINDOW

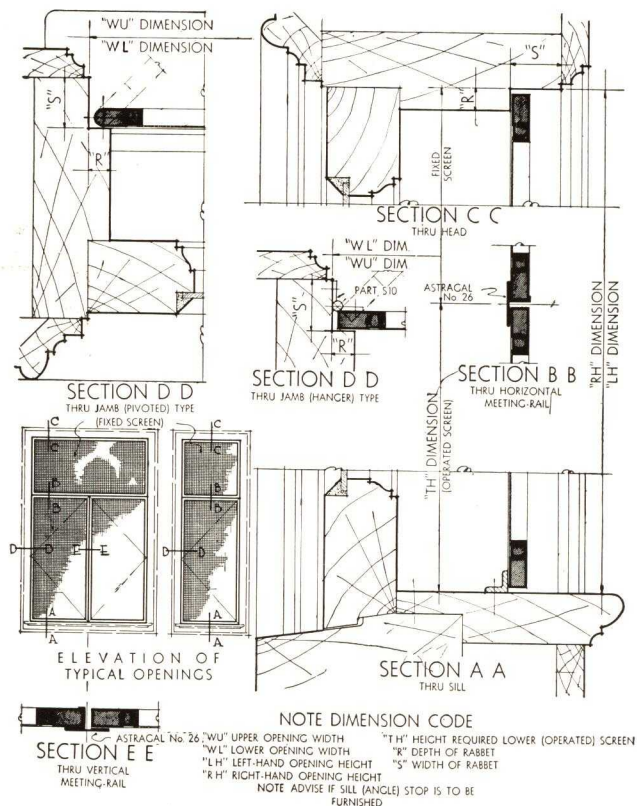
NOTE
LOWER HALF FOR (SINGLE SLIDING SCREEN)
SHOWN IN FULL SECTION
UPPER HALF FOR (DOUBLE SLIDING SCREEN)
SHOWN IN DOTTED LINE



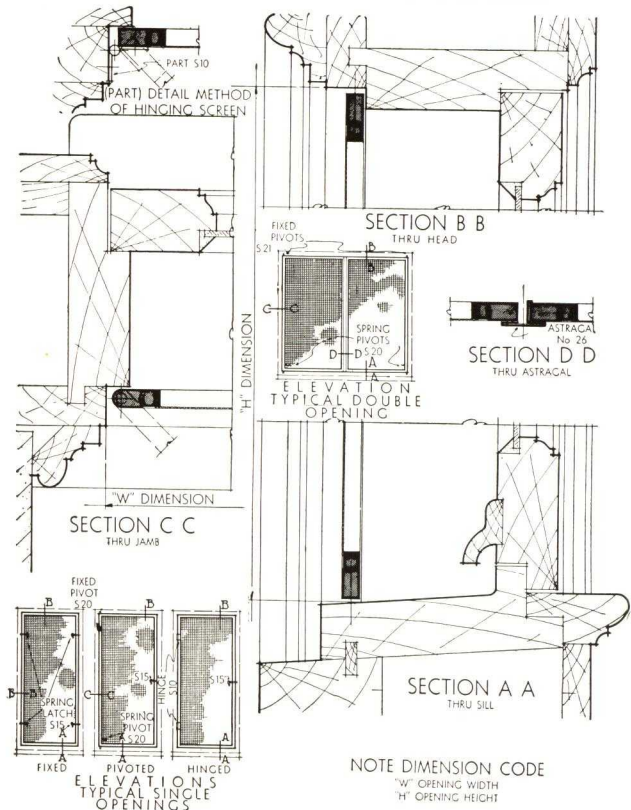
Ceco TOP-HUNG (PIVOTED & HANGER TYPE) SCREEN FOR DOUBLE-HUNG STEEL WINDOW



Ceco INSIDE PIVOTED OR HINGED SCREENS FOR CASEMENTS OR DOUBLE-HUNG WINDOW

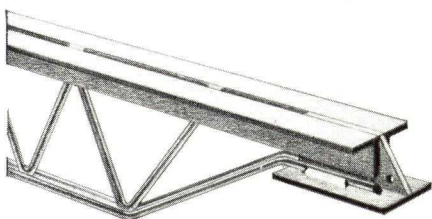


Ceco FIXED PIVOTED & HINGED SCREENS FOR WOOD (SWING-IN) CASEMENTS



CECO STEEL JOISTS . . .

STANDARD



CECO Open Web Steel Joists provide a light, easily erected floor system that conceals all sanitary, lighting and heating systems.

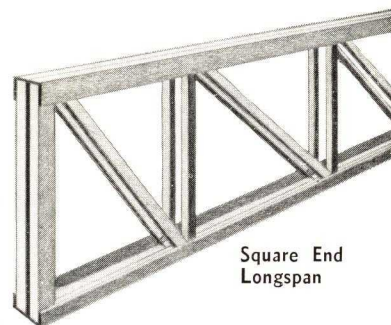
CECO Joists are shop fabricated of rolled steel sections into the form of a Warren Truss by the shielded arc welding process. Underslung ends allow required head room with minimum floor thickness.

The Top Flange, as wide as consistent with good design, provides greater lateral rigidity and increases efficiency of centering material and floor slab by reducing clear span between joists. The Bottom Chord, a tension member made of two round bars, permits easy, positive attachment of ceiling lath by standard tie wires or CECO Hairpin Type Clips. Round bars allow less contact with plaster, permit free air circulation, and eliminate ceiling streaking at contact point. Individual bearing plates are welded on each end. Separation of chord members permits easy attachment of special type floors or ceilings.

without using additional purlins. Depths of 18 in. to 32 in. make it possible to construct additional floors over auditoriums or gymnasiums without waste space between floors. One-story garages or factories often can be constructed without columns.

The accompanying illustration shows how CECO Longspans are made with a box section, vertical legs of chord angles outside, and all web members double angle sections. Steel Joists are often subjected to greater strain when handling and erecting than when in use, this construction insures delivery in good condition. Joists are bridged by angle cross bracing bolted at intervals of not over 10 ft. Holes are provided for attaching nailers and for structural steel connections.

CECO Longspans are made with square or underslung ends. On the square-end type the top chord can be sloped in one or both directions from center for roof drainage. All connections are made by the shielded arc welding process.



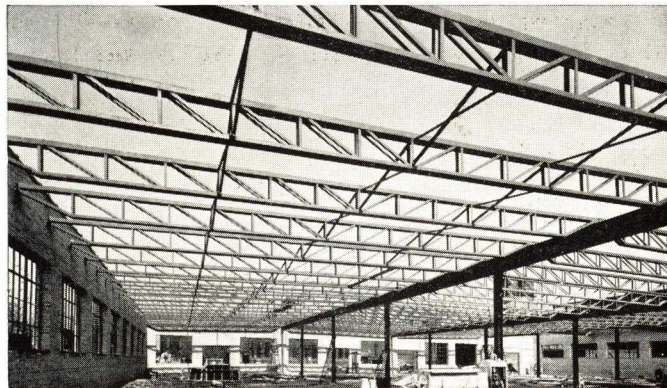
Square End
Longspan

NAILER JOISTS

CECO Nailer Joists are similar to CECO Standard Joists with the addition of a 2 x 3 wood nailer attached to the Top Chord for direct application of wood floors or roofs. Larger clear openings may be spanned with nailer joists, thus eliminating columns. This is advantageous in home construction where basements are put to many living uses. For greater load-carrying capacity than CECO Nailer Joists provide, wood nailers can be attached to standard steel joists.

LONGSPAN

CECO Longspan Joists span clean openings up to 64 ft. 0 in. spaced to permit application of floor or roof deck directly to joists



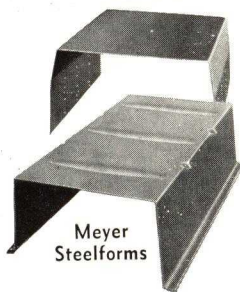
OTHER CECO PRODUCTS

CECO METAL LATHING MATERIAL

Includes expanded metal lath, rib lath, strip lath, all types of corner bead, base bead and picture mould, expansion flashing, hot and cold rolled furring channels, pencil rods, angles, tees, flats, tie wire, and accessories.

MEYER STEELFORM CONSTRUCTION

A standard system representing the highest type of concrete joist floor construction. Heavy gauge removable steelforms are used to form a floor construction of reinforced concrete joists and a thin concrete slab. Metal lath furring may be used beneath to provide a flat ceiling for plastering. Meyer Steelforms are handled on a rental basis only. Labor of installation and removal of steelforms by our skilled workmen may be included with the rental charge. Economy of the rental plan is apparent.



Meyer
Steelforms

WIRE FABRIC REINFORCEMENT

CECO Electrically Welded and Triangle Fabric consisting of cold drawn wires welded or woven to form a closely spaced mesh of square, rectangular or triangular shape is well adapted for many uses as tension reinforcement for concrete. CECO fabric is ideal for reinforcing roads, pavements, sidewalks, driveways, concrete pipe, reservoirs and concrete floors.

CECO REINFORCING BARS

CECO Bars are rolled from new billet steel and furnished as plain rounds or deformed rounds and squares. They can be furnished cut to length and bent, or in stock lengths. Reinforcing bars re-rolled from steel rails are also available.

CECO METAL WEATHERSTRIPS

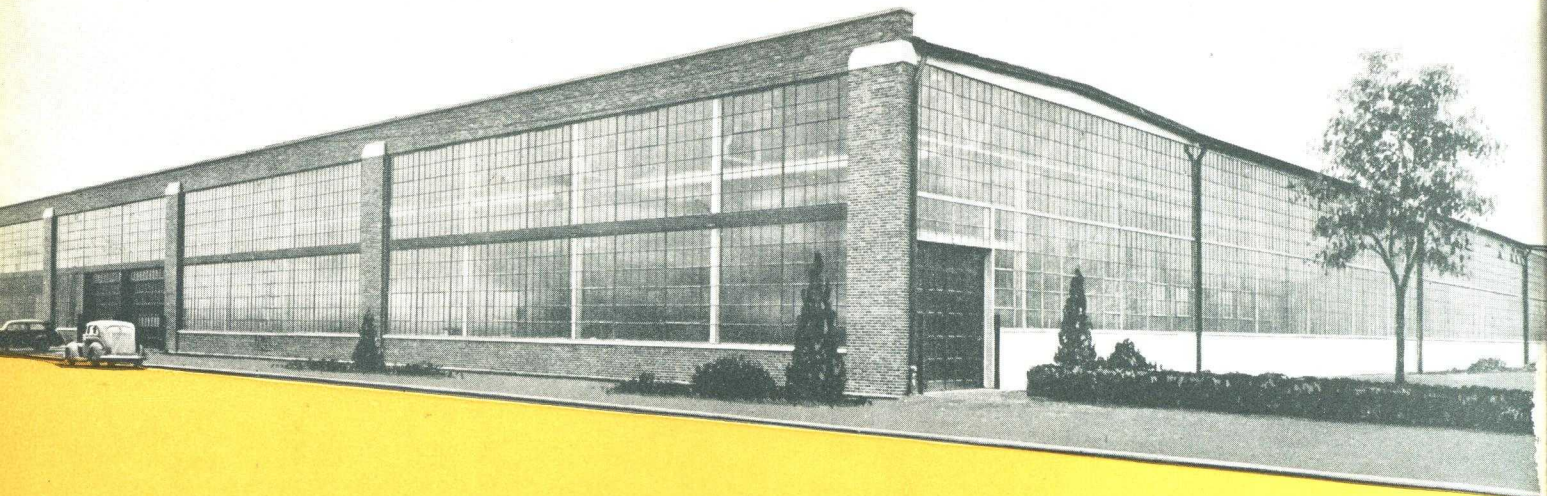
CECO offers a complete line of metal weatherstrip products for all standard or special weatherstripping conditions. CECO Weatherstrips offer many important, new advantages in design and operation. Proper weatherstrip installations are assured regardless of warpage because of maximum flexibility. University tests prove their highest efficiency. They are installed by authorized dealers or direct factory branches.

CECO CAULKING COMPOUND

An especially prepared plastic caulking compound which remains permanently elastic, non-staining and waterproof and does not dry out hard. CECO Caulking adheres tightly to both metal and wood and can be painted over without staining or marring new finish.

SEND FOR CATALOGS

We have prepared new, complete, illustrated catalogs on all of the above products which are handy reference books for all types of steel building products. They will be furnished free upon request.



THE NEW CHICAGO PLANT of CECO STEEL PRODUCTS CORP.

Construction of this large new unit to CECO'S manufacturing plant in Chicago, necessitated by the increased demand for CECO Products, adds greatly to our facilities for prompt delivery of highest quality Steel Building Materials. The new unit houses improved facilities for

the manufacture of CECO Steel Windows, Metal Frame Screens, Steel Joists and Metal Lathing Materials.

CECO'S Manufacturing Division, located in the heart of the country, is augmented by CECO Sales Offices and Warehouses in eighteen cities throughout the country.

Ceco STEEL PRODUCTS CORPORATION

Formerly **CONCRETE ENGINEERING COMPANY • INC.**

Manufacturing Division Headquarters • 5701 West 26th St., Chicago

General Offices • OMAHA

A NATIONAL ORGANIZATION AT YOUR SERVICE

The services of CECO Engineers and Sales Representatives in these strategically-located points throughout the country are at your command promptly for consultation and assistance in your construction problems.

GENERAL OFFICES • OMAHA, NEBRASKA

CECO DISTRICT SALES OFFICES

Dallas, 307 Construction Bldg.

Des Moines, Hubbell Bldg.

Detroit, 509 Guaranty Trust Bldg.

Houston, 2814 Pease Ave.

Indianapolis, 423 Berkley Road

Jersey City, Foot of New York Ave.

Kansas City, 1000 Waltower Bldg.

Los Angeles, 1450 Mirasol Street

Milwaukee, Bartlett Bldg.

Minneapolis, 2801 E. Hennepin Ave.

New Orleans, Carondelet Bldg.

Oklahoma City, 626 Insurance Bldg.

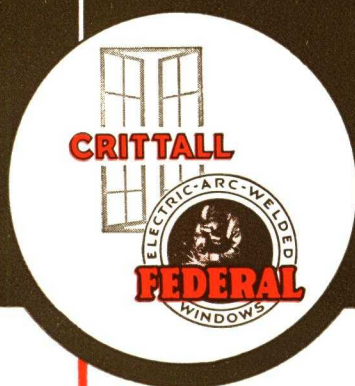
Omaha, 1141 North 11th Street

Peoria, South Bartonville

San Antonio, 501 Builders Exchange

San Francisco, 1280 Indiana St.

St. Louis, 4903 Delmar Blvd.



Windows

CRITTALL · FEDERAL · INC
WAUKESHA · WISCONSIN

CRITTALL - FEDERAL, INC.

WAUKESHA, WISCONSIN



UNIVERSAL CASEMENTS

NORMAN CASEMENTS

STANWIN CASEMENTS

INDUSTRIAL WINDOWS

INDUSTRIAL DOORS

MECHANICAL OPERATORS

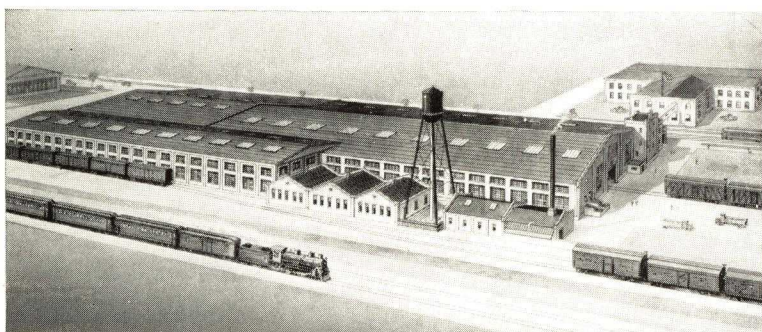


To help you please your clients with better jobs—conveniently, on time—this company has made two established lines of steel windows available from one dependable source, to meet every requirement.

Federal industrial windows—with an enviable reputation for quality and service—and Crittall casements in light, intermediate, and heavy classifications—embodying the patents and designs of the world's largest makers of casement windows—are manufactured under one roof and offered to you through one service organization.

This consolidated catalog, including an entirely new line of hardware for Stanwin casements, is designed for your convenience in specifying and detailing steel windows. It provides useful technical data rather than extensive illustration of the finished product.

Other applications and combinations of course are available, and improvements are constantly being made. These are offered as typical, covering the most usual conditions and practice. Engineering service of the Crittall-Federal organization is available promptly and cheerfully to help you meet any special need. Call the nearest representative, or write Crittall-Federal, Inc.



PLANT AND GENERAL OFFICES AT WAUKESHA, WISCONSIN

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UNIVERSAL CASEMENTS OF BRONZE, ALUMINUM and STEEL—Made of Heavy and Medium Section Assemblies.	3 to 8 inc.
NORMAN CASEMENTS—CASEMENTS PROJECTED and COMBINATION—Made of Medium Section Assemblies.	5, 9, 10
CASEMENT DOORS.	11
CASEMENT SCREENS.	12
STANWIN CASEMENTS of Light Section Assemblies.	13 to 17 inc.
INDUSTRIAL WINDOWS—Full Electric Arc Welded.	18 to 27 inc.
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Universal Steel Casement Specifications

All windows shall be Universal Steel Casements manufactured by Crittall-Federal, Inc., complete with hardware and erection fittings and in types and sizes as shown on the drawings and as hereinafter specified.

Glass and glazing are specified under "Glazing"; grouting and caulking, under "Masonry Work"; field painting, under "Painting."

Casements shall be made of hot rolled new billet steel. Combined weight of vent and frame sections shall be not less than 4.6 lbs. per lineal foot for Heavy Casements (or 3.45 lbs. for Medium Casements); and combined depth of vent and frame sections front to back in closed position not less than $1\frac{13}{16}$ " for Heavy Casements (or $1\frac{1}{2}$ " for Medium Casements). The table of maximum sizes on Page 7 shall govern the weight of the section to be used.

All corners shall be mitered, electrically butt welded and exposed and contact welded surfaces ground smooth. All weathering contacts shall be rolled integral with the outside frame and vent sections and shall be continuous between parallel flat surfaces of not less than $\frac{1}{4}$ " width at both inside and outside points of closure. Sections shall be so designed that in composite openings glass will be in the same plane in stationary and ventilating units and sight lines will be uniform throughout. Furnish moulded steel glazing beads carefully mitered and file fitted to each pane using countersunk brass attaching screws.

Side hinged vents shall have free extension or close drop forged steel pivot hinges with bronze pins. (Optional) Hinges shall be solid bronze butts with hardened steel pins. (Optional)—Furnish extension or close pivot hinges with special zinc alloy friction washers to eliminate use of sill adjusters. Vents up to 5' 6" high to have solid bronze locking handle; vents

5' 6" high and over shall be furnished with two-throw locking devices.

Projected ventilators shall be balanced on two heavy supporting arms pivoted securely to the ventilator and to the frame. Friction shall be provided by two extruded bronze sliding shoes equipped with coil compression springs encased in steel barrel housings rigidly welded to ventilator section. Projected ventilators shall have cam handles or spring catch to provide for pole operation when out of easy reach from the floor.

Top and bottom hinged ventilators to be equipped with steel pivot hinges or solid bronze butts and shall have peg and stay for top hinged swing out and spring catch and concealed side arms for bottom hinged in ventilators.

Horizontally and vertically pivoted ventilators shall be hung on heavy bronze ring type pivots. Horizontally pivoted ventilators shall be fitted with spring catches for pole operation if friction ring center pivots are used or spring catch and cord if free pivots. Vertically pivoted ventilators shall have one locking handle up to 5' 6" high and two throw locking device over 5' 6"; vertically pivoted vents 3' 0" wide and over shall have locking handles at each jamb.

All steel sections shall be cleaned free from rust, oil and loose scale and painted in shop with two coats rust-inhibitive paint, each coat baked on separately at a temperature of 300 degrees.

Provide screens where required. (See page 12 for screen specifications.)

All casements shall be erected complete into prepared openings by skilled mechanics and bedded in non-staining mastic cement with excess mastic neatly trimmed off.

SUBFRAMES

Subframes will be furnished when specified made of 12 ga. pressed steel with all corners and joints at mullion and transom bars coped or mitered and continuously welded along the entire line of intersection with welds dressed flush on all exposed surfaces. Subframes shall be painted as specified for casements. They shall be set plumb and level and built in and calked by the mason contractor as the walls go up.

BRONZE AND ALUMINUM CASEMENTS

These non-ferrous casements are available in sections similar to the steel casements covered by the foregoing specifications. The sections are assembled by solidly

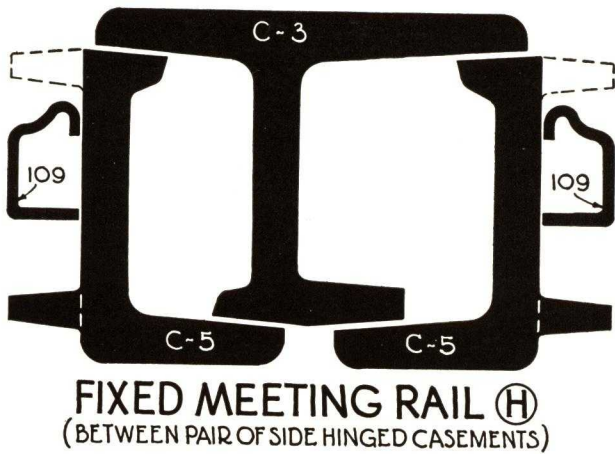
gas welding corners and carefully cleaning welds free from flux. Finish is generally smooth natural extruded finish, but satin or polished finish is furnished when specified. Hardware is of white metal. Windows and hardware are carefully packed to prevent damage to finish during shipment.

CASEMENT COMBINATION—CASEMENT PROJECTED—NORMAN CASEMENTS

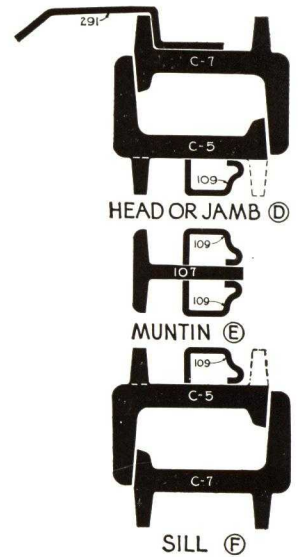
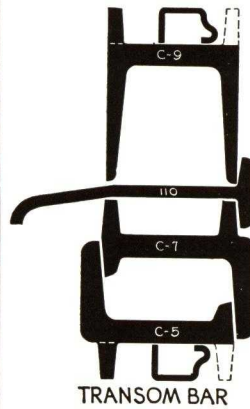
These standardized lines of Universal Medium Casements are particularly suitable for hospitals, schools, office buildings, institutions, and similar buildings and they are described on pages 7, 8 and 9.

Heavy Steel Casement Sections

TYPICAL FULL SIZE

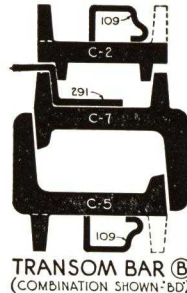
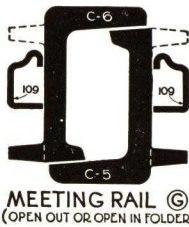


HALF FULL SIZE



HEAD OR JAMB (D)

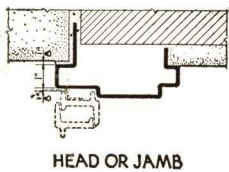
MUNTIN (E)



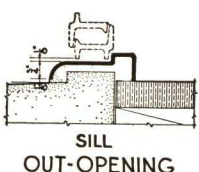
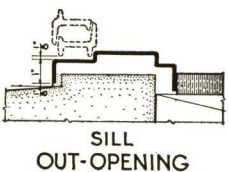
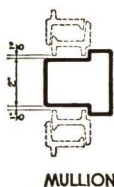
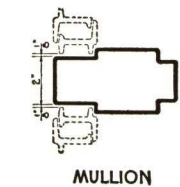
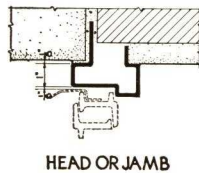
NOTE:
DOTTED LINES SHOW
SECTIONS USED FOR
OUTSIDE PUTTY GLAZING

Steel Casement Subframes

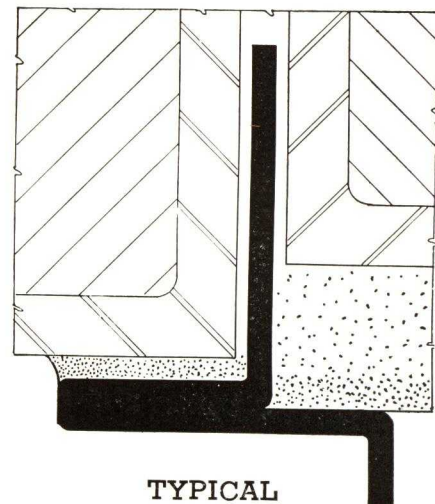
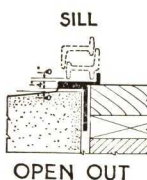
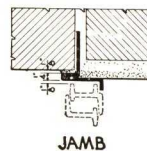
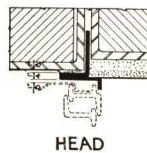
DOUBLE RABBET



SINGLE RABBET

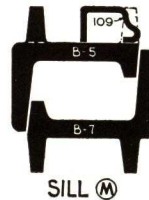
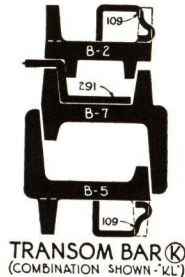
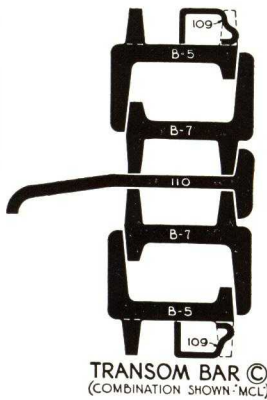
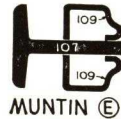
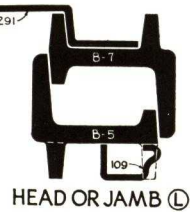


UTILITY FRAMES

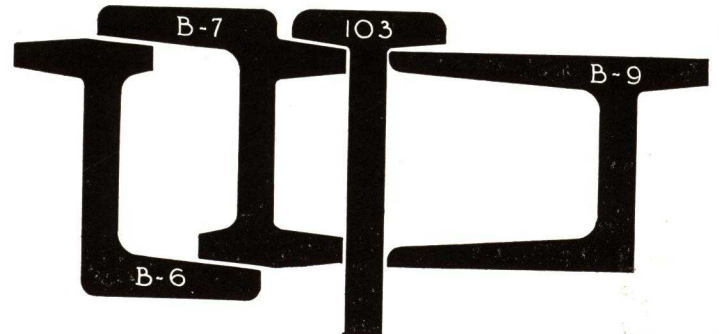


Medium Steel Casement Sections

HALF FULL SIZE



TYPICAL FULL SIZE

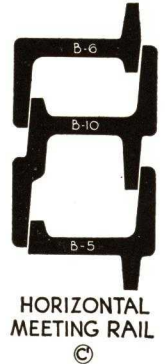
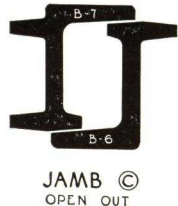
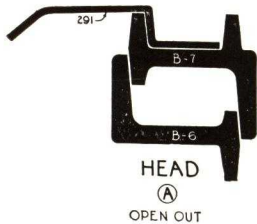


NOTE:

DOTTED LINES SHOW
SECTIONS USED FOR
OUTSIDE PUTTY GLAZING

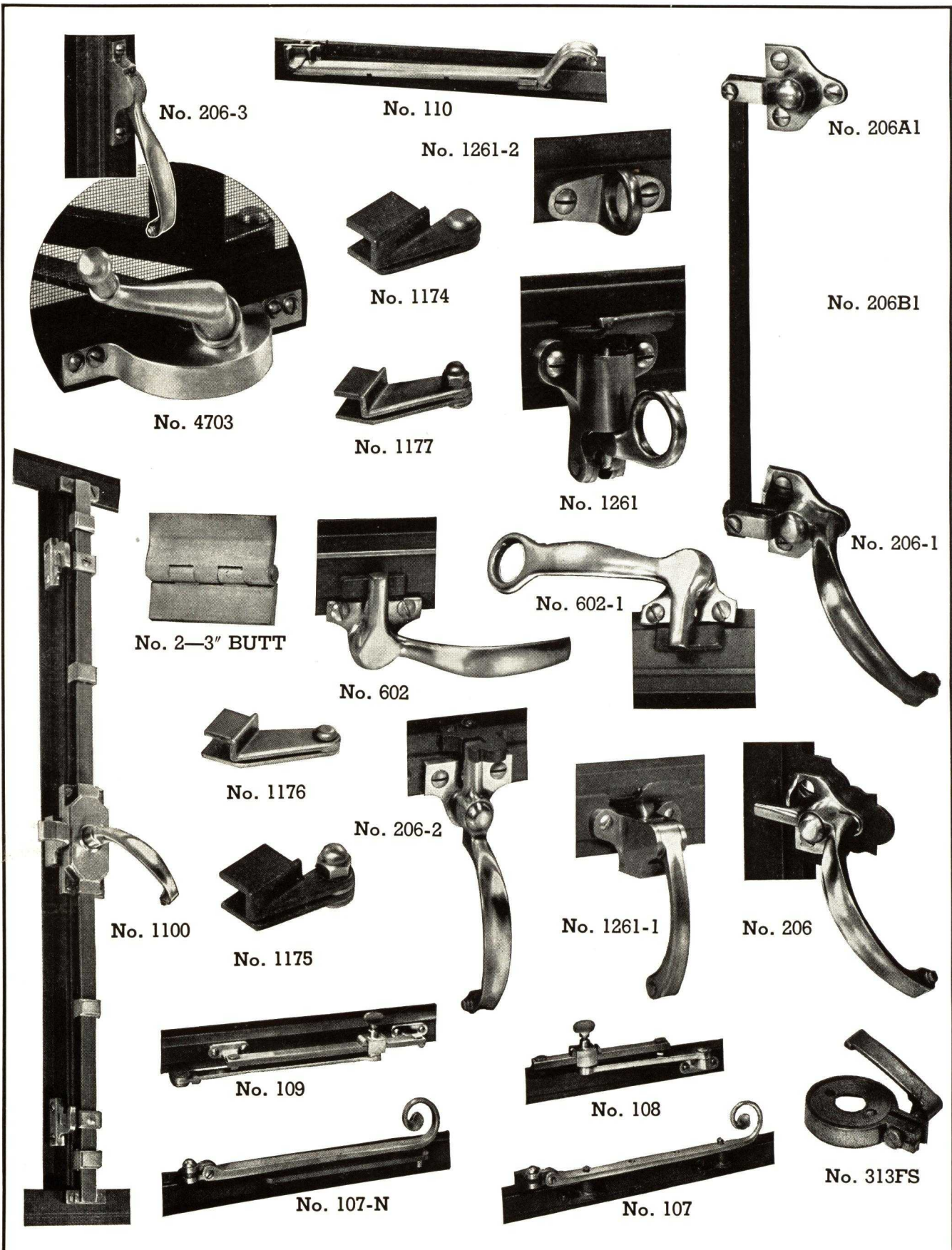
CASEMENT COMBINATION — CASEMENT PROJECTED — NORMAN

HALF FULL SIZE



SEE PAGES
7 AND 9
FOR WINDOWS

Universal Casement Hardware



Universal Steel Casements

CASEMENT PROJECTED & CASEMENT COMBINATION SPECIFICATIONS

Window sections to be steel with combined weight of outside frame and vent sections not less than 3.45 lb. per lin. ft. and combined depth front to back in closed position of not less than 1 1/2", and shall be arranged for outside putty glazing.

All corners shall be electrically butt welded and exposed and contact welded surfaces ground smooth. Meeting rails and transom bars shall be riveted and welded. Muntins shall be riveted to frames and interlocked at their intersections.

All weathering contacts shall be continuous between parallel flat surfaces of not less than 1/4" width at both inside and outside points of closure without the use of applied or loose weathering linings.

Side hinged vents shall be hung on extended drop forged steel friction pivots continuously welded to frame and vent frames. Projected vents shall have two high carbon steel balance arms and bronze sliding friction shoes backed by adjustable heavy coil spring completely enclosed in dust-proof housing rigidly attached to corners of vent.

All finish hardware shall be bronze, statuary finish, of heavy, plain design. Project in vents within reach of floor shall have positive type spring handle latch. Projected vents beyond reach from floor shall have ring type spring catches. Side hinged vents to have pivoted type locking handles with concealed coil tension springs.

For those out opening vents requiring insect screens, underscreen hardware is to be furnished. (See page 12 for screen specifications.)

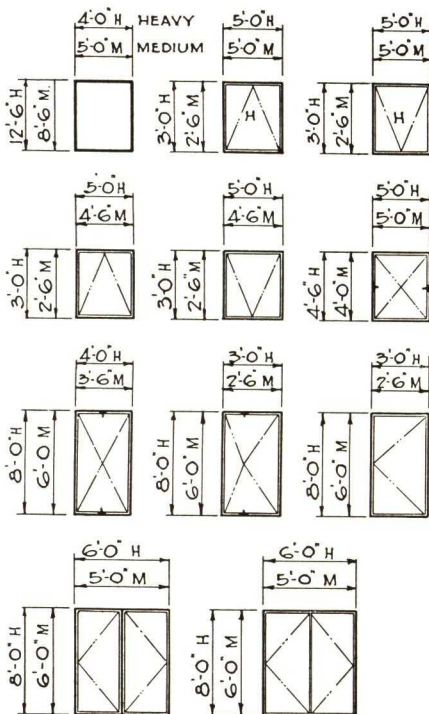
All steel sections shall be cleaned free from rust, oil, and loose scale and painted in shop with two coats rust-inhibitive paint, each coat baked on separately at a temperature of 300 degrees.

Outside frame members shall be equal leg to set into prepared rebate or shall have proper extension for securely setting into masonry joint, as required.

All casements shall be erected complete into prepared openings by skilled mechanics and bedded in non-staining mastic cement with excess mastic neatly trimmed off.

UNIVERSAL WINDOWS—SIZE LIMITATIONS

BASIC CASEMENT SECTIONS LIMITING SIZES FOR MEDIUM AND HEAVY SECTIONS

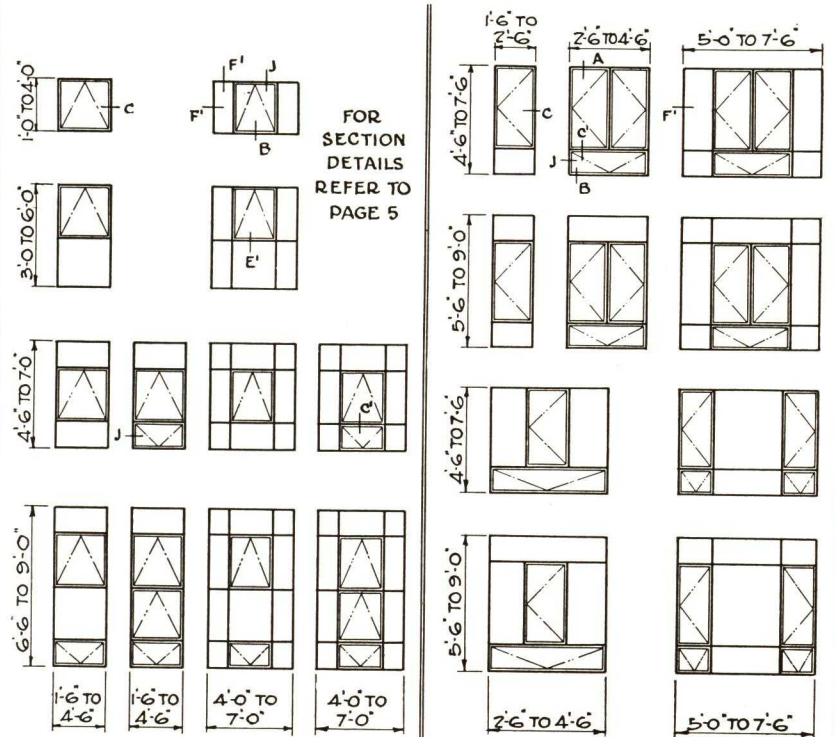


PROJECTED CASEMENTS

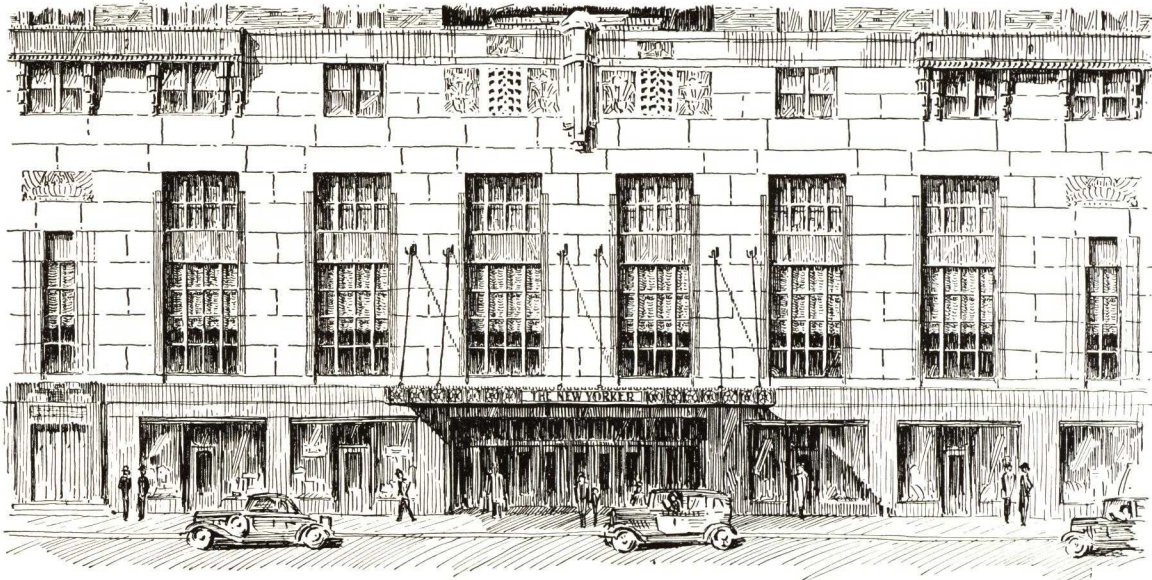
COMBINATION CASEMENTS

STANDARD DIMENSIONS

RUN IN 6" INCREMENTS BETWEEN THE MINIMUM & MAXIMUM SIZES SHOWN

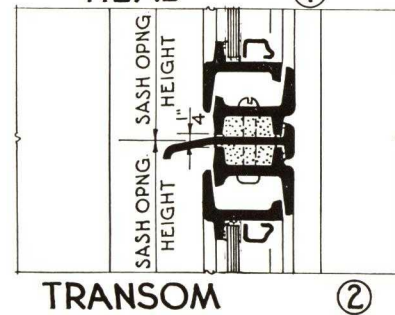
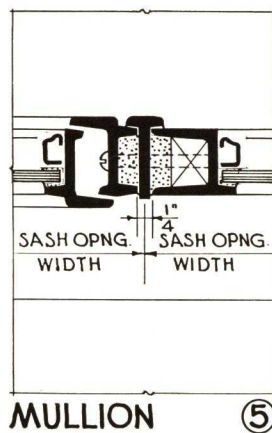
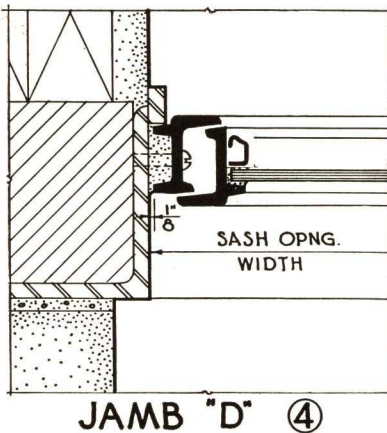
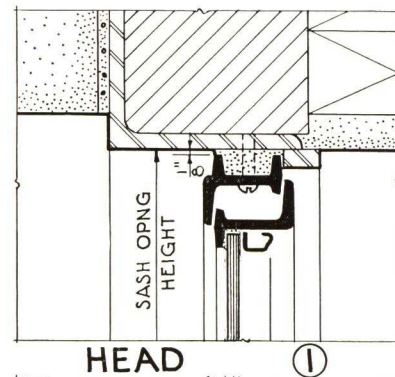
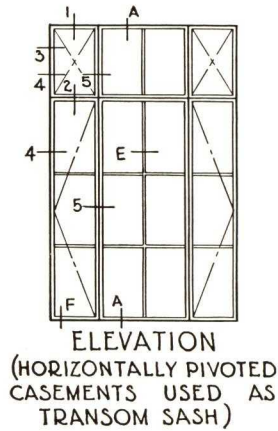
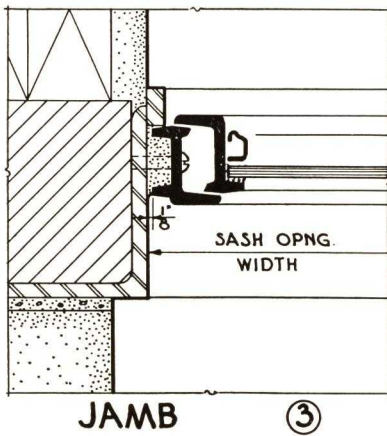


Universal Casement Installation



NEW YORKER HOTEL - NEW YORK CITY

SUGARMAN AND BERGER - ARCHITECTS



NOTE: SECTION NUMBERS REFER
TO ELEVATION SHOWN. SECTION
LETTERS REFER TO SECTIONS ON
PAGE 4

SCALE OF DETAILS - 3" = 1'-0"

Norman Casements

Norman Casements are heavy standard windows, in a wide range of sizes, and are adaptable to use in any type of building. They are a standardization of the medium Universal Casement, a custom-built window, and possess the same characteristics of design and workmanship.

SPECIFICATIONS

All windows shall be Crittall-Federal Norman Casements in standard types and sizes shown on the drawings and as hereinafter specified.

Casements are to be fabricated from steel sections with combined weight of outside frame and vent sections not less than 3.45 lbs. per lineal foot and combined depth front to back in closed position of not less than $1\frac{1}{2}$ ", and shall be arranged for outside putty glazing.

All corners shall be electrically butt welded and exposed and contact welded surfaces ground smooth. Meeting rails and transom bars shall be riveted and welded. Muntins shall be riveted to frames and interlocked at their intersections.

All weathering contacts shall be continuous between parallel flat surfaces of not less than $\frac{1}{4}$ " width at both inside and outside points of closure, without the use of applied or loose weathering linings.

Side hinged vents shall be hung on extended drop forged steel pivots continuously welded to frame and

vent frames. Top hinged vents are hung on close type pivots.

Side hinged vents shall be fitted with polished bronze underscreen locking handles with concealed coil tension springs and roto style adjuster having $\frac{5}{8}$ " diameter worm engaging 4 teeth of heavy, cadmium-plated segment gear. Locking handle and adjuster case and handle shall be solid bronze with statuary finish. Top hinged vent shall have solid bronze underscreen push bar adjuster.

All steel sections shall be cleaned free from rust, oil, and loose scale and painted in shop with two coats rust-inhibitive paint, each coat baked on separately at a temperature of 300 degrees.

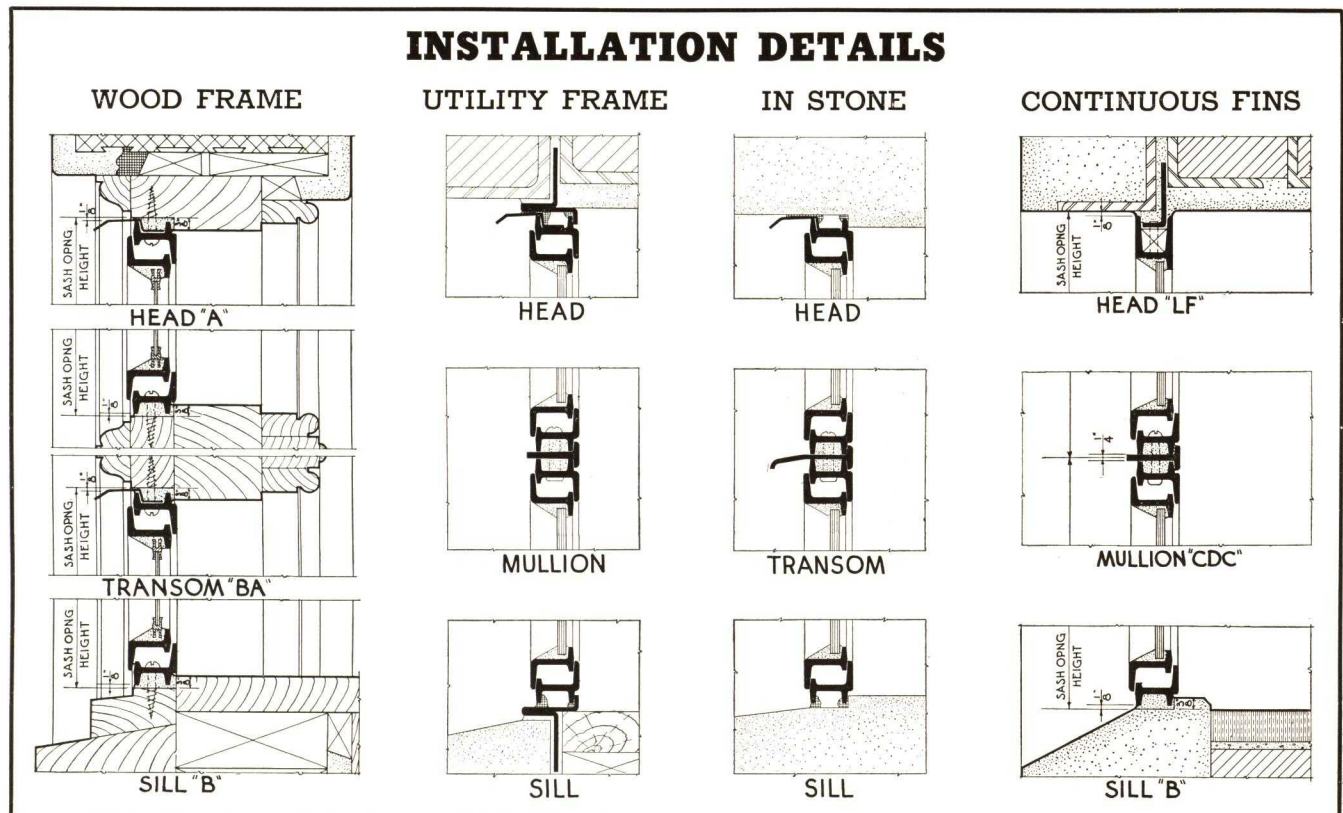
Provide one metal screen for each vent with the screen frame made of one-piece steel section with $\frac{1}{4}$ " diameter solid steel spline, enameled dark grey. Cloth shall be 16 mesh bronze wire. Grommets in cloth will not be permitted.

All casements shall be erected complete into prepared openings by skilled mechanics and bedded in non-staining mastic cement with excess mastic neatly trimmed off.

Where insect screening is not essential, specify friction pivots and solid bronze locking handle on side hung vents and bronze peg and stay adjuster on top hinged vents.

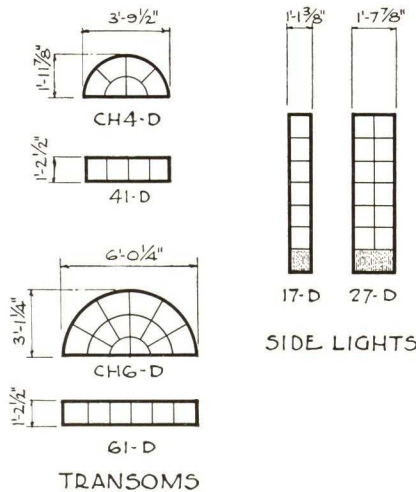
Construction "with sight lines" is furnished when specified—see sections on page 5.

INSTALLATION DETAILS



Casement (French) Doors

NORMAN DOOR



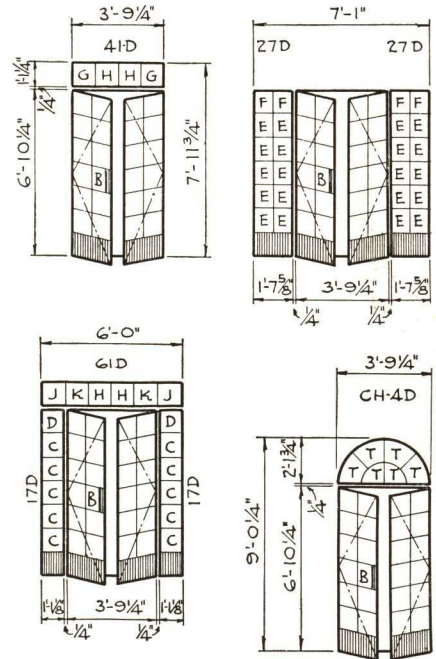
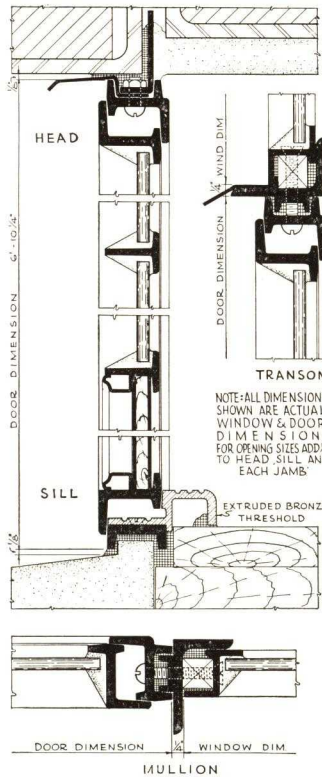
SECTIONS
ONE-FOURTH
FULL SIZE



STANDARD DOOR

STANWIN DOOR

Transom and Side Lights

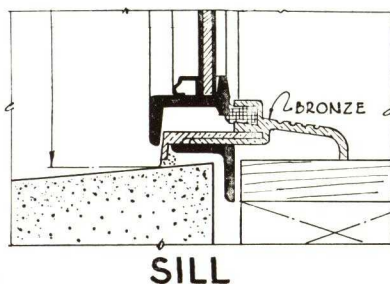
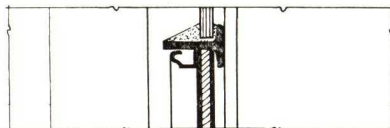
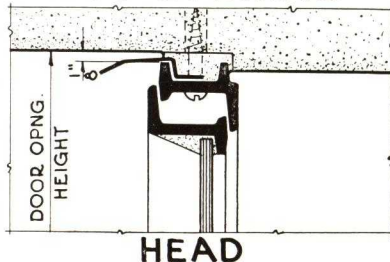


GLASS SIZES

A = 10" x 11"
B = 7 1/2" x 11"
C = 11 3/4" x 11"
D = 11 3/4" x 11 3/4"
E = 8 3/4" x 11"
F = 8 3/4" x 11 3/4"
G = 10 1/2" x 11 3/4"
H = 10 1/2" x 11 3/4"
J = 12 3/4" x 11 3/4"
K = 11 1/2" x 11 3/4"
T = TO TEMPLATE
NOTE: ALL LIGHTS NOT LETTERED SIZE "A"

SECTIONS
ONE-FOURTH
FULL SIZE

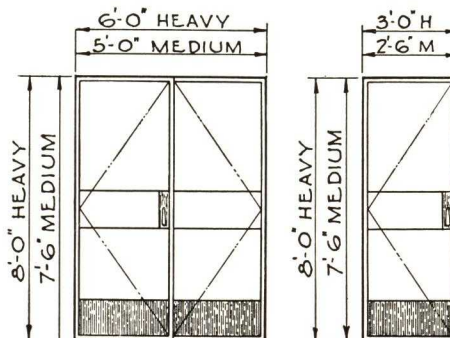
OUT-OPENING



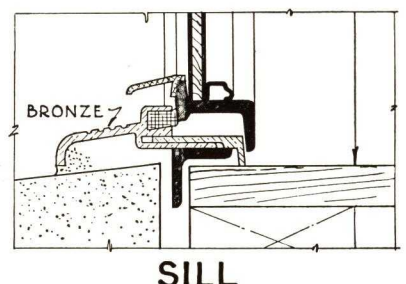
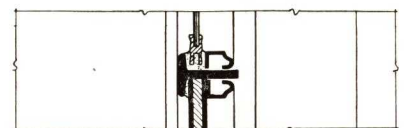
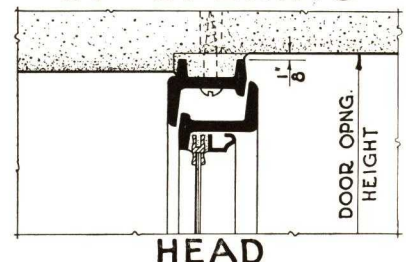
UNIVERSAL MEDIUM and HEAVY DOORS

STEEL CASEMENT DOORS ARE FITTED WITH CONCEALED TYPE CREMONE BOLT LOCK WITH THUMB TURN ON INSIDE, SOLID BRONZE LOCKING HANDLES, TOP AND BOTTOM BOLTS AND STEEL KICK PLATE. BRONZE THRESHOLD AND CYLINDERS FOR LOCK ARE FURNISHED AT AN EXTRA.

MAXIMUM SIZES



IN - OPENING

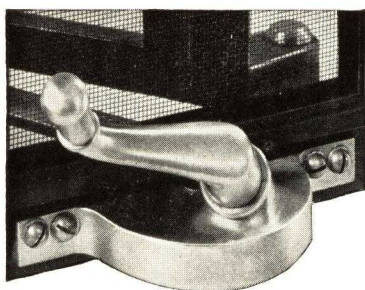


Casement Screens

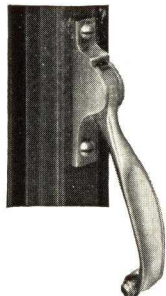
Screens may be applied to all types of casement windows and doors. In selecting the screen and window combination, consideration should be given to appearance, convenience, shades, venetian blinds, draperies, expected frequency of opening and closing the ventilators, economy, and other factors.

ROTO STYLE—SIDE HINGED OPEN OUT WINDOWS

Roto style windows and fixed screens are more widely used than any other combination. The windows themselves are factory prepared especially to receive screens. The hardware is so designed that out opening ventilators are controlled with ease without touching the screen.



No. 4703



No. 206-3

This roto style operator and locking handle are recommended for general use on vents up to 2'3" wide and 5'0" high. For vents exceeding these sizes please consult us.

SCREENS FOR TOP HINGED AND PROJECT OUT AT BOTTOM WINDOWS



No. 110

Stay bar No. 110 permits out opening top hinged and project out at bottom vents to be equipped with fixed screens and the operation of the vents either by hand or by pole without touching the screen.

OTHER SCREENING ARRANGEMENTS

Side hinged screens may be applied directly to the frames of windows with side hinged vents—friction hinges or concealed friction adjusters should be specified for the windows as exposed double bar adjusters will interfere with the screen. Vertically sliding screens are also available.

Vertically and horizontally pivoted windows are furnished with flat screens—one screen on outside

and one on inside of each leaf with closure astragal from pivot to pivot. Ventilator hardware is always applied to the inswinging rail of the window vent.

Screen doors are never connected directly to the casement doors. Double rebated subframes providing rebates for both door and screens and clearance for hardware are recommended. Hanging stiles secured to casement door frame and having rebate for screen door may be used in place of subframe.

SCREEN FRAMES

Frames should be narrow to admit a maximum of daylight and ventilation. Large single screens, however, must have frames wide enough to be rigid and to keep the screen cloth taut. Cross braces are required on screen doors and similar large panels. Screen frames for projected vents are furnished with projecting leg or box to allow screen to clear the toe of the window ventilator on the sliding shoe rail.

SPECIFICATIONS

Solid spline frames—in steel only, recommended maximum size 2'6" x 5'0". Frame is special drawn one-piece steel section .04" thick continuous at all four corners with 1/4" round spline.

Tubular frames—in steel, bronze, or aluminum, 5/8" x 1/16" Tube, recommended maximum size 3'0" x 6'0" with one cross brace. 1 1/8" x 1/16" Tube, recommended maximum size 3'0" x 8'0" with one cross brace.

Frame is rolled from flat stock into rigid tubular shape and assembled by accurately mitering the corners and solidly pressing over heavy stamped corner reinforcing blocks which extend approximately 3" in each direction from each corner. Spline is shell type.

Screen door frames and screen door hardware. Rails and stiles are .032" thick steel tubes, 5/8" thick. Top rails, stiles, and cross braces should be 3" wide. Bottom rail can be arranged to be 6" to 12" in height. Each leaf is hung on three loose pin hinges; the active leaf fitted with bronze latch, lever handles, and air check; the inactive leaf with bronze top and bottom bolts. Closure astragal furnished between door leaves.

Screen cloth shall be 16 mesh, .0113" in diameter, bronze wire. This cloth must be held tautly by removable spline. Edges of spline groove and of the spline are rounded to avoid possibility of cutting the screen cloth.

Combination wire guard and insect screens are similar in all respects to solid spline type frames except 1 1/2" mesh, No. 9 gauge steel wire cloth is attached to screen frame by welding at all contact points. Heavier grilles may require special hardware.

Stanwin Steel Casements

SPECIFICATIONS

All windows shall be Crittall-Federal Stanwin Casements in standard types and sizes shown on the drawings and as hereinafter specified.

Casements are to be fabricated from steel sections with combined weight of outside frame and vent sections not less than 2 lb. per lin. ft. and neither frame nor vent member shall be less than 1" deep.

Frame and vent frame corners shall be electrically butt welded with exposed and contact welded surfaces ground smooth. Meeting rails and transom bars shall be riveted and welded. Muntins shall be solidly riveted to frames and interlocked at their intersections.

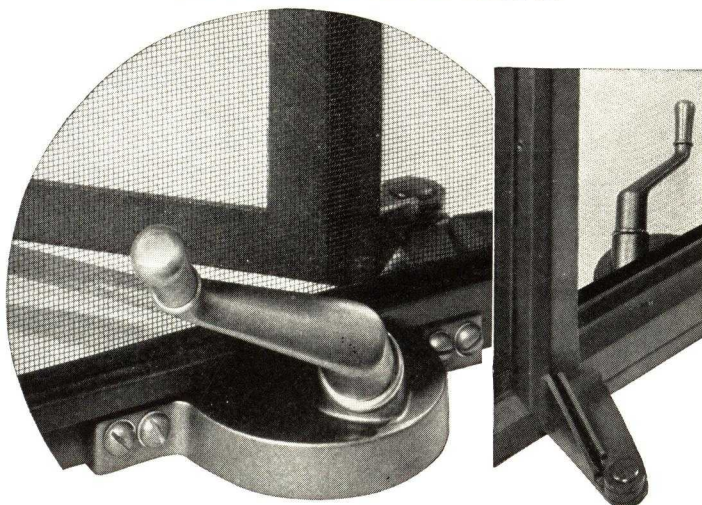
Side hinged ventilators shall be hung on extension

hinges of the angle (bracket) type fully arc-welded both horizontally and vertically along the line formed by hinge leaf abutting the window member. Hinge pins are to be not less than $\frac{5}{16}$ " diameter bronze. Transom and Tilt-in vents shall be hung on steel hinges.

All steel sections shall be cleaned free from oil, rust, and loose scale and painted in shop with two coats rust-inhibitive paint, each coat baked on separately at a temperature of 300 degrees.

All casements shall be erected complete into prepared openings by skilled mechanics and bedded in non-staining mastic cement provided by window manufacturer.

ROTO STYLE HARDWARE



No. 4703 AF GEAR OPERATOR (Front and Back Views)

Provide solid cast bronze lever locking handle—one for each vent. Operators shall be of heavy internal segment gear and worm type with four teeth of the segment in constant engagement with worm. Housing for worm and gear shall be non-ferrous, metallic lacquered to match locking handles. Both locking handles and gear operators shall be so designed that no cut-outs in screen cloth are required.

Top hinged transoms to be provided with screen-type push bar.

Provide one screen for each vent with attachments allowing for easy removal of screen without special tools. Screen frame to be of rewirable type with $\frac{1}{4}$ " solid steel round spline and U-shaped steel frame continuous at all four corners. Cloth to be 16 mesh bronze.



No. S4617
LOCKING
HANDLE

SIMPLEX STYLE HARDWARE



No. S4618
LOCKING HANDLE

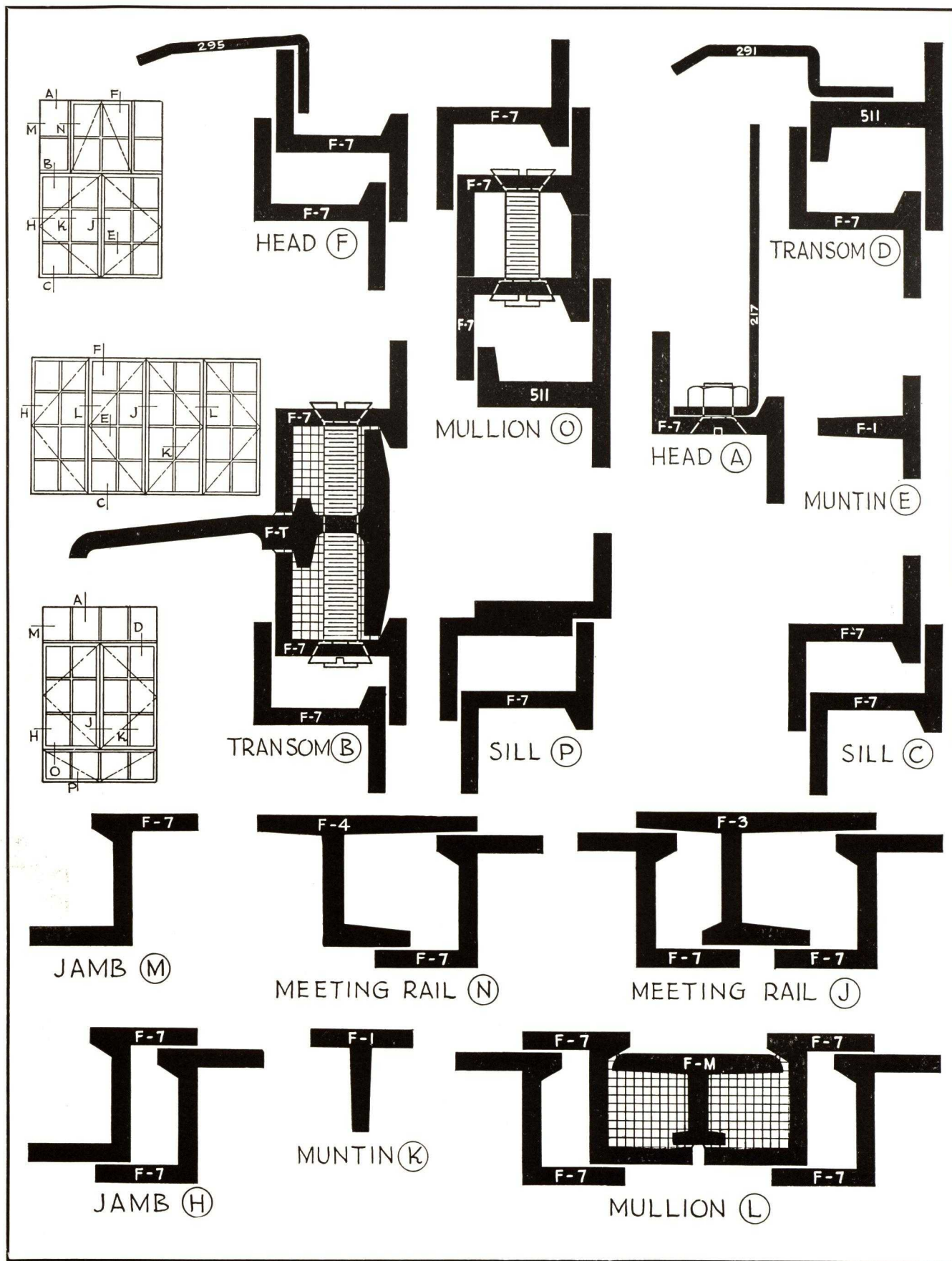
Provide solid cast bronze lever locking handle attached to vent frame engaging in closed position with bronze, wedge shaped, strike attached to outside window frame.

Hinges to be of adjustable friction type which eliminates the need of separate stay-bar or adjuster.

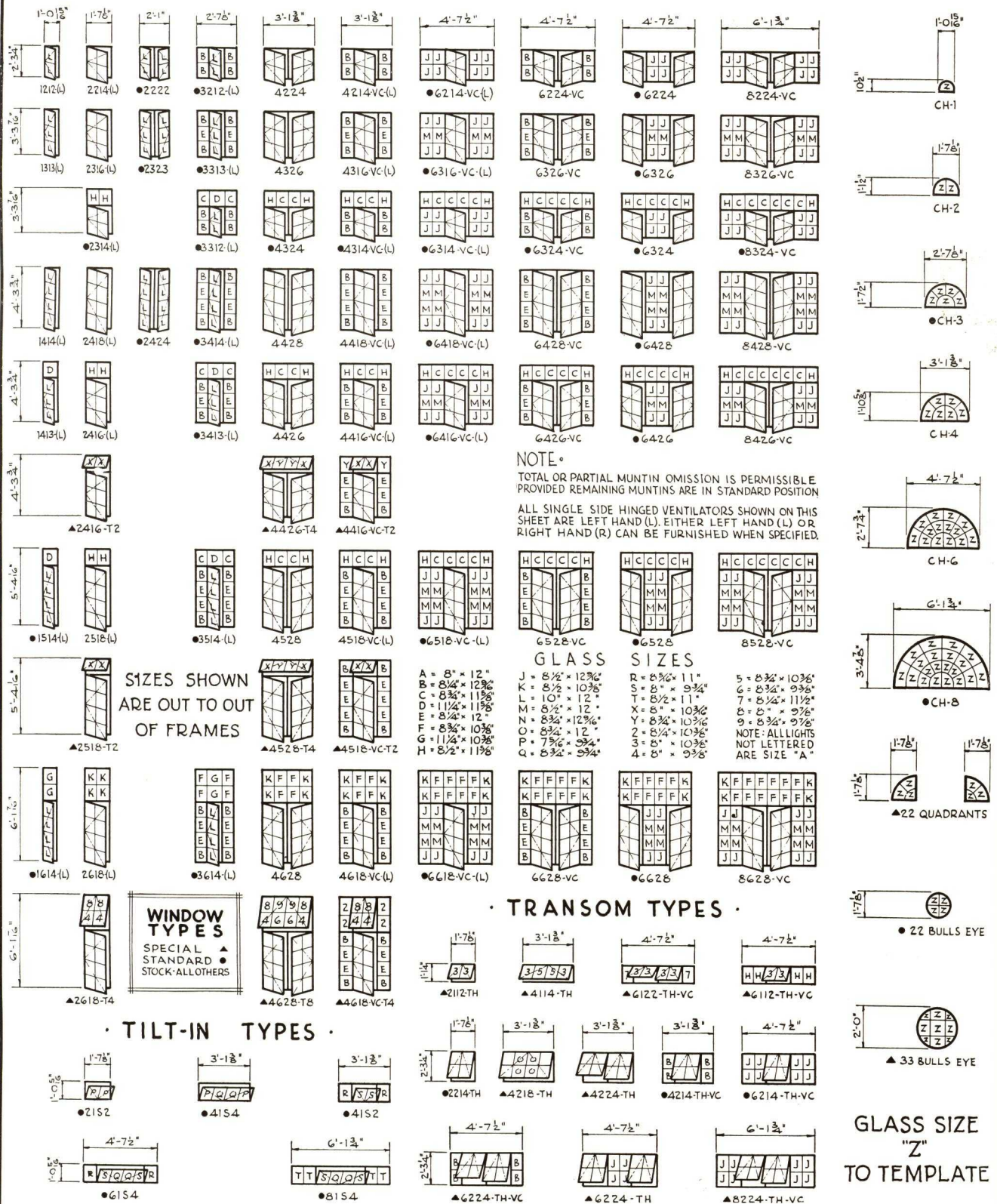
Screens to be wicket type with steel frame having solid $\frac{1}{4}$ " round spline and 16 mesh bronze cloth. Screen frame to be of proper depth to clear casement hardware and sliding wicket to provide ready access for opening and closing window ventilator. One screen to be furnished for each single side hinged vent and one screen to be furnished for each pair of adjacent side hinged vents.

(Option) Side hinged screens may be had instead of wicket type. Windows with fixed transoms should be detailed to avoid interference between hinged screen and shades or draperies.

Stanwin Casement Full Size Sections



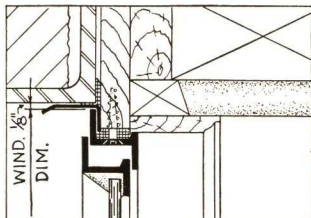
Stanwin Casement Types and Sizes



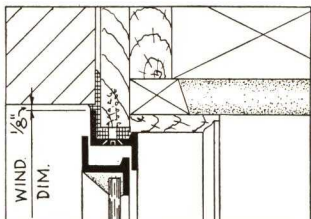
STANWIN'S 100% FIXED AVAILABLE IN ALL ABOVE DIMENSIONS (EXCEPT "TILT-IN" TYPES)

Stanwin Casement Installation Details

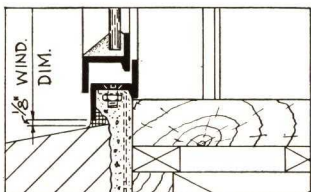
NOTE: INTERIOR, ROUGH WALL DIMENSIONS MUST ALLOW AMPLE SPACE FOR FURRING, PLASTER, TRIM, STOO, SHADES, STORM SASH, SCREENS AND HARDWARE INDICATED IN THESE TYPICAL DETAILS.



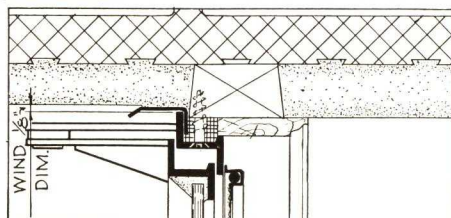
HEAD



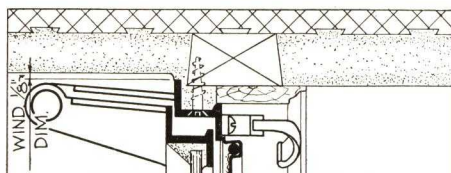
JAMB



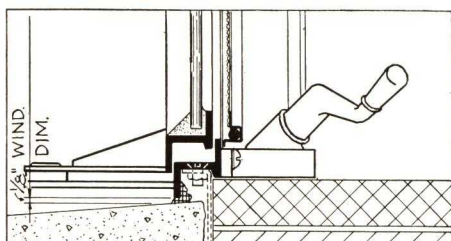
SILL
BRICK VENEER



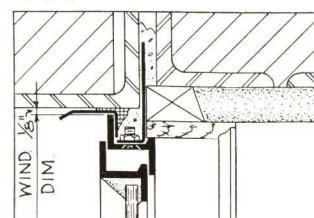
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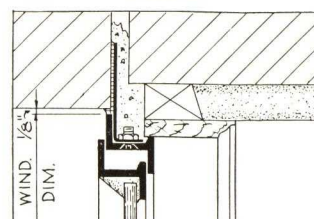
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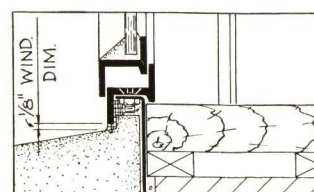
SILL
TILE & STUCCO



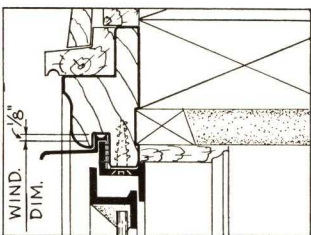
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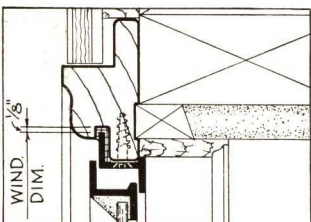
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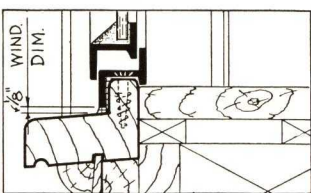
SILL
SOLID BRICK



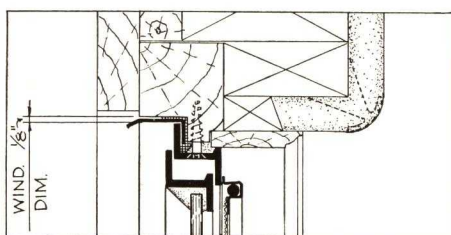
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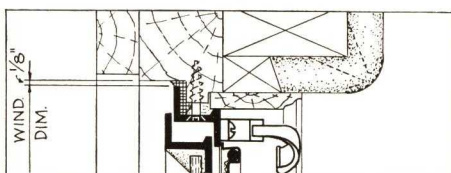
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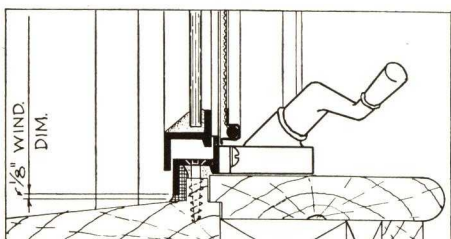
SILL
REDWOOD SURROUNDS



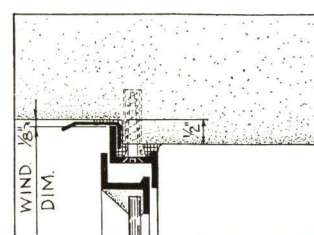
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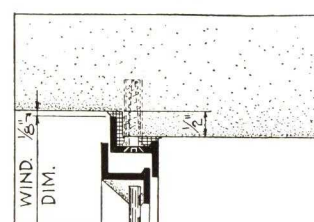
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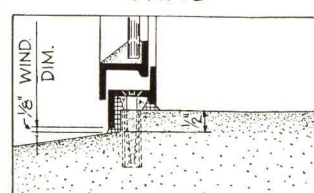
SILL
FRAME



HEAD



JAMB



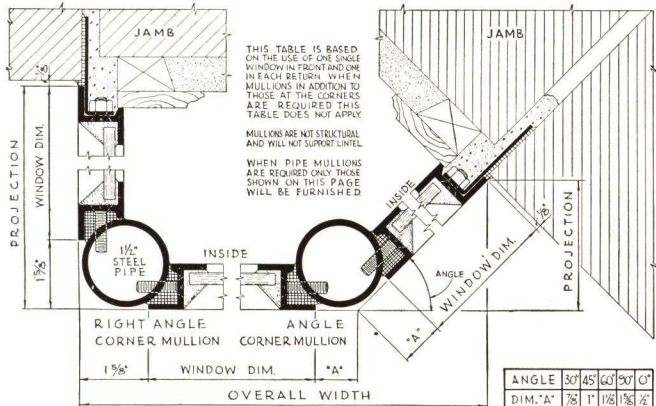
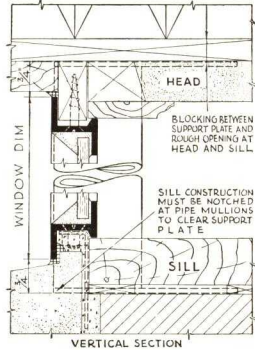
SILL
STONE

Stanwin Steel Casements

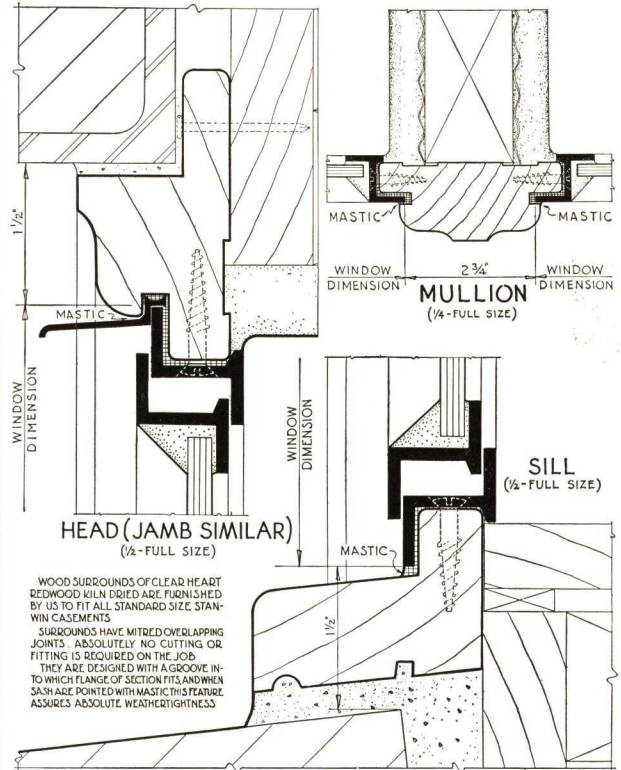
BAY WINDOWS

OVERALL WIDTHS (OW) FOR BAY WINDOWS

	30° SPLAY	45° SPLAY	60° SPLAY	90° SQUARE
FOR ONE LIGHT WIDE RETURN				
3 LIGHTS IN FRONT SECTION	4'-8 3/8"	4'-4 7/8"	3'-11 1/2"	2'-10 3/8"
4 LIGHTS IN FRONT SECTION	5'-3"	4'-11"	4'-5 5/8"	3'-4 5/8"
5 LIGHTS IN FRONT SECTION	6'-0 5/8"	5'-5 1/4"	5'-11 3/8"	4'-10 3/4"
6 LIGHTS IN FRONT SECTION	6'-3 3/8"	7'-11 1/2"	7'-6"	6'-5"
FOR 2 LIGHT WIDE RETURN				
3 LIGHTS IN FRONT SECTION	5'-7 1/2"	5'-1 5/8"	4'-5 5/8"	2'-10 3/8"
4 LIGHTS IN FRONT SECTION	6'-1 3/8"	5'-7 7/8"	4'-11 7/8"	3'-4 5/8"
5 LIGHTS IN FRONT SECTION	7'-7 7/8"	7'-2"	6'-6"	4'-10 3/4"
6 LIGHTS IN FRONT SECTION	9'-2 1/8"	8'-8 3/4"	8'-0 1/4"	6'-5"

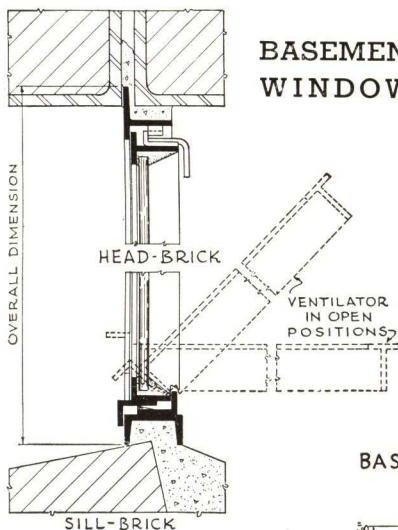


WOOD SURROUNDS



Basement and Utility Windows

BASEMENT WINDOWS



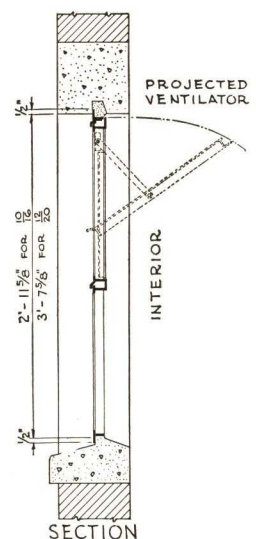
WINDOWS ARE LOCKED WITH A CAM ACTION LOCK; ARE PROVIDED AT THE JAMBS WITH STEEL ANGLE MASON GUIDES; HAVE A LEAK PROOF SILL AND ALL JOINTS IN FRAME AND VENT ARE FULLY WELDED INSURING MAXIMUM STRENGTH.

BASEMENT WINDOW TYPES AND SIZES

1'-11 5/8"	2'-7 3/8"	3'-3 5/8"
2-LT-10x12	2-LT-14x20	3-LT-12x18
2'-9 5/8"	2'-9 5/8"	2'-9 5/8"
3-LT-10x12	3-LT-10x16	3-LT-10x20

2'-10"	3'-4"
2'-11 5/8"	3'-7 5/8"
32-131	32-131

UTILITY WINDOWS ARE ESPECIALLY SUITABLE FOR USE IN GARAGES, STORES OR BUILDINGS WITH AREAWAYS BELOW GRADE. THE BOTTOM PORTION IS FIXED WHILE THE UPPER PORTION PROJECTS IN AND HAS HEAVY SPRING CATCH FOR LOCKING SECURELY SHUT.



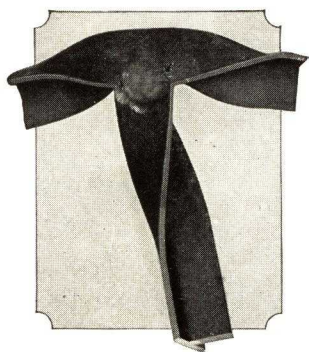
UTILITY WINDOWS

Federal Arc Welded Industrial Windows

your assurance of full section strength . . . trouble-free installation and performance . . . long-time economy

HOW FEDERAL MANUFACTURING METHODS PROTECT YOU—Ever since their introduction sixteen years ago, Federal Arc Welded Windows have occupied a unique position in the building industry, being the only windows with all joints fully welded. Federal joints are welded along the full line of intersection of the two members, both in face and in depth. All overlapping surfaces and openings between butt edges are eliminated. This assures you that no crevices exist where moisture can seep in and set up corrosion, resulting in eventual failure of the joint structure. Muntins are continuous from jamb to jamb, except in ventilators where they are continuous from head to sill. They have no copes, cut-outs, or reduction in section. Vertical muntins in fixed portions of windows, and horizontal muntins in ventilators, are individual pieces coped to fit the members to which they join. Welding of all joints and connections is continuous along contact lines both in face and depth.

MAXIMUM STRENGTH DEVELOPED—Being fully welded, the full section strength of Federal Arc Welded Windows is utilized, both in the plane of the windows and vertically to the face, which latter is the direction in which the wind load is imposed upon the window. Utilization of the full section strength of the steel produces a window of great lateral rigidity and with less deflection under load than is attainable with substantially larger sections held together with the customary mechanical joints of ordinary windows.

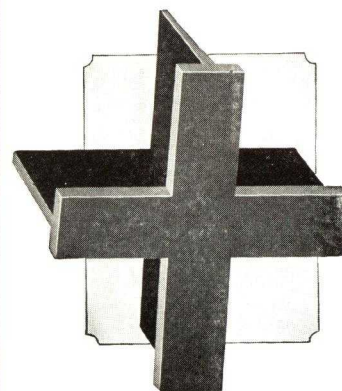
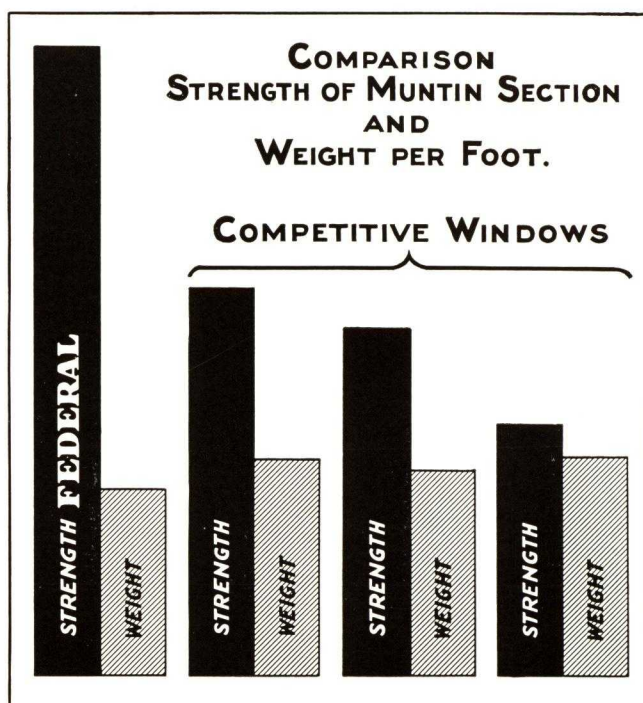


Distorted joint showing the remarkable strength of the weld

COMPARISON OF SECTION WEIGHTS—In making any comparison of the strength and stiffness of window sections, the distribution of metal in the various sections is of great importance. **Weight alone does not make strength.** Since profiles of window sections vary greatly, the only accurate method of comparison is by a mathematical computation (the section modulus) of the strength of the net section, allowing for all cut out portions at the joint. Such a computation, assuming an arbitrary figure of 100 for Federal, both for strength and weight per foot, shows for the ordinary, mechanically-assembled window strength down to 21.7, with a weight of 107.2, and weight up to 138.7, with strength of 39.1. These figures show the impracticability of estimating the strength and resistance to deflection when considering only the depth and weight of sections and disregarding the method of fabricating them into a completed unit.

WHY FEDERAL WINDOWS ARE EASY TO INSTALL—Mechanical joints, with their inherent lack of rigidity, result in a window which often racks out of shape in shipment. This movement in transit destroys the work of fitting and weathering the ventilator in the shop, and necessitates the repetition of this important task by high-priced, and often inexperienced, field labor.

Federal Fully Arc Welded Windows, with ventilators accurately weathered at the shop by experienced fitters working under the most favorable conditions, come to you in perfect shape, because the welded



The muntin joint. Note the smooth exterior surface

Federal Arc Welded Industrial Windows

joints are resistant to distortion in shipment and handling. As a result, tests made by disinterested engineers show the infiltration of air through Federal Ventilators to be remarkably low.

PROTECTIVE COATINGS—Paint, rust-proofing, or galvanizing can be applied to Federal Arc Welded Windows without danger of the coating being ruptured at the joints through racking of the window.

YOU ENJOY ECONOMY OF MAINTENANCE—Federal Arc Welded Windows have no members with moulded faces, ridges, projections, overlapping surfaces, or butt edges to interfere with wire brushing or easy painting, and therefore can be more effectively maintained at low cost than ordinary windows made with these features.

YOU SAVE INSTALLATION TIME AND EFFORT—All hardware is attached in our shop before shipment, an exclusive Federal feature that simplifies and speeds up erection. All Federal operating hardware is of unusually rugged design, affording positive ventilator operation at all times.

FEDERAL CLOSE PIVOT—For horizontally pivoted windows, the hinge or pivot projects only $\frac{5}{8}$ in. beyond the inside face of the window frame. It consists of two substantial pressed steel hinge leaves joined with a sturdy bronze pin, providing a free acting ventilator at all times and insuring against the "freezing" of the hinge through corrosion.

FEDERAL DRAW-TIGHT PUSH BARS—The design of push bar furnished on all horizontally pivoted ventilators, located within convenient reach of the floor level, is an exclusive patented feature on Federal Windows. The push bar is attached to the lower rail of the vent at one side of the vent center. The push bar construction includes a heavy steel hinge affording a universal joint for free movement in the opening and closing operation. In the corresponding location on the opposite side of the

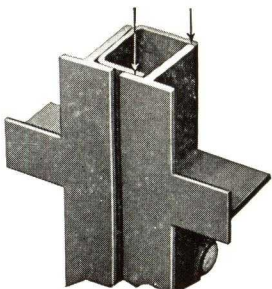
vent is attached a locking clip. Midway between these points, and located on the window frame, is a strike plate acting as a fulcrum for the push bar, which when in a closed position, serves to draw the vent tightly shut at both lower corners.

FEDERAL BRONZE FRICTION GUIDES—Each of the friction guides attached to the upper corners of all Federal projected ventilators consists of a heavy solid bronze pin with the end slotted to form a yoke. Inset at the bottom of the slot is a hardened steel ball which, in turn, slides upon the guide angles at both jambs. Friction is furnished by the pressure of a spring in back of the steel ball, forcing it into contact with the steel guides. This exclusive Federal friction-shoe design eliminates all binding and scraping of the friction guide against the side members, and insures a smooth and positive operation of ventilator at all times.

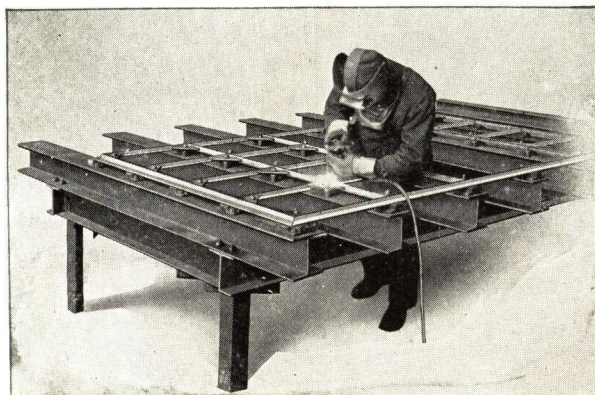
ADJUSTABLE MULLIONS—Federal vertical mullions, adjustable both vertically and horizontally, are easy to set. They eliminate any need for prys, drifts or hammering, to force window units into place.

FEDERAL INDUSTRIAL DOORS—The neat appearance, strength, durability and economy of Federal steel doors fully match the high quality standards set by Federal window products. With specially designed hardware, sturdy enough to stand up under the most severe usage, Federal Industrial Doors offer an economical and dependable product for general industrial use.

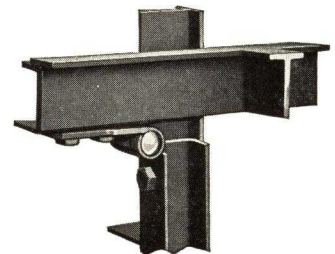
FEDERAL TYPES AND SIZES—All masonry opening dimensions and standard window designs as offered in Federal products are in accordance with the standards promulgated by the Division of Simplified Practice of the U. S. Bureau of Standards. They are also in accordance with the standards for sizes and specifications recommended by the Metal Window Institute.



Double contact weathering all four sides of the Ventilators



Specially designed welding tables insure accurate dimensions and absolute squareness



Pressed steel hinge with brass pin

Federal Arc Welded Industrial Windows

SPECIFICATIONS—PIVOTED WINDOWS

GENERAL—Steel windows shall be of the Federal arc welded horizontally pivoted type as manufactured by Crittall-Federal Inc., of Waukesha, Wisconsin, or approved equal and shall be of types and sizes as indicated on drawings.

MATERIALS—Window sections shall be of hot rolled new billet steel, not less than $\frac{1}{8}$ " in thickness. Applied weathering shall be not less than 16 gauge.

CONSTRUCTION—Steel windows shall be designed for inside putty glazing (or for glazing with steel angles). All joints shall be electric arc welded in full depth and across all faces. Ventilators shall be of the horizontal pivoted type with closed knuckle pivots and bronze hinge pins. Continuous double contact weathering shall be provided around all four sides of ventilators.

HARDWARE—Each ventilator within convenient reach from the floor level shall be equipped with a push bar securely locking the windows when in a closed position. For ventilators located beyond convenient reach from the floor, furnish a malleable iron cam handle controlled by an endless chain running through a roller bracket at the head of the vent.

ning through a roller bracket at the head of the vent.

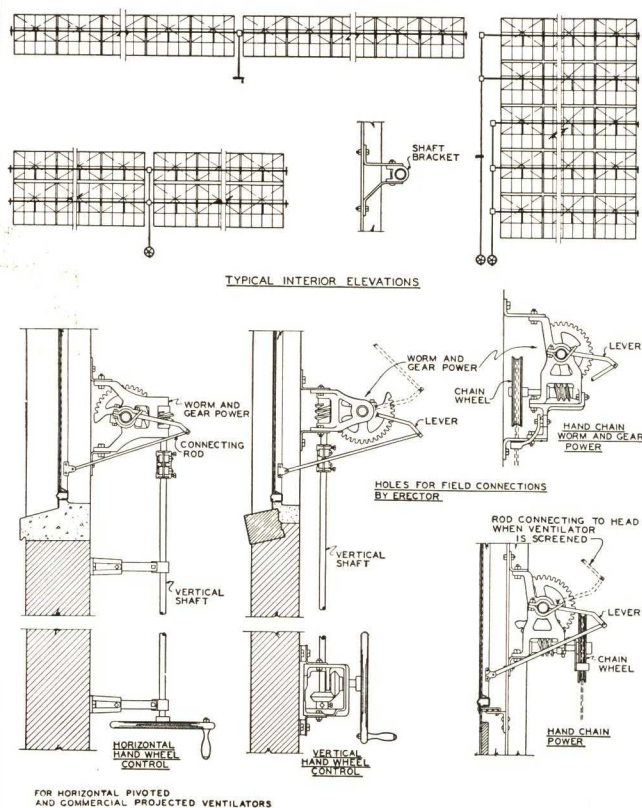
ERECTION FITTINGS shall be supplied by window manufacturer in accordance with installation details.

PAINTING—All steel material shall be given a dip coat of manufacturer's standard grey mineral oxide paint before shipment.

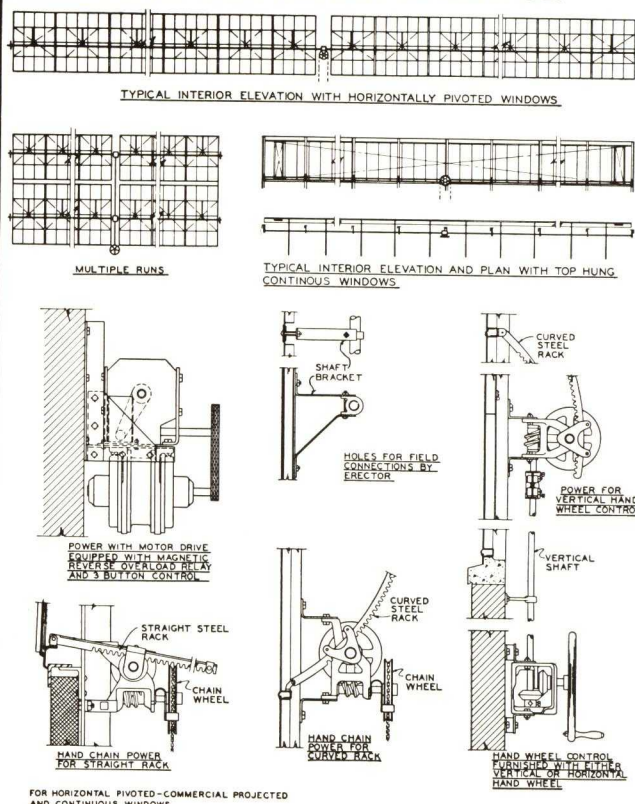
ERECTION—All steel windows shall be set plumb and true, properly aligned, securely anchored and all ventilators shall be adjusted before glazing.

MECHANICAL OPERATORS for Horizontally Pivoted and Commercial Projected Windows—Lever Arm, Screw Type or Rack and Pinion Operators, where called for on drawings, shall have shaft brackets and supports adjusted to allow free turning of the shaft without binding. Shaft must be level and straight. Arms, connecting rods and racks shall be adjusted for each Ventilator to compensate for torsion in the shaft. Each ventilator shall be drawn tight when in closed position. After adjusting the Operator, all bolts, screws, etc., shall be set up tight and the Operator shall work smoothly and without binding.

LEVER ARM OPERATOR

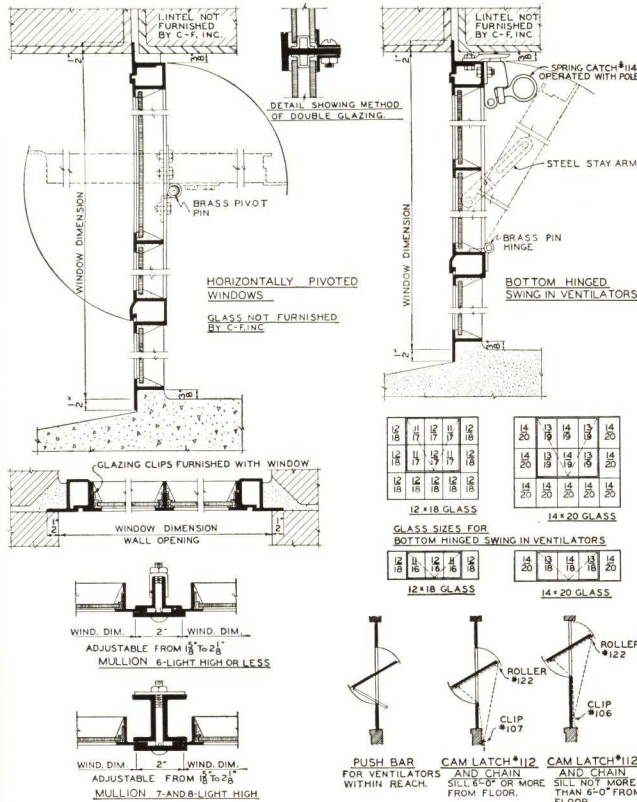


RACK AND PINION OPERATOR



HORIZONTALLY PIVOTED WINDOWS

TYPICAL SECTIONS



UNDERWRITER'S LABELS

THE FOLLOWING APPLIES TO PIVOTED AND COMMERCIAL PROJECTED WINDOWS

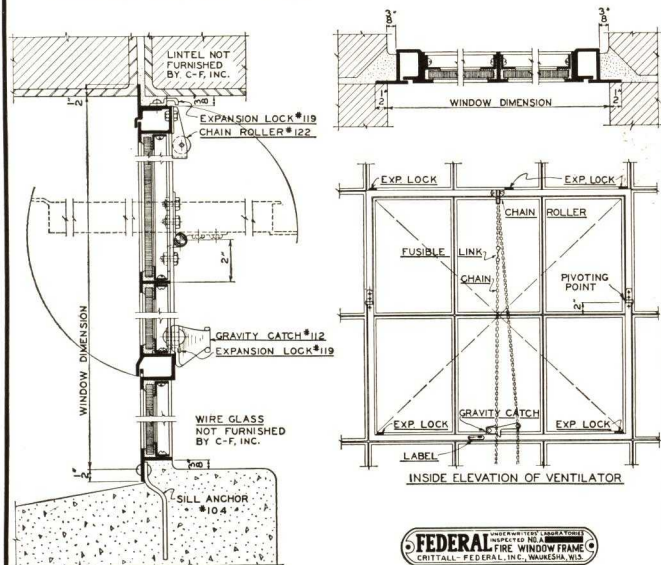
WINDOW UNITS FOR SINGLE UNIT OPENINGS MUST NOT EXCEED 8'-6" IN WIDTH OR 12'-0" IN HEIGHT; BUT IN NO CASE SHALL THE AREA EXCEED 75 SQUARE FEET FOR A VENTILATED UNIT AND 80 SQUARE FEET FOR A FIXED UNIT.

UNITS IN MULTIPLE OPENINGS MUST NOT EXCEED 7'-0" IN WIDTH.

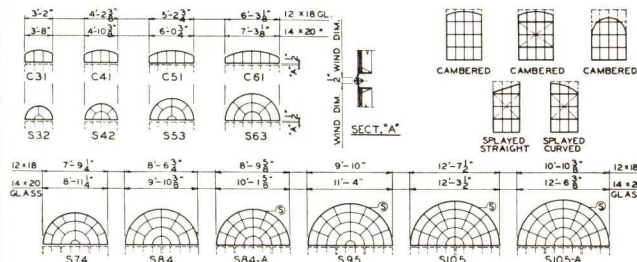
GLASS LIGHTS ARE LIMITED TO A MAXIMUM EXPOSED GLASS AREA OF 350 SQUARE INCHES.

THE TOTAL VENTILATED AREA IN ANY SINGLE WINDOW UNIT IS LIMITED TO 40 SQUARE FEET (5,760 SQUARE INCHES) OF EXPOSED GLASS AREA, AND NOT MORE THAN THREE VENTS ARE PERMITTED PER WINDOW UNIT.

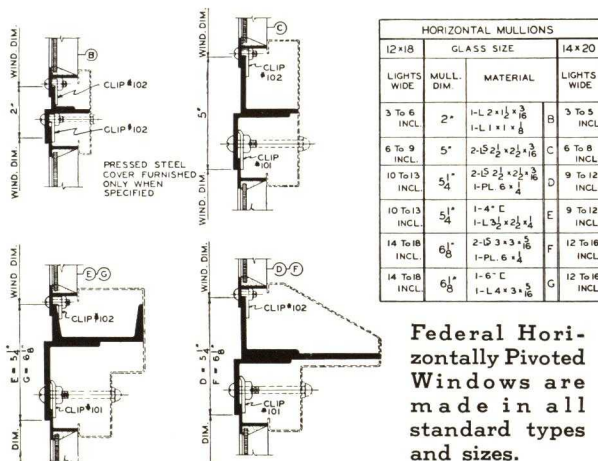
VENTILATORS MAY BE HORIZONTALLY PIVOTED NEAR CENTER OR NEAR TOP TO OPEN OUT AT BOTTOM.



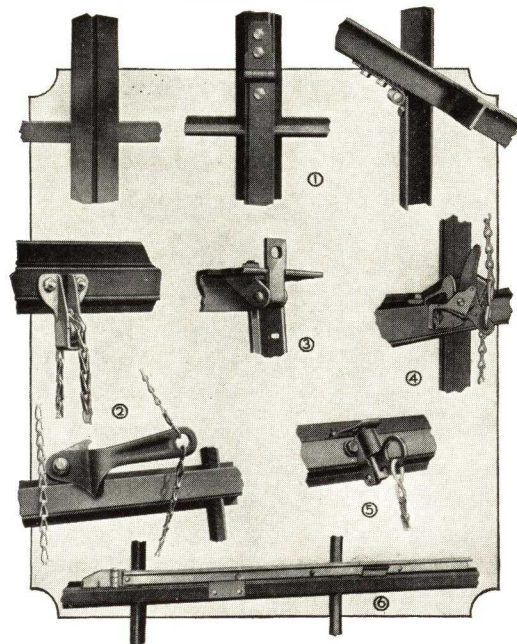
CURVED HEADS



HORIZONTAL MULLIONS



HARDWARE



Federal Arc Welded Industrial Windows

COMMERCIAL PROJECTED WINDOWS

SPECIFICATIONS

GENERAL—Steel windows shall be of the Federal arc-welded commercial projected type as manufactured by Crittall-Federal Inc., of Waukesha, Wisconsin, or approved equal.

CONSTRUCTION—Steel Windows shall be designed for inside glazing or for glazing with steel angles. (Outside glazing is also available, if desired.) All joints shall be electric arc welded in full depth and across all faces. Ventilators shall be of the projected type opening down and out at the bottom (or up and in at the top).

HARDWARE—Hardware shall be of substantial design affording convenient and positive operation of all ventilators from the floor level. (EXPLOSION HARDWARE, if specified, can be furnished in this ventilator design.)

PAINTING—All steel material shall be given a dip cost of manufacturers standard grey mineral oxide paint, before shipment.

ERECTION—All steel windows shall be set plumb and true, properly aligned, securely anchored and all vents shall be carefully adjusted before glazing.

SCREENS

FOR PIVOTED AND PROJECTED VENTILATORS SPECIFICATIONS

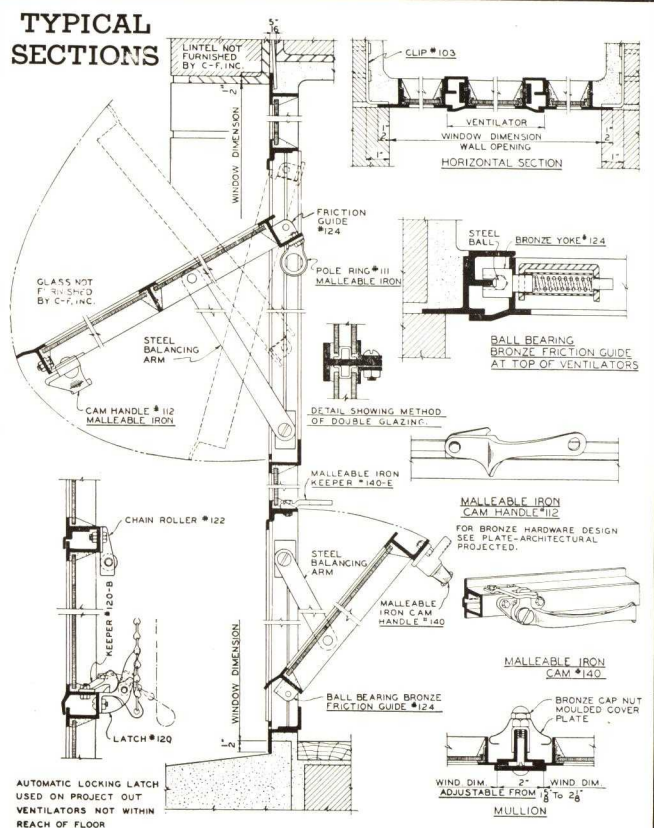
MATERIAL—Frames shall be solid drawn (steel) (bronze) (aluminum) sections of special design. Cloth shall be 16 mesh bronze wire (specify other mesh). Box frames, clips and corner boxes shall be 16 gauge sheet steel.

CONSTRUCTION—Frame members shall be continuous from head to sill and jamb to jamb, mitered at corners and Electric Welded. Splines for holding Cloth in frames shall be copper wire. Screen Cloth shall be 16 mesh (specify other mesh) bronze wire, stretched flat and without wrinkles or waves.

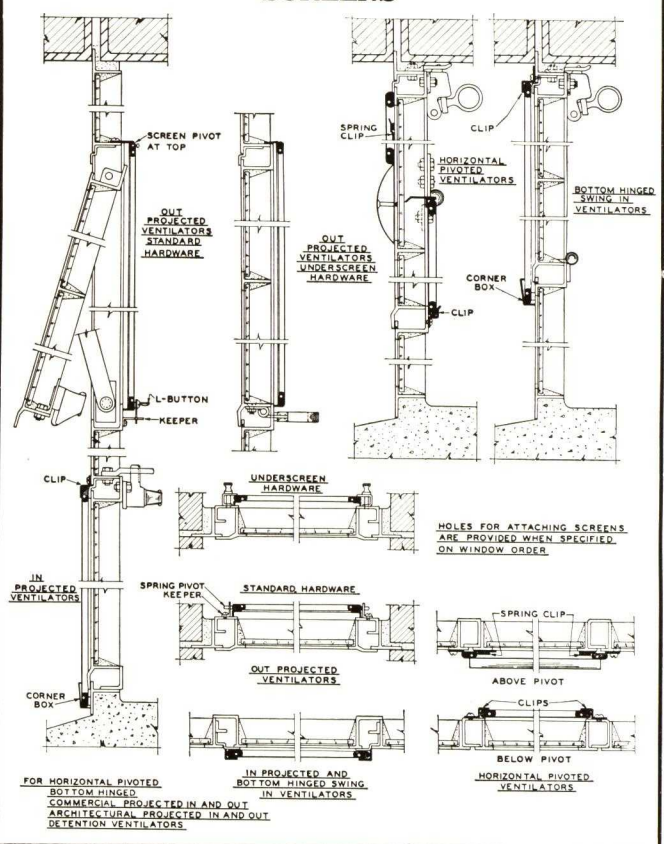
PAINT—Frames, box frames, spring clips, corner boxes and baffles shall be given one coat of black enamel before shipment.

INSTALLATION—Windows with Ventilators specified to be screened, shall be prepared at factory for attaching Screens after erection.

TYPICAL SECTIONS



SCREENS



Federal Arc Welded Industrial Windows

DETENTION WINDOWS

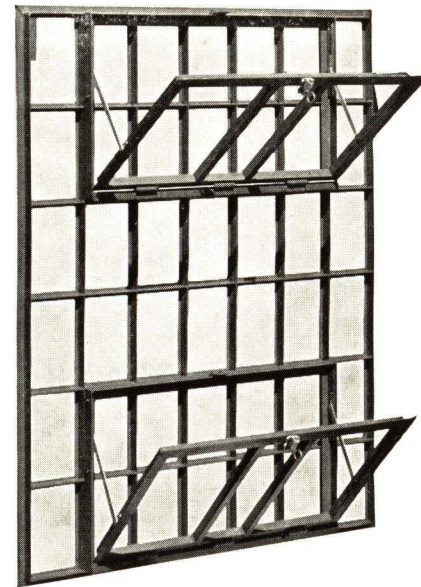
INDUSTRIAL DETENTION WINDOWS shall have Horizontally Pivoted (or Commercial In or Out Projected) Ventilators. For Horizontally Pivoted and Commercial Out-Projected Ventilators, malleable iron Cam Handle Hardware shall be supplied. For Commercial In-Projected Ventilators, malleable iron Spring Cam Hardware is used. (Hardware can be furnished in bronze, if specified.)

PROTECTION WINDOWS—The ventilator if outside, is Commercial Out-Projected; if inside may be either Bottom Hinged Swing In or Commercial In-Projected.

Hardware for outside Ventilator shall be malleable iron Cam Handle or Automatic Locking Latch; for inside Ventilators is a Spring Catch, bolted to the head of the Ventilator. Bronze Hardware can be furnished, if specified.

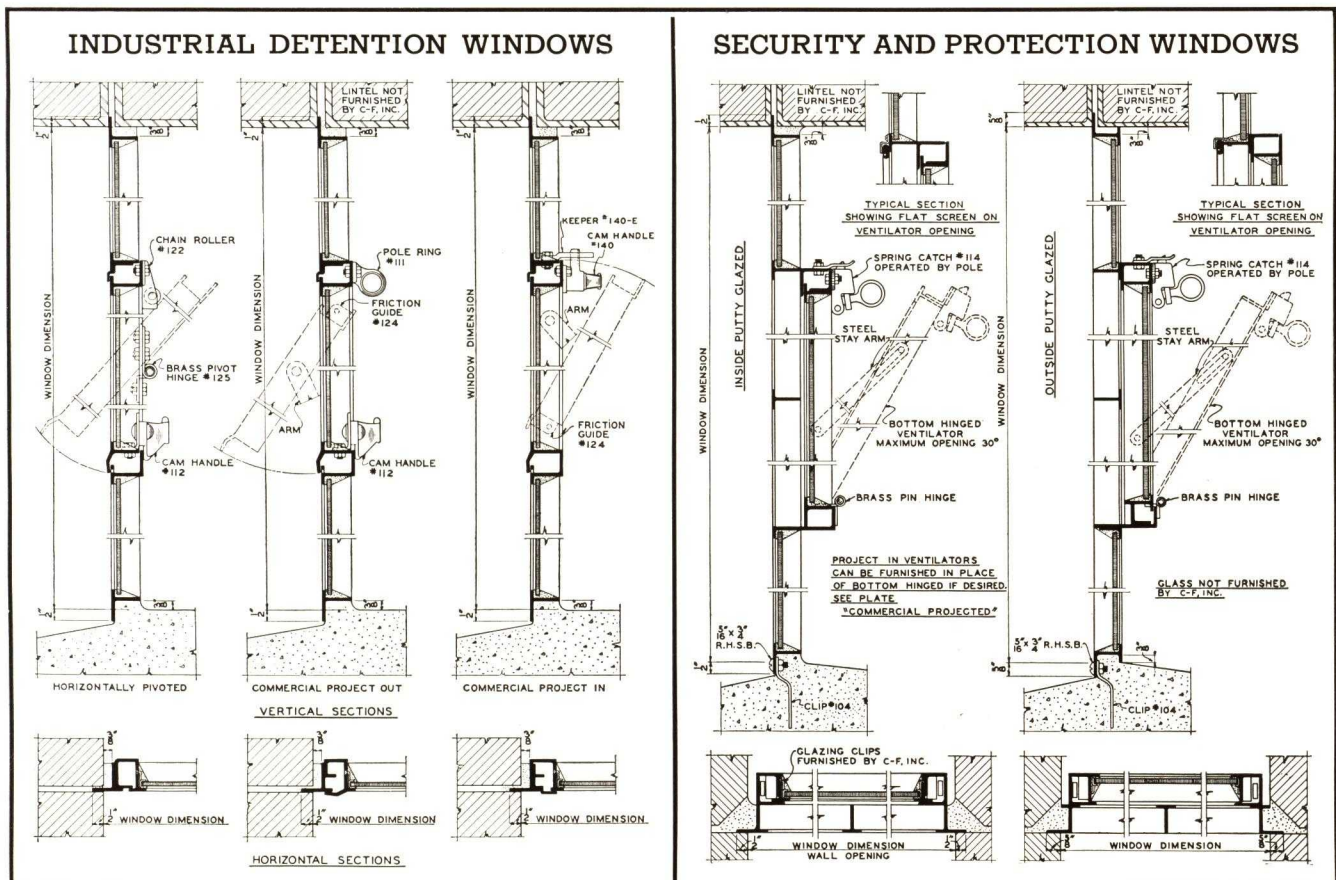
Windows can be putty glazed with glass either on the inside or outside of the face of the Window, as specified.

SECURITY WINDOWS are in all respects similar to Protection Windows above, except that the glass size of the main frame is 6" x 18" and of the Ventilator 12" x 18".



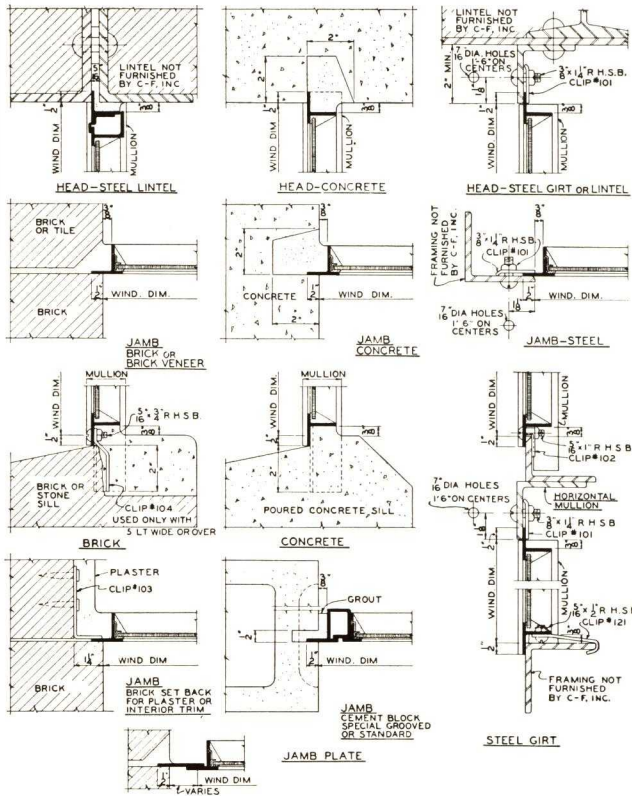
FEDERAL PROTECTION WINDOW

The uninterrupted section forming the bottom of Federal's vent frame guarantees the elimination of water leakage at this critical point. See detail below.



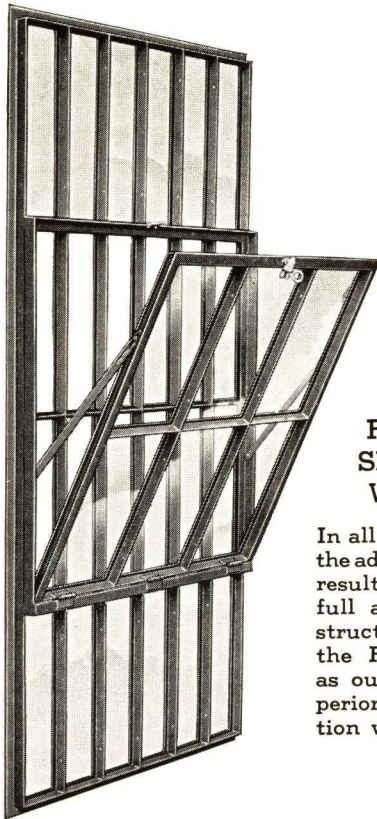
COLLATERAL DETAILS

INSTALLATION DETAILS



GLASS SIZES — COMBINATIONS FOR PIVOTED AND COMMERCIAL PROJECTED WINDOWS

12 x 18 Height of Opening	Lights High	14 x 20 Height of Opening	Number of Lights in Width of Opening	Number of Units To Fill Opening	Number of Lights in Each Unit and Number Units to Fill Opening
1'-7 $\frac{1}{4}$ "	1	1'-9 $\frac{1}{4}$ "			
3'-1 $\frac{5}{8}$ "	2	3'-5 $\frac{5}{8}$ "			
4'-8"	3	5'-2"			
6'-2 $\frac{3}{8}$ "	4	6'-10 $\frac{3}{4}$ "			
7'-8 $\frac{3}{4}$ "	5	8'-6 $\frac{3}{4}$ "			
9'-3 $\frac{1}{8}$ "	6	10'-3 $\frac{1}{8}$ "			
10'-9 $\frac{1}{2}$ "	7	11'-11 $\frac{1}{2}$ "			
Width of Opening					
12x18		14x20			
2'-1 $\frac{5}{8}$ "		2'-5 $\frac{5}{8}$ "	2	1	2
3'-2"		3'-8"	3	1	3
4'-2 $\frac{3}{8}$ "		4'-10 $\frac{3}{8}$ "	4	1	4
4'-5 $\frac{1}{4}$ "		5'-1 $\frac{1}{4}$ "	4	2	2, 2
5'-2 $\frac{3}{4}$ "		6'-0 $\frac{3}{4}$ "	5	1	5
6'-3 $\frac{1}{8}$ "		7'-3 $\frac{1}{8}$ "	6	1	6
6'-6"		7'-6"	6	2	3, 3
7'-6 $\frac{3}{8}$ "		8'-8 $\frac{3}{8}$ "	7	2	4, 3
8'-6 $\frac{3}{4}$ "		9'-10 $\frac{3}{4}$ "	8	2	4, 4
9'-10"		11'-4"	9	3	3, 3, 3
10'-7 $\frac{1}{2}$ "		12'-3 $\frac{1}{2}$ "	10	2	5, 5
10'-10 $\frac{3}{8}$ "		12'-6 $\frac{3}{8}$ "	10	3	3, 4, 3
11'-10 $\frac{3}{4}$ "		13'-8 $\frac{3}{4}$ "	11	3	3, 5, 3
11'-10 $\frac{3}{4}$ "		13'-8 $\frac{3}{4}$ "	11	3	4, 3, 4
12'-8 $\frac{1}{4}$ "		14'-8 $\frac{1}{4}$ "	12	2	6, 6
12'-11 $\frac{1}{8}$ "		14'-11 $\frac{1}{8}$ "	12	3	4, 4, 4
13'-2"		15'-2"	12	4	3, 3, 3, 3
13'-11 $\frac{1}{2}$ "		16'-1 $\frac{1}{2}$ "	13	3	4, 5, 4
13'-11 $\frac{1}{2}$ "		16'-1 $\frac{1}{2}$ "	13	3	5, 3, 5
14'-11 $\frac{7}{8}$ "		17'-3 $\frac{7}{8}$ "	14	3	4, 6, 4
14'-11 $\frac{7}{8}$ "		17'-3 $\frac{7}{8}$ "	14	3	5, 4, 5
15'-2 $\frac{3}{4}$ "		17'-6 $\frac{3}{4}$ "	14	4	3, 4, 4, 3
16'-0 $\frac{1}{4}$ "		18'-6 $\frac{1}{4}$ "	15	3	5, 5, 5
16'-0 $\frac{1}{4}$ "		18'-6 $\frac{1}{4}$ "	15	3	6, 3, 6
16'-6"		19'-0"	15	5	3, 3, 3, 3, 3
17'-0 $\frac{5}{8}$ "		19'-8 $\frac{5}{8}$ "	16	3	5, 6, 5
17'-0 $\frac{5}{8}$ "		19'-8 $\frac{5}{8}$ "	16	3	6, 4, 6
17'-3 $\frac{1}{2}$ "		19'-11 $\frac{1}{2}$ "	16	4	4, 4, 4, 4
17'-3 $\frac{1}{2}$ "		19'-11 $\frac{1}{2}$ "	16	4	3, 5, 5, 3
17'-6 $\frac{3}{8}$ "		20'-2 $\frac{3}{8}$ "	16	5	3, 3, 4, 3, 3
18'-1"		20'-11"	17	3	6, 5, 6
18'-6 $\frac{3}{4}$ "		21'-4 $\frac{3}{4}$ "	17	5	3, 4, 3, 4, 3
19'-1 $\frac{3}{8}$ "		22'-1 $\frac{3}{8}$ "	18	3	6, 6, 6
19'-4 $\frac{1}{4}$ "		22'-4 $\frac{1}{4}$ "	18	4	3, 6, 6, 3
19'-4 $\frac{1}{4}$ "		22'-4 $\frac{1}{4}$ "	18	4	4, 5, 5, 4
19'-7 $\frac{1}{8}$ "		22'-7 $\frac{1}{8}$ "	18	5	3, 4, 4, 4, 3
20'-7 $\frac{1}{2}$ "		23'-9 $\frac{1}{2}$ "	19	5	3, 5, 3, 5, 3
21'-5"		24'-9"	20	4	5, 5, 5, 5
21'-5"		24'-9"	20	4	4, 6, 6, 4
21'-7 $\frac{7}{8}$ "		24'-11 $\frac{7}{8}$ "	20	5	4, 4, 4, 4, 4
21'-10 $\frac{3}{4}$ "		25'-2 $\frac{3}{4}$ "	20	6	3, 3, 4, 4, 3, 3



FEDERAL SECURITY WINDOW

In all detention types the additional strength resulting through the full arc-welded construction establishes the Federal product as outstandingly superior in the detention window field.

Federal Arc Welded Industrial Windows

ARCHITECTURAL PROJECTED WINDOWS

SPECIFICATIONS

GENERAL—Steel windows shall be of the Federal arc welded architectural projected design as manufactured by Crittall-Federal, Inc., of Waukesha, Wisconsin, or approved equal.

CONSTRUCTION—Steel windows shall be designed for inside glazing with continuous steel angles held in place with round head brass screws. (Outside or inside putty glazing also available if desired.) All joints shall be electric arc welded in full depth and across all faces. Ventilators shall be of the projected type opening down and out at the bottom (or up and in at the top).

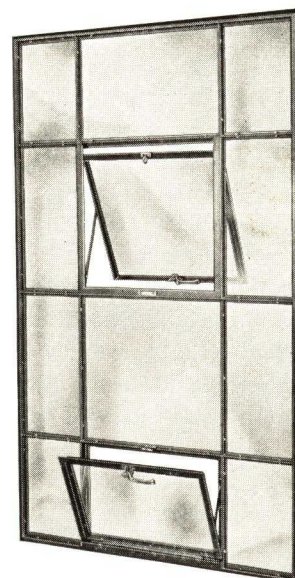
HARDWARE—Hardware shall be of solid bronze, in attractive and substantial design, affording convenient and positive operation of all ventilators from the floor level.

PAINTING—All steel material shall be given a dip coat of manufacturers standard grey mineral oxide paint before shipment.

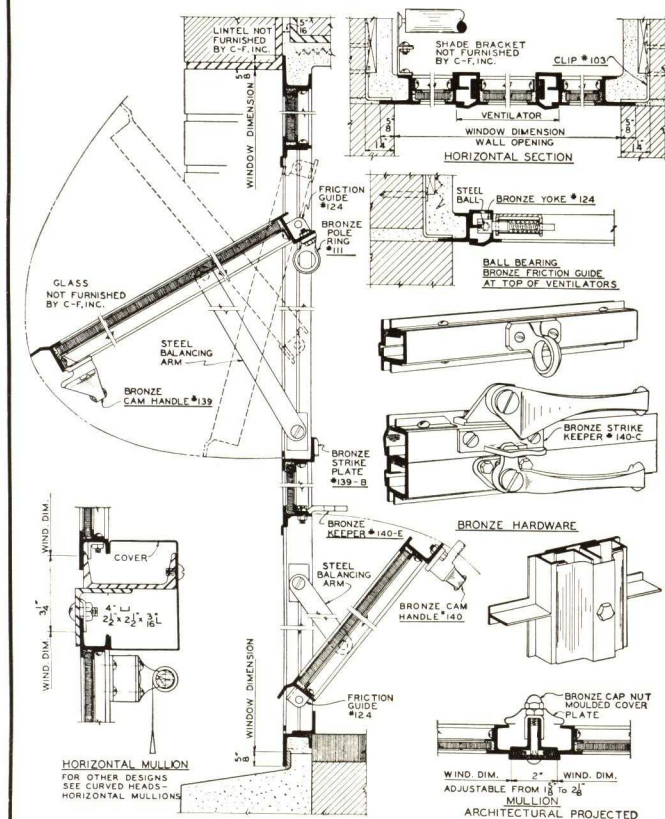
ERECTION—All steel windows shall be set plumb and true, properly aligned, securely anchored and all vents shall be carefully adjusted before glazing.

ARCHITECTURAL PROJECTED WINDOW FROM THE INSIDE

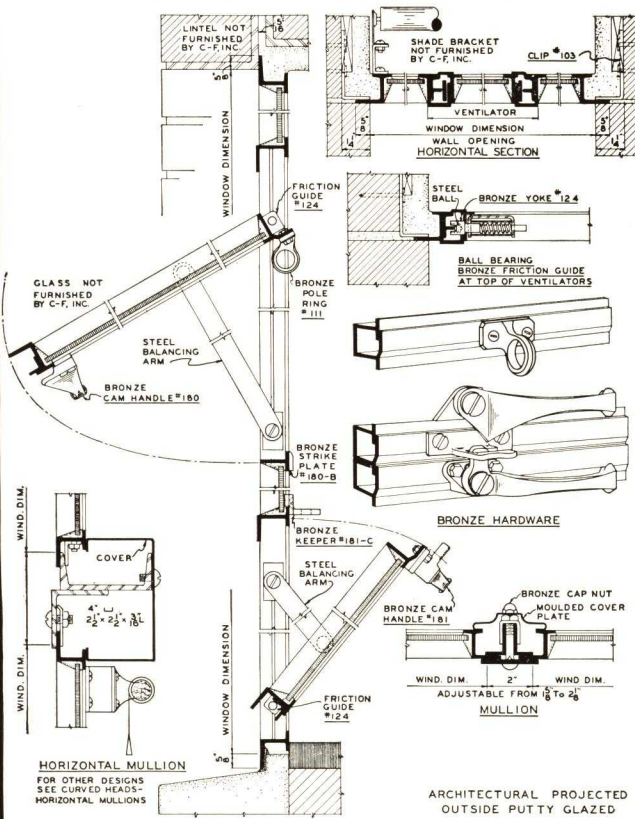
Federal Architectural Projected Windows are made in all standard types and sizes.



INSIDE ANGLE GLAZED



OUTSIDE PUTTY GLAZED



Federal Arc Welded Industrial Windows

CONTINUOUS WINDOWS AND OPERATORS

SPECIFICATIONS

GENERAL—Steel windows shall be of the Federal arc welded continuous design as manufactured by Crittall-Federal, Inc., of Waukesha, Wisconsin, or approved equal.

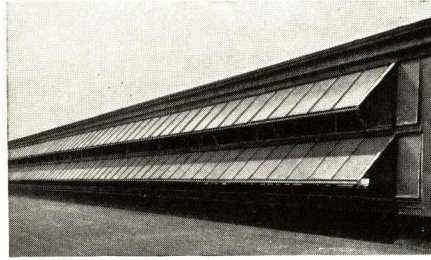
CONSTRUCTION—All material shall be of hot rolled open hearth new billet steel. All joints and connections shall be full welded, continuous along contact lines in full depth and across all faces. Panel sections are joined together by bolts. Storm and end panels shall be included at both ends of each operating run. The design shall provide for positive weathering at all contact points when the window is in a closed position.

MECHANICAL OPERATORS—Operators shall be of tension design with 1" standard pipe supported on steel pipe rollers with brass sleeves and adjustable

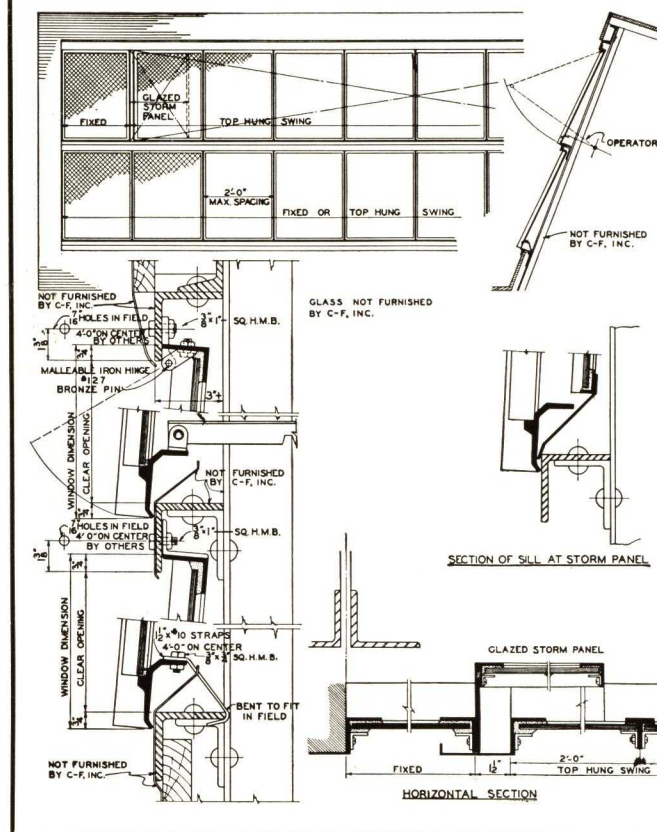
connections. The toggle-acting opening mechanism shall be substantial in weight and design, affording positive opening and closing action. The operator power shall consist of a cast iron oil-tight housing in which are assembled a machine cut steel pinion and gear which, in turn, engages with a cast iron machine cut toothed rack. Operator control shall be by hand chain through a cast iron chain wheel and jack chain to within 4'0" from floor. Short runs may be operated by rack and pinion operating device.

PAINTING—All steel material shall be given a coat of manufacturers' standard grey mineral oxide paint, before shipment.

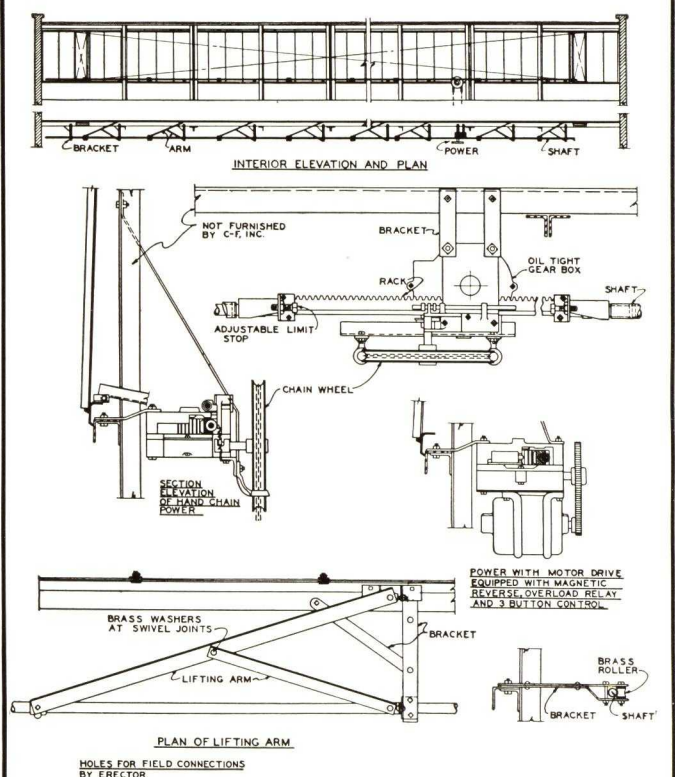
ERECTION—All steel windows shall be set plumb and true and properly aligned. Operators shall be carefully adjusted with all parts working smoothly.



CONTINUOUS WINDOWS



TENSION OPERATOR



Federal Arc Welded Industrial Windows

INDUSTRIAL DOORS

SPECIFICATIONS

GENERAL—Steel doors shall be of the Federal Heavy (or Light) Industrial type as manufactured by Crittall-Federal, Inc., of Waukesha, Wisconsin, or approved equal.

CONSTRUCTION—Rails and stiles shall be of formed steel tube full welded on all four sides at intersections and joints. Plate panels shall be of not less than No. 14 gauge. Astragals for all double doors shall be of steel.

FRAMES (For Swing Doors Only)—For Heavy type doors, frames shall be of structural steel shapes as detailed on plans. For Light type doors, frames shall be of pressed steel not less than No. 14 gauge in thickness.

HARDWARE—Steel half-surface butt hinges shall be furnished for all swing leaves and for double doors; top and bottom bolts shall be furnished for

the inactive leaf. Locking hardware shall be a lever latch, mortise latch, thumb latch. (Cylinder locks are furnished when specified.)

For slide doors hardware shall include track and trolley, hasp and staple, flush handle, floor guide and door stop.

PAINTING—All steel material shall be given a coat of manufacturers' standard grey mineral-oxide paint before shipment.

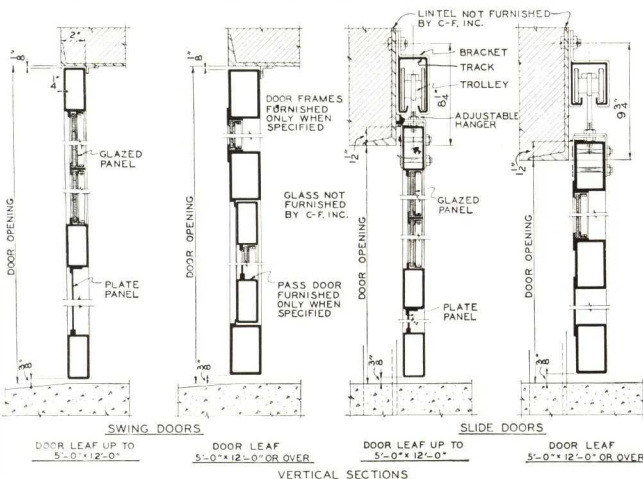
ERECTION—Frames shall be erected square and plumb and proper width maintained at both head and sill of frame, so that doors will hang true and weather properly. Proper clearances must be maintained between doors and frame. (See door drawings.) Hangers and tracks shall be adjusted to allow for proper clearances, both between door and wall and at sill.

HEAVY DOORS

OPENING HEIGHT	SINGLE DOORS					DOUBLE DOORS					
	OPENING WIDTH					OPENING WIDTH					
7'-0"	2'-0"	3'-0"	3'-6"	4'-0"	5'-0"	5'-0"	6'-0"	7'-0"	8'-0"	10'-0"	12'-0"
7'-6"											
8'-0"											
10'-0"											
11'-0"											
12'-0"											
13'-0"											
14'-0"											
15'-0"											

DIMENSIONS GIVEN ARE FOR SWING DOORS ONLY. ALL DIMENSIONS ARE INSIDE MEASUREMENTS OF FRAME.

DIMENSIONS FOR SLIDE DOORS ARE 3" LESS IN WIDTH AND 1 1/2" LESS IN HEIGHT THAN DIMENSION GIVEN.



LIGHT DOORS

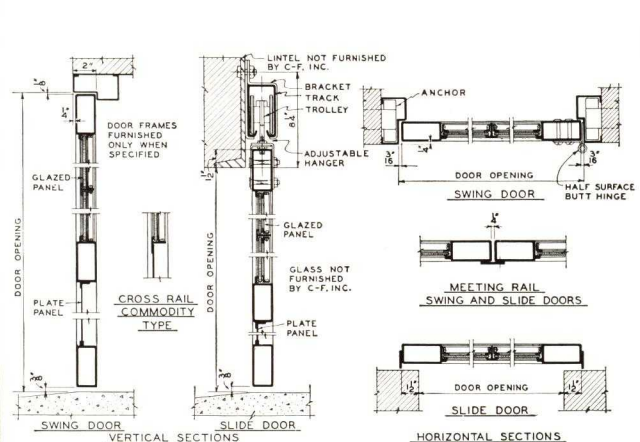
TYPE	COMMODITY TYPE DOORS					
	SINGLE DOORS			DOUBLE DOORS		
SWING DOOR	A	B	C	D	E	F
OPENING SIZES	2'-6" x 7'-0"	3'-0" x 7'-0"	5'-0" x 10'-0"	5'-0" x 7'-0"	7'-0" x 7'-6"	10'-0" x 10'-0"
SLIDE DOOR						
OPENING SIZES	2'-3" x 6'-10 1/2"	3'-3" x 7'-4 1/2"	4'-9" x 9'-10 1/2"	4'-9" x 6'-10 1/2"	6'-9" x 7'-4 1/2"	9'-9" x 9'-10 1/2"

STANDARD DOOR LEAFS

TYPE	STANDARD DOOR LEAFS					
	G	H	J	K	L	M
SWING DOOR LEAF						
MAX. 5'-0" x 10'-0"						
SLIDE DOOR LEAF						
MAX. 4'-9" x 9'-10 1/2"						

DOORS CAN BE FURNISHED WITH ALL PLATE, WINDOW, OR PLATE AND WINDOW PANELS.

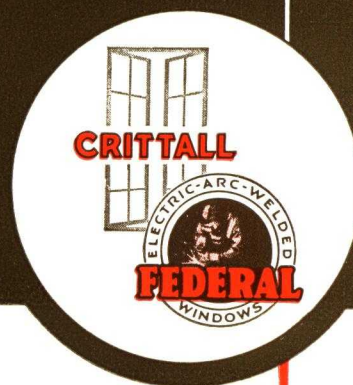
LIGHT INDUSTRIAL SWING AND SLIDE DOORS





Windows

CRITTALL • FEDERAL • INC
WAUKESHA • WISCONSIN



CROFT STEEL WINDOWS, INC.

AND SUBSIDIARY COMPANIES

Designers and Creators of Modern Steel Windows
JAMESTOWN, N. Y.

NEW YORK SALES OFFICE: 110 East 42nd Street, NEW YORK, N. Y.

NEW JERSEY SALES OFFICE: 65 Pavonia Avenue, JERSEY CITY, N. J.

Croft-Lemco Steel Products

Residence Casements
Intermediate Casements
Casement Projected Windows
Heavy Casements
Basement Windows
Utility Windows
Casement Doors
Commercial Projected Windows
Pivoted Windows
Architectural Projected Windows
Security Windows
Continuous Windows



Croft-Lemco Bronze and Aluminum Windows

Bronze and aluminum windows are furnished in either intermediate or heavy sections for buildings in which non-ferrous metals are required. Full particulars will be furnished upon request.

Standard Types of Steel Casement and Industrial Windows

A wide range of standard types and sizes in casement and industrial windows is carried in warehouse stock for immediate delivery.

Solid Bronze Hardware

Hardware of solid bronze for all casement products is standard equipment even for the most inexpensive casement. All casement hardware is produced in our own foundry under strictest supervision to guarantee perfect fit and satisfaction.

Screens for All Products

Screens of steel tubular frames covered with 16-mesh bronze wire (rewireable type) will be furnished for any type of window when desired. Finished in gray baked-on enamel.

Architect's Service Department

Architects are invited to call on our Service Department for preliminary estimates, complete suggestions, details, layouts and definite quotations.

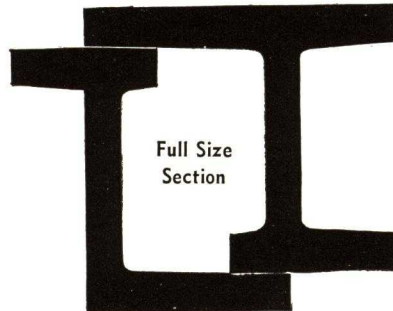
A Few New York Architects Who Approved Croft-Lemco

William F. R. Ballard
Phelps Barnum
Boak & Paris
F. L. Burmeister
Delano & Aldrich
Wm. F. Dominick
Livingston Elder
Thomas Harlan Ellett
H. I. Feldman
Fellheimer & Wagner
J. M. Felson
Frank J. Forster

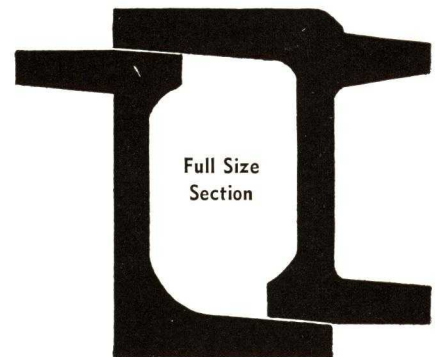
Holden & McLaughlin
Chas. Kreymborg
Thomas W. Lamb
William Lescaze
Mayers, Murray & Phillip
A. F. Meissner
Frederick Mellor
Madigan & Hyland
Henry J. McGill
James W. O'Connor
B. R. Swartburg
Hobart Upjohn



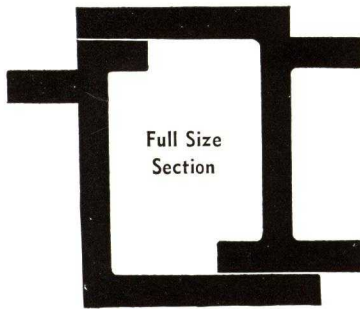
Residence—Fig. 1



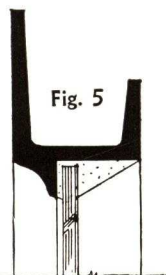
Intermediate—Fig. 2



Heavy—Fig. 3



Bronze—Fig. 4
Aluminum (Intermediate)

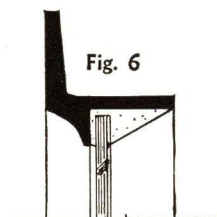


(1/2) Full Size

Croft Industrial Windows

Pivoted Windows—Fig. 6
Commercial Projected
Windows—Fig. 6

Architectural Projected
Windows—Fig. 5



(1/2) Full Size

MEMORANDA

Fenestra



LIBERTY MUTUAL INSURANCE COMPANY, Boston, Massachusetts
Chester Lindsay Churchill, Architect

B L U E B O O K

O F

S T E E L W I N D O W S A N D D O O R S

| 9 3 9

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THE COMPANY

ESTABLISHED in 1904, Detroit Steel Products Company is America's oldest and largest steel window manufacturer. The trade name *Fenestra*, is the Latin word for *window*. Many of the Fenestra windows installed in the early days are reported to be in excellent condition today. Millions of Fenestra windows are in continuous service throughout the nation, and in many foreign countries. Primarily, Fenestra is an organization of steel window and steel door specialists.

THE PRODUCTS

FENESTRA has developed and pioneered many notable improvements in the window and door industries. One of the latest is the Bonderizing process for the protection of steel against rust, introduced in 1937. There is a Fenestra steel window and door for almost every building need—for residential, com-

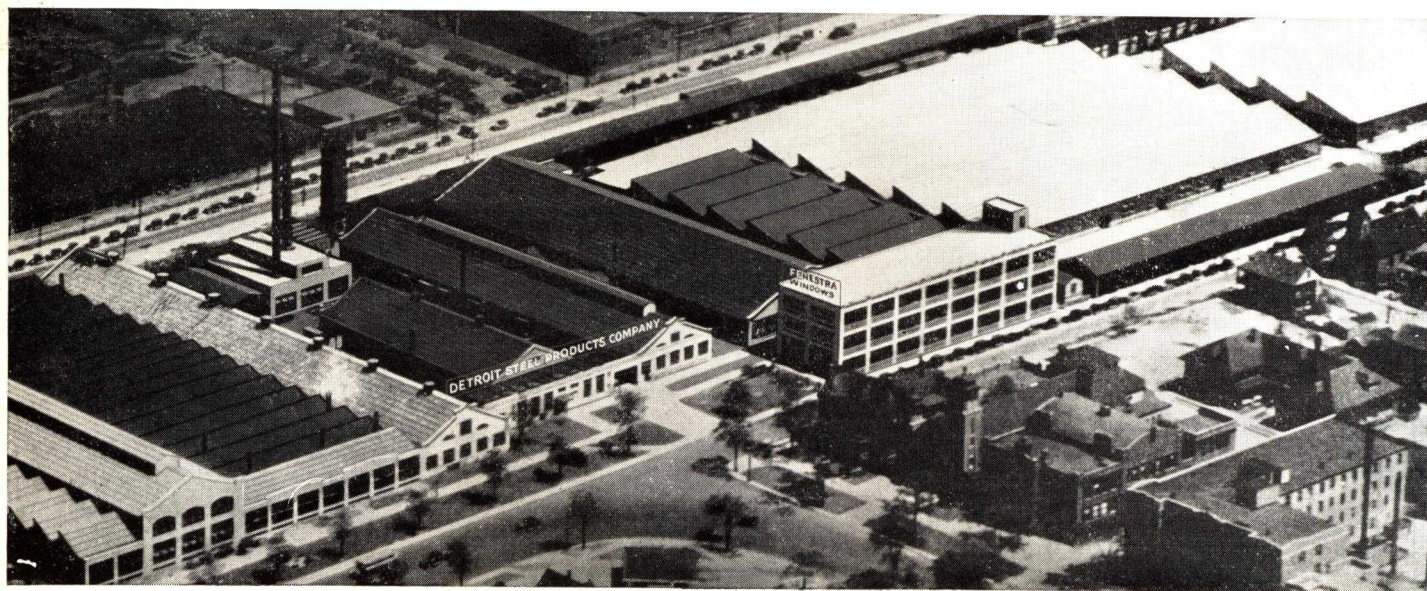
mercial, industrial, educational, hospital and institutional, public, religious, social and recreational buildings, etc.

THE SERVICE

TO render efficient service throughout the country, the Fenestra distribution system includes engineering and sales offices in 200 principal cities (see back cover of this catalog), factory warehouses located in trading centers, and an organization of thousands of dealers.

For the particular information of architects, Fenestra publishes many catalogs—supplied on request—which provide the most complete details available in the steel window and steel door industries.

Below—one of two Detroit Steel Products Company factories in Detroit, Michigan. Other plants are located in Monroe, Michigan, and in Oakland, California.



Fenestra

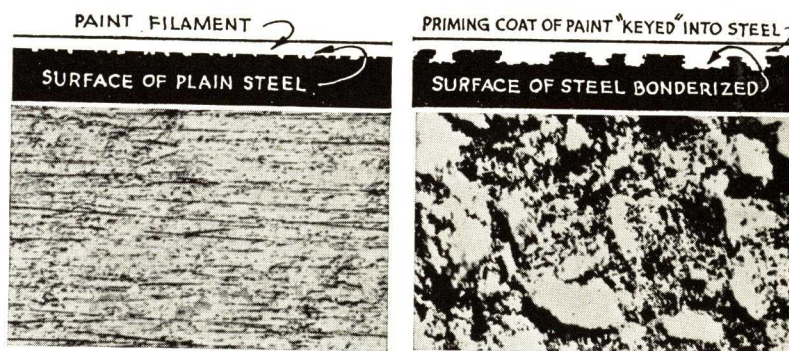
STEEL WINDOWS and DOORS

BY AMERICA'S OLDEST AND LARGEST STEEL WINDOW MANUFACTURER

FENESTRA INTRODUCES BONDERIZING FOR PROTECTION AGAINST RUST

FENESTRA introduced the Bonderizing process to the steel window industry in 1937, with a new plant costing \$200,000. The Fenestra Bonderized Finish is now standard on all Fenwrought Casements, Basement and Utility Windows made in Detroit, and is available on other types of windows (and doors) at slight extra cost when specified.

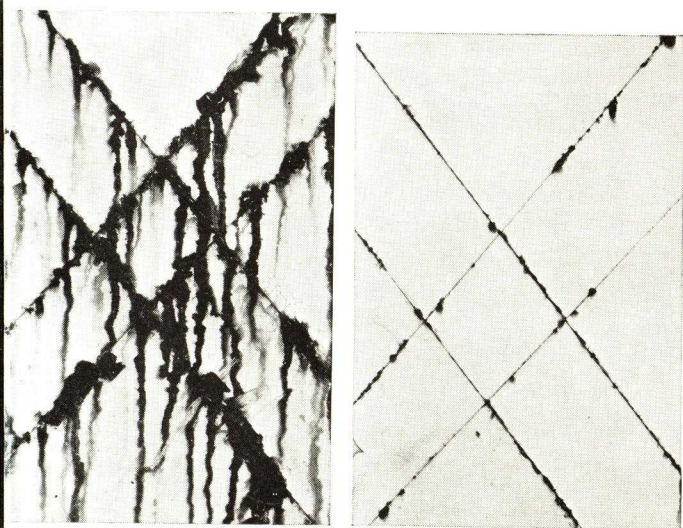
In this process the smooth metallic surface is etched by chemicals, and becomes a non-metallic, crystalline structure, "toothed" with countless microscopic peaks and pits. When the Fenestra Primer is applied to this new surface, the paint flows into the crevices between the crystals and is thus "keyed" to the steel.



Plain Steel Surface (enlarged). Note it is "slick," offering poor foothold for paint.

Bonderized Surface (enlarged). Note peaks and pits which provide secure anchorage for paint.

Fenestra's new Bonderized Finish is destined to effect important savings in maintenance costs: It protects against rust, and in case of abrasion, retards the creepage of rust beneath paint film. Fenestra's special, baked-on, Rust-inhibitive Primer, anchored to the steel, lasts 3 to 5 times longer than ordinary primers. It affords a durable base coat for all finish coats applied in the field, protecting against flaking, peeling, chalking and abrasion.



Photographs at left show two steel panels. The one on the extreme left is plain steel, acid cleaned and then painted. The other has Fenestra's standard Bonderized Finish. Both were cross-scratched deep, to expose the bare metal, following which both were subjected simultaneously to salt spray (20% solution) for more than 700 hours. Note that the rust in the panel with the Bonderized Finish is closely confined to the bare metal in the scratches.

DETROIT STEEL PRODUCTS COMPANY

GENERAL OFFICES: 2250 EAST GRAND BOULEVARD, DETROIT, MICHIGAN

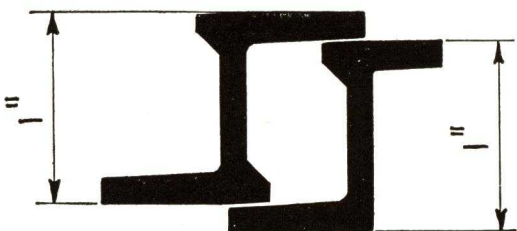
Factories: Detroit and Monroe, Michigan, and Oakland, California

Member of The Producers' Council, Affiliated with the A. I. A.

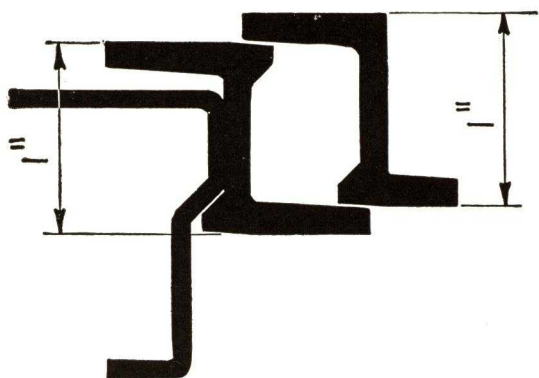
CASEMENT WINDOWS—FULL SIZE SECTIONS

Grouped below are full size, typical sections of various types of Fenestra Casements, with their bar depth dimensions and trade names, for comparison and con-

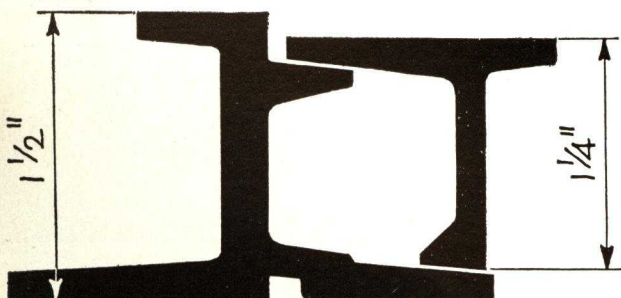
venient selection. For more complete details of each type, see following pages. (For windows for Industrial, Commercial or Institutional buildings see Index.)



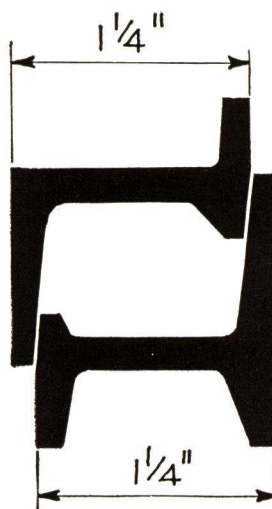
FENWROUGHT CASEMENTS



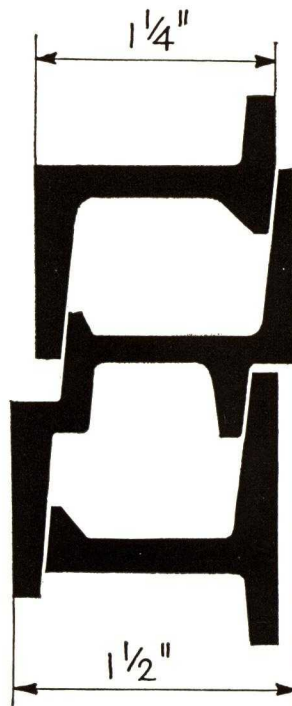
**BASEMENT AND
UTILITY WINDOWS**



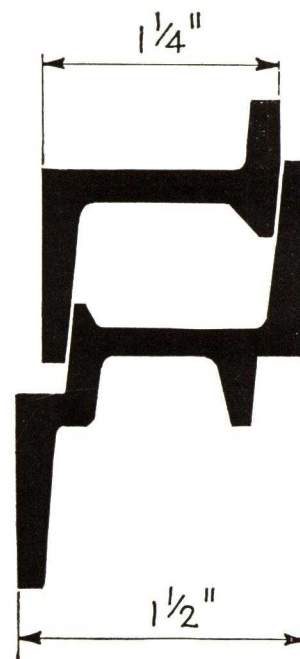
**PROJECTED FENMARK
WINDOWS**



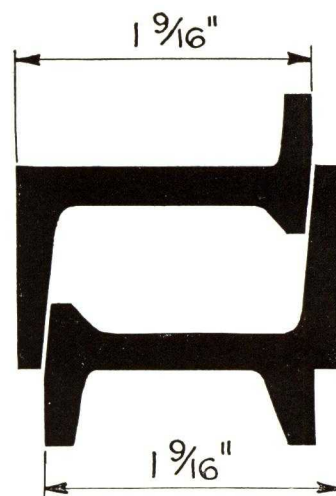
**FENCRAFT
CASEMENTS**



**DALMO-FENMARK
WINDOWS**



**FENMARK
WINDOWS**



**CUSTOM
CASEMENTS**

FENWROUGHT CASEMENTS

Fenestra Fenwrought Casements are the most popular of all Fenestra Casement designs for residential use. They are applicable to all types and designs of houses from the severely Colonial to the ultra Modern, and to all kinds of construction, including brick, brick veneer, stone, frame and stucco.

Frames are solid, rolled sections 1 in. deep from front to back. Corners of both frames and swing leaves are mitered and electrically butt-welded. Swing leaves meet the frame with a continuous, two-point, flat contact and are weathered by double baffles extending all around the opening.

All Fenwrought Casements have extension (cleaning) hinges so that the outside surface of all glass lights may be reached from inside the room for cleaning.

All Fenwrought Casements, made in Detroit, are "Rust Inhibited" by means of a special finish which includes alkali cleaning, Bonderizing, dip priming and oven baking. This process makes the useful life of the priming coat three to five times as long. Provision should be made for a second painting after erection and before glazing and for a finish coat about three weeks after glazing. (See Page 1.)

Mastic is supplied by the window manufacturer for sealing the entire perimeter of all Fenwrought Casements.

Glazing is done from the outside after installation. We recommend $\frac{1}{8}$ in. or $\frac{3}{16}$ in. plate glass set in bed and face putty and held by spring glazing clips which are supplied at no extra cost. Only steel window putty should be used.

(Units may be combined, one above another by means of transom bars, or side by side through the use of T mullions or $1\frac{1}{2}$ in pipe mullions.)

("Inside Insulating Window" available if desired.)

THREE FENWROUGHT GROUPS

To permit a wide variety in the selection of types and flexibility in design and cost, Fenwrought Casements are subdivided into three groups:

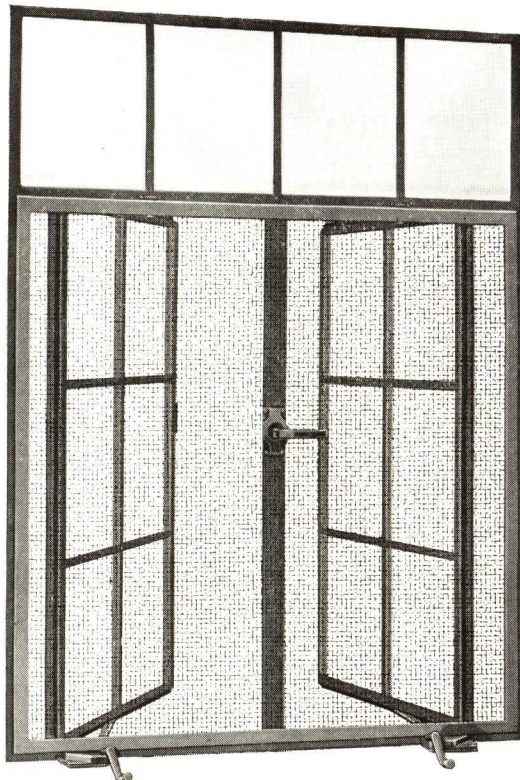
Screen Fenwrought Casements.

Standard Fenwrought Casements.

Economy Fenwrought Casements.

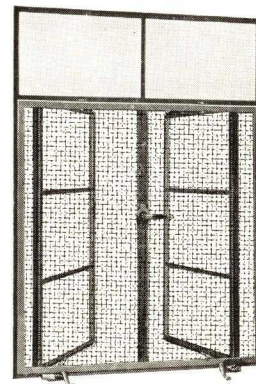
All of the information given above applies equally to all three types, but in certain other features, the three types differ considerably as outlined below:

SCREEN FENWROUGHT CASEMENTS

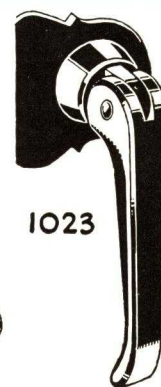
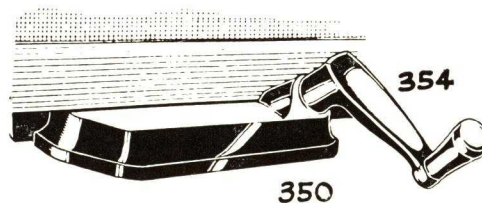


Left: Screen Type Fenwrought Casement, Type 4426. Double ventilated. Only ONE screen is needed to cover both swing leaves.

Right: Screen Type Fenwrought, Type 4426 same as at left but with vertical muntins omitted to give horizontal glass lights. ONE screen covers both swing leaves.



Hardware for Screen Type Fenwrought. At right, the Locking Handle; below, the Roto-Adjuster and Roto-Adjuster Handle.



Screen Fenwrought Types are equipped for Fenestra, Inside, Flat Screens and have hardware so designed that the swing leaves may be opened, closed and locked without touching the screens.

Handle brackets are of solid rolled steel or steel plate, solidly attached to the casement frame and carry the locking handles which are attached by concealed spring washers and lock nuts.

Extension (cleaning) hinges have bronze hinge pins and flanged bronze bushings.

Roto-Adjusters at the sill rest on and are firmly attached to solid rolled steel brackets solidly welded to the casement frame.

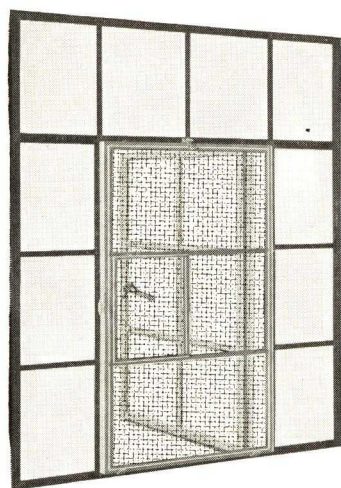
(For Roto-Adjuster assembly, see Section 6, General Window Specifications (page 11). Fenewrought adjusters supplied with diecast cases. (Bronze at extra cost where specified.)

Stock Warehouse types have diecast hardware with bronze lacquer finish including: Handle 1023; Roto-Adjuster 350 with adjuster handle 354; Transom Stay 1108. Solid bronze hardware furnished at extra cost, when specified, but shipment from factory is required.

We strongly recommend the use of Stock Warehouse types (see page 5). These may be supplied as shown or with muntins omitted as specified.

Screens have frames of cold rolled steel, reinforced by a continuous, triangular rib. Frames are Bonderized and painted two coats of gray enamel, the first coat baked on. (Provide for finish painting in field.) Cloth is 16-mesh, .0113 in. bronze wire. All screens are rewirable. Each screen is removable and interchangeable with any other screen of the same size and hand. A circular aperture in each screen permits it to fit snugly over and around the casement locking handle.

STANDARD FENWROUGHT CASEMENTS



Standard Fenwrought Vent Center Type with sliding wicket screen attached.

Standard Fenwrought Types are equipped for Fenestra Inside Wicket screens. These screens have horizontally sliding wickets providing access to casement locking handles. Wicket frames and guides occur directly opposite casement muntins. Screen frames attach directly to casement bars and are undisturbed in operating vents—a decided advantage over screens hinged to swing in with resulting interference with shades, curtains, etc.

Handle brackets are of solid, rolled steel solidly welded to the swing leaves. Locking handle is mounted on boss on bracket and firmly attached by a friction clevis, screw and shakeproof washer. Cleaning hinges are friction type with oil-impregnated bronze bushing washers, bronze studs and nuts. Adjustment of the nuts increases or decreases the friction. Top hung swing leaves have sherardized steel hinges with bronze pins.

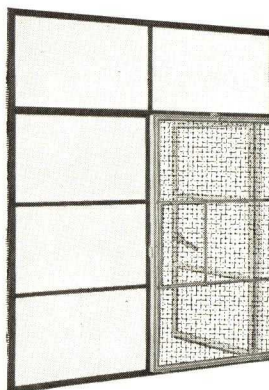
We strongly recommend the use of Stock Warehouse Types (see page 5) which are supplied as shown or with muntins omitted if so specified. Hardware for these types include diecast Locking Handle 30 with bronze lacquer finish, and Transom Stay 747 in rust-proofed iron. Any type furnished with solid bronze hardware, if specified, but shipment from factory is required.

Screens have frames of cold rolled steel with corners mitered and

butt welded, and with extending flanges to permit clearance of hardware. Frames are Bonderized and painted one coat of gray enamel, baked on. (Provide for finish painting in field.) Cloth is 16-mesh, .0113 in. bronze wire. All Screens are removable and rewirable. Rolling screens are available at extra cost if desired.

Wicket type screens are also available for top hung transom ventilators.

ECONOMY FENWROUGHT CASEMENTS



Economy Fenwrought Type with sliding wicket screen attached. Note offset vent and absence of vertical muntins. Provides same amount of light and ventilation as Standard Fenwrought Type shown at left but costs less.

Economy Fenwrought Types are exactly like Standard Fenwrought Types in material, workmanship, dimensions, construction and hardware but are supplied only in the types and sizes shown on page 6. The arrangement of swing leaves and the omission of vertical muntins often results in a considerable saving.

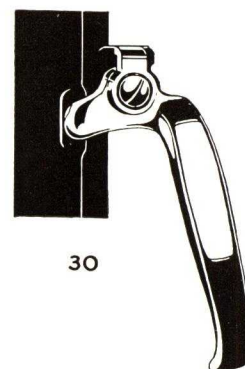
Economy Casements may be combined with Standard and Screen Types where desired, by the use of mullions or transom bars.

Wicket type screens are supplied for Economy Casements.

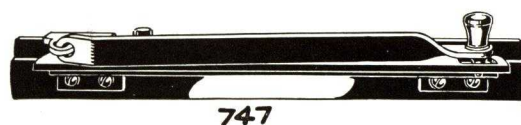
Hardware for Standard and Economy Fenwrought



Friction Hinge



30



747

FENESTRA WOOD SURROUNDS

The installation of all Fenwrought Casements is made easier by the use of Fenestra Wood Surrounds. These are especially designed of California Red Wood and are attached to the casements in a bed of mastic by copper coated screws before shipment, if so specified. The builder saves the cost of making and attaching his own surrounds and is provided with quick, economical, efficient method of installing his windows and locating his plaster grounds.

GLASS SIZES









A	8" x 12"	* P	8 1/2" x 11 3/4"
B	8 1/2" x 12 1/2"	R	11 3/4" x 12 3/4"
C	8 3/4" x 12"	S	11 3/4" x 12"
D	8 1/2" x 13"	T	11 3/4" x 10 1/2"
E	10" x 12"	U	11 3/4" x 11 3/4"
F	11 1/2" x 11 3/4"	V	8" x 10"
G	9 3/4" x 15"	W	8 1/2" x 10"
H	9 3/4" x 9 3/4"	LL	8" x 9 3/4"
J	11 1/2" x 16 1/2"	SS	7 1/2" x 9 1/2"
M	11 1/2" x 13 1/4"	W	8 1/2" x 9 1/2"
N	11 1/2" x 13 1/4"		
O	11 1/2" x 13 1/4"		

**LIGHTS NOT LETTERED ARE "A" SIZE.
* : CUT TO TEMPLATE WHEN USED IN
SEMI-CIRCULAR UNITS.**

TILT/IN UNIT TYPES

$3-1\frac{1}{2}"$
 $41-PI-4$
 $1-7\frac{3}{8}"$
 $21-PI-2$

TRANSOM TYPES

2-3/4" 42.14-TH-VC

 1-7/8" 42.14-TH-VC

 2-3/4" 42.14-TH-VC

 2-3/4" 42.14-TH-VC

 2-3/4" 42.14-TH-VC

 2-3/4" 42.14-TH-VC

 2-3/4" 42.14-TH-VC

 2-3/4" 42.14-TH-VC


A-244

FENWROUGHT TYPES

SCREENED & STANDARD

VC = VENT IN CENTER. JH = HINGED
TH = TOP HINGED TRANSOM. AT JAMB
PI = PROJECTED IN (TILTIN)

TYPE SIZES GIVEN ARE ACTUAL WIND-
LOW DIMENSIONS. ALLOW CLEARANCE
FOR INSTALLATION. SEE OTHER PLATES.

 SIDE = HINGED  TOP = HINGED  = PROJECTED IN
 INDICATES STOCK WAREHOUSE TYPE.

CASEMENT IS HINGED AT RIGHT, A LEFT HAND AT LEFT. NOMENCLATURE SHOULD INCLUDE THE SUFFIX "R" OR "L" TO INDICATE HAND. ~

CASEMENTS WITH SINGLE SIDE HINGED
VENTS MAY BE RIGHT OR LEFT HAND. WHEN
VIEWED FROM OUTSIDE, A RIGHT HAND

[illegible]

ECONOMY FENWROUGHT TYPES AND SIZES

1'-7 $\frac{3}{8}$ " HM-2214	3'-1 $\frac{1}{2}$ " HM-4214-JH	3'-1 $\frac{1}{2}$ " HM-4224	4'-7 $\frac{1}{2}$ " HM-6224-JH	4'-7 $\frac{1}{2}$ " HM-6214-VC
3'-5 $\frac{1}{2}$ " HM-2314	3'-5 $\frac{1}{2}$ " HM-4314-JH	3'-5 $\frac{1}{2}$ " HM-4324	3'-5 $\frac{1}{2}$ " HM-6324-JH	3'-5 $\frac{1}{2}$ " HM-6314-VC
4'-3 $\frac{3}{4}$ " HM-2416	4'-3 $\frac{3}{4}$ " HM-4416-JH	4'-3 $\frac{3}{4}$ " HM-4426	4'-3 $\frac{3}{4}$ " HM-6426-JH	4'-3 $\frac{3}{4}$ " HM-6416-VC
5'-4" HM-2518	5'-4" HM-4518-JH	5'-4" HM-4528	5'-4" HM-6528-JH	5'-4" HM-6518-VC

TABLE OF GLASS SIZES			
MARK	SIZE	MARK	SIZE
A2	16 $\frac{1}{16}$ " x 12"	E2	17 $\frac{1}{16}$ " x 12"
B2	17 $\frac{1}{16}$ " x 12 $\frac{1}{2}$ "	F2	17 $\frac{1}{8}$ " x 12"
C2	17 $\frac{1}{8}$ " x 12 $\frac{1}{2}$ "	G2	17 $\frac{1}{2}$ " x 11 $\frac{3}{4}$ "
D2	17 $\frac{1}{16}$ " x 11 $\frac{3}{4}$ "		

LIGHTS NOT LETTERED ARE "A2"

NOTE

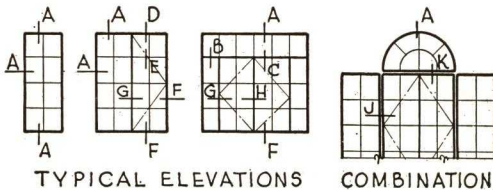
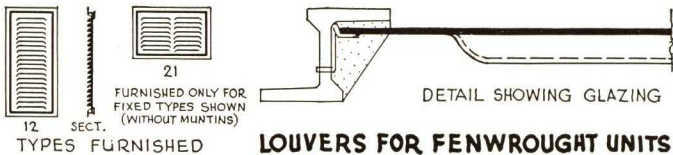
CASEMENTS WITH SINGLE VENTS MAY BE EITHER RIGHT OR LEFT HAND, DEPENDING ON SWING OF VENT DESIRED. WHEN VIEWED FROM THE OUTSIDE, A RIGHT HAND CASEMENT HAS VENT HINGED AT RIGHT AND A LEFT HAND HAS VENT HINGED AT LEFT.

OFFSET VENTS (AS IN TYPE HM-4518-JH) MUST ALWAYS BE HINGED AT THE JAMB OF FRAME.

NOMENCLATURE SHOULD INCLUDE THE LETTERS "R" or "L" TO INDICATE HAND AS HM-4416-JHR or HM-6518-VC L VC = VENT IN CENTER JH = VENT HINGED AT JAMB OF UNIT

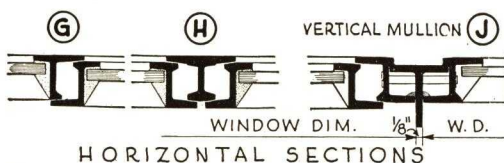
FENESTRA STEEL LOUVERS

Designed in two types only, to fit fixed light Fenwrought Casement Types 12 and 21 with muntin omitted. Made of 16-gauge, pressed steel to be set directly into the casement frame and held by glazing clips and putty, like a pane of glass. Particularly applicable to attics, gable ends, store rooms or wherever moderate ventilation without light is desirable.



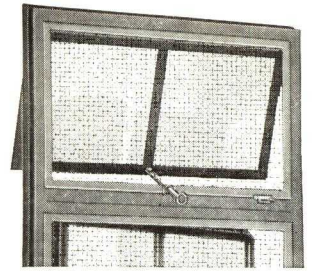
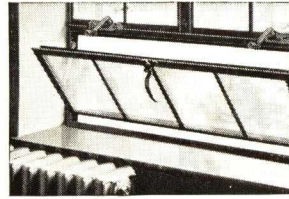
SYMMETRICAL COMBINATIONS OF UNITS				
STANDARD WIDTHS	UNITS WIDE	PANES WIDE	PANES WIDE PER UNIT	VERT. MULLS.
1'-7 $\frac{3}{8}$ "	1	2	2	0
3'-1 $\frac{1}{2}$ "	1	4	4	0
3'-2 $\frac{7}{8}$ "	2	4	2-2	1
4'-7 $\frac{1}{2}$ "	1	6	6	0
4'-10 $\frac{3}{8}$ "	3	6	2-2-2	2
6'-1 $\frac{5}{8}$ "	1	8	8	0
6'-3 $\frac{1}{8}$ "	2	8	4-4	1
6'-4 $\frac{1}{2}$ "	3	8	2-4-2	2
6'-5 $\frac{7}{8}$ "	4	8	2-2-2-2	3
7'-10 $\frac{1}{2}$ "	3	10	2-6-2	2
7'-10 $\frac{3}{8}$ "	3	10	4-2-4	2
8'-1 $\frac{3}{8}$ "	5	10	2-2-2-2-2	4
9'-4 $\frac{3}{4}$ "	3	12	4-4-4	2

STANDARD WIDTHS IN TABLE ABOVE INCLUDE ALLOWANCE FOR VERTICAL MULLIONS.



TRANSOM BAR
VERTICAL SECTIONS

Below: Four-light-wide "Tiltin" sill ventilator. Can be screened on the outside.



Above: Two-light Transom, screened inside, above a Screened Type Casement.

FENESTRA "TILTIN" AND TRANSM WINDOWS

Fenestra Tiltin Windows, one light high and two, four, six and eight lights wide, (4 lights wide maximum vent size), opening in at the top, are supplied for attachment to the sills of Fenwrought Casements but may be used individually if desired. When open, they act as baffles, deflecting air currents upward and toward the opposite side of the room.

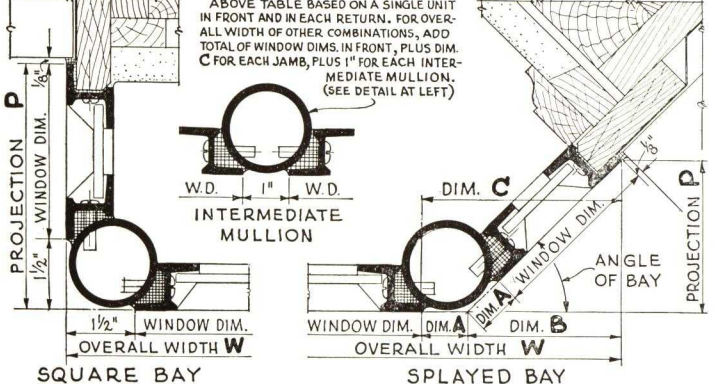
Designed for bedrooms where moderate night ventilation is needed. Also adaptable to libraries, play rooms, dens, sewing rooms where the "wind guard" feature prevents sudden gusts from disarranging papers, patterns, games or materials. Can be left open even in rainy weather. Screened outside where specified. When used separately, Tiltin Windows may be set high in the wall to leave room below for beds, bookcases or cupboards. Also convenient for basement "Rumpus Rooms" etc. See types and sizes under Fenwrought, page 5.

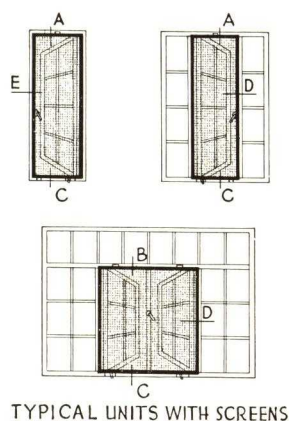
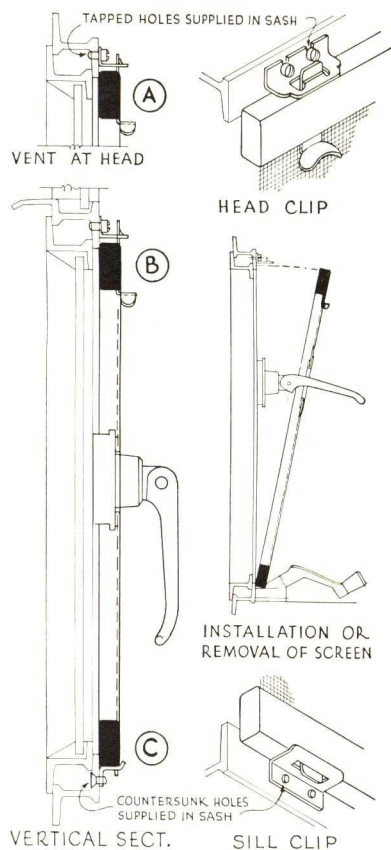
Two-light-high, top-hung, open-out transoms may be used at the head of Screened or Standard Type Fenwrought Casements. (See page 5.) Desirable for kitchens or for bedroom night ventilation. Weather-protecting even when open.

ANGLE OF BAY	PROJECTION	DIM. A	DIM. B	DIM. C	OVERALL WIDTH W		
IN LIGHTS IN RETURN	P	SEE DETAILS BELOW			LIGHTS IN FRONT SECT.		
					4	6	8
30°	1	6 $\frac{15}{16}$ "	13 $\frac{11}{16}$ "	1'-0"	5'-3 $\frac{1}{16}$ "	6'-9 $\frac{1}{8}$ "	8'-3 $\frac{1}{4}$ "
	2	10 $\frac{1}{16}$ "	1'-5 $\frac{7}{16}$ "	1'-6 $\frac{1}{4}$ "	6'-4 $\frac{1}{8}$ "	7'-8"	9'-2 $\frac{1}{8}$ "
45°	1	9 $\frac{7}{8}$ "	15 $\frac{1}{16}$ "	9 $\frac{1}{8}$ "	4'-11 $\frac{1}{16}$ "	6'-5 $\frac{1}{8}$ "	7'-11 $\frac{1}{4}$ "
	2	1'-2 $\frac{5}{16}$ "	1'-2 $\frac{5}{16}$ "	1'-3 $\frac{1}{4}$ "	5'-7 $\frac{1}{16}$ "	7'-2"	8'-8 $\frac{1}{8}$ "
60°	1	1'-0 $\frac{1}{4}$ "	1 $\frac{1}{16}$ "	7 $\frac{1}{8}$ "	8 $\frac{1}{4}$ "	4'-5 $\frac{1}{16}$ "	5'-11 $\frac{1}{4}$ "
	2	1'-5 $\frac{3}{8}$ "	10 $\frac{3}{16}$ "	11 $\frac{1}{4}$ "	4'-11 $\frac{1}{16}$ "	6'-6"	8'-0 $\frac{1}{8}$ "
90°	1	1'-2 $\frac{3}{8}$ "			DIM A = DIM C = 1 $\frac{1}{2}$ "	3'-4 $\frac{1}{16}$ "	4'-10 $\frac{1}{16}$ "
	2	1'-8 $\frac{1}{16}$ "				3'-4 $\frac{1}{16}$ "	4'-10 $\frac{1}{16}$ "
SQUARE SPLAYED	1	2'-0 $\frac{9}{16}$ "	10 $\frac{9}{16}$ "	11 $\frac{1}{2}$ "	5'-0 $\frac{7}{16}$ "	6'-6 $\frac{1}{2}$ "	8'-0 $\frac{5}{8}$ "
	2	2'-11 $\frac{1}{4}$ "	15 $\frac{1}{16}$ "	1'-3 $\frac{1}{16}$ "	5'-9 $\frac{1}{16}$ "	7'-3 $\frac{1}{8}$ "	8'-9 $\frac{1}{2}$ "

30° 45° 60° 90° 90° 45°

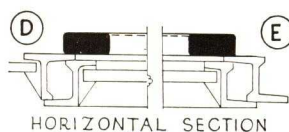
SPLAYED BAYS SQUARE BAY SQUARE SPLAYED



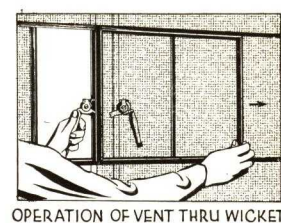
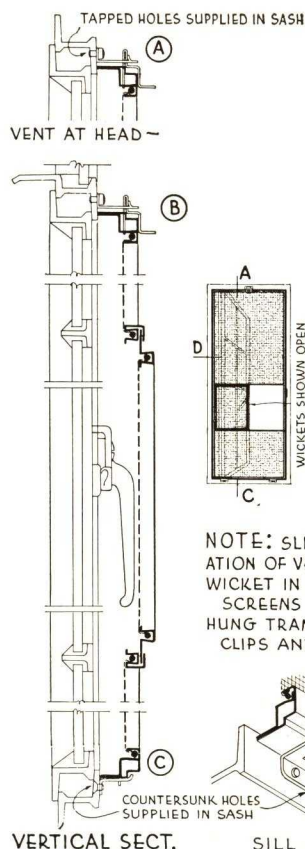


TYPICAL UNITS WITH SCREENS

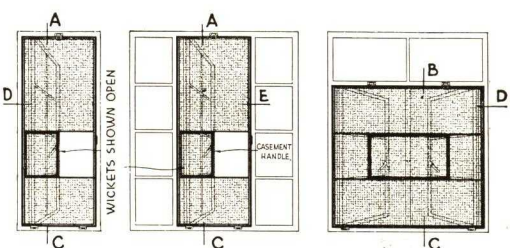
NOTE
SILL CLIPS OCCUR ONLY AT HANDLE SIDE OF SINGLE VENTS. HEAD CLIPS HOLD SCREENS WITH POSITIVE CAM ACTION AND ARE EASILY ENGAGED AND DISENGAGED. SCREENS OF THIS TYPE ARE ALSO AVAILABLE FOR TOP HUNG TRANSOM VENTS. CLIPS AND SCREWS ARE FURNISHED WITH SCREENS.



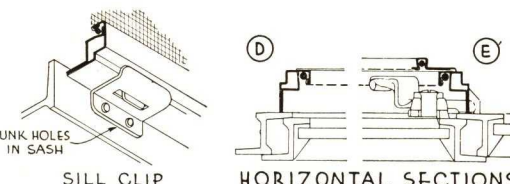
FLAT SCREENS FOR SCREEN FENWROUGHT A-264



OPERATION OF VENT THRU WICKET



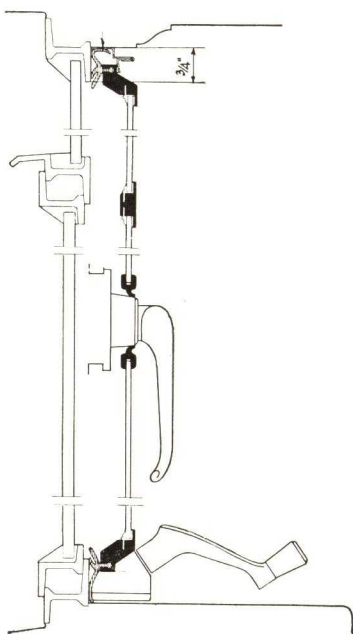
NOTE: SLIDING WICKETS PROVIDE ACCESS FOR OPERATION OF VENTS AFTER WHICH WICKETS ARE RECLOSED. WICKET IN DOUBLE SCREEN SLIDES EITHER WAY TO OPEN. SCREENS OF THIS TYPE ARE ALSO AVAILABLE FOR TOP HUNG TRANSOM VENTS. CLIPS AND SCREWS ARE FURNISHED WITH SCREENS.



WICKET SCREENS FOR FENWROUGHT (STANDARD & ECONOMY) A-125

INSIDE INSULATING WINDOWS

Designed to entirely cover Screen, Standard and Economy types of Fenwrought Casements. Applied inside (when screens are removed) forming a "Double Window" with approximately 1 in. of dead air space between glass surfaces.



Fenestra Insulating Window installed on Screen type Fenwrought Casement.

An effective, insulated, Double Window eliminating frost and condensation under all ordinary conditions (70 degrees and 40% relative humidity inside and 5 degrees above zero outside.) Heat loss through windows is reduced 60%. A definite saving in fuel consumption is effected and sometimes an actual saving in the cost of heating equipment.

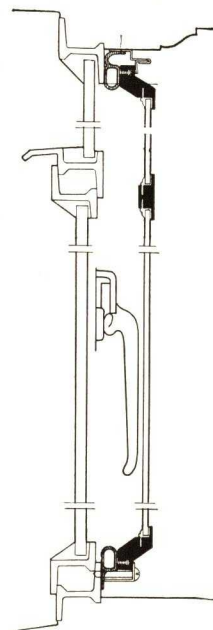
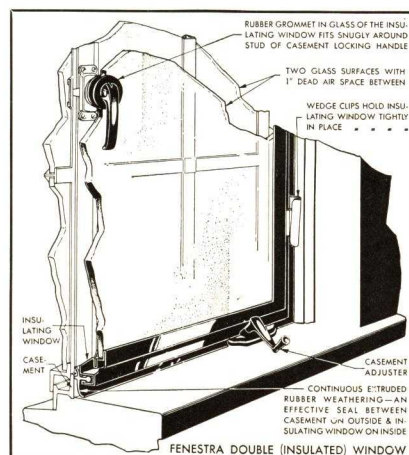
Easy to put on. Easy to take off. Preserves the attractive appearance of the window. Ventilated types available to provide restricted opening.

Frame is light weight, cold rolled, tubular steel with corners mitered, welded and reinforced. Shipped glazed with double

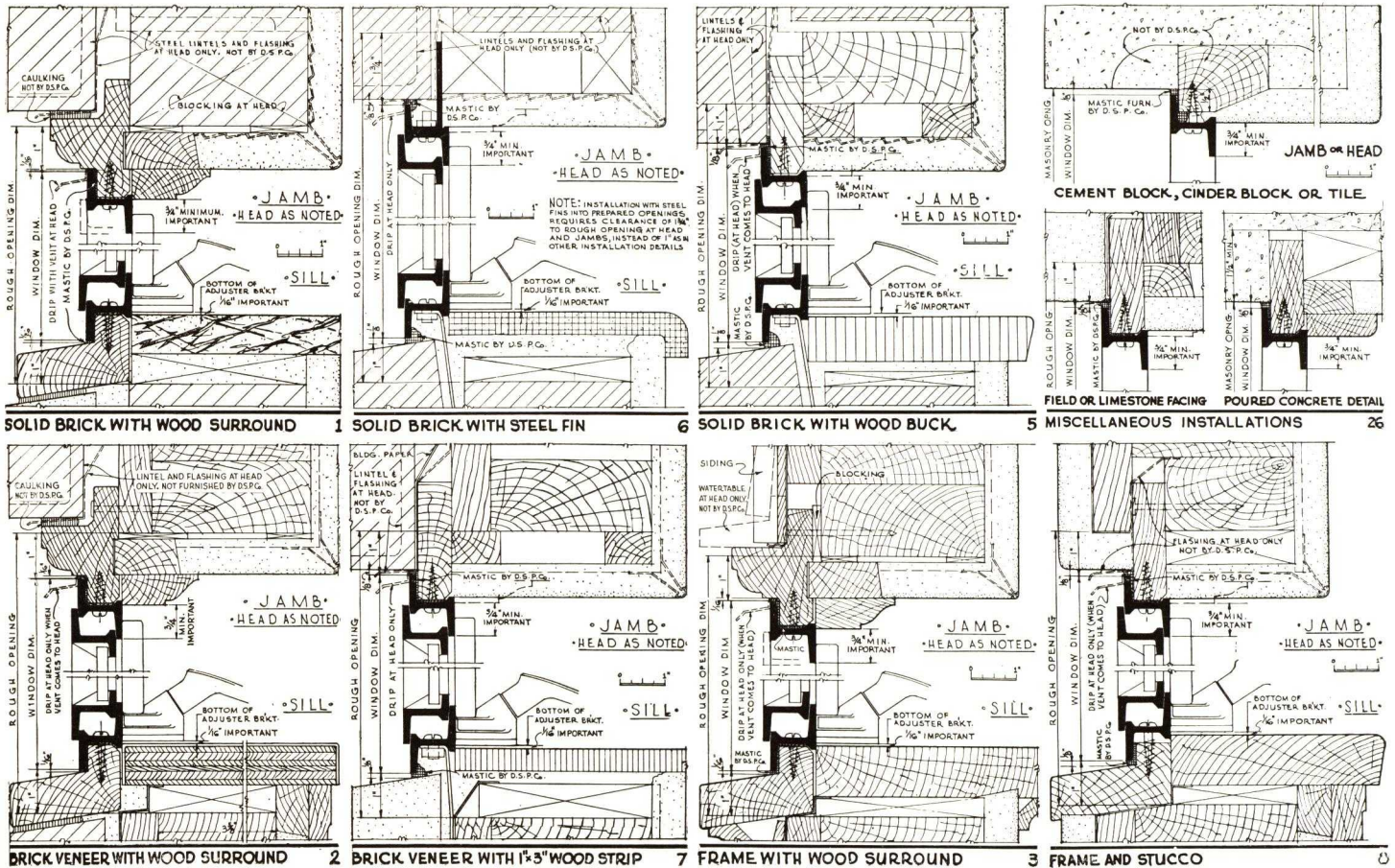
strength glass held by spring bronze glazing splines. (Semi-circular head types have frames of extruded aluminum.)

An extruded rubber weathering seal around the entire perimeter presses tightly against and completely covers the casement frame insulating it against heat transmission. Moulded rubber grommet fits tightly around the casement locking handle.

Window is held in place by steel plated wedge clips applied to trim on the inside or may be screwed direct to the casement frame, holes being drilled and tapped in the field.



Insulating Window for Standard and Economy types.



STEEL CASINGS

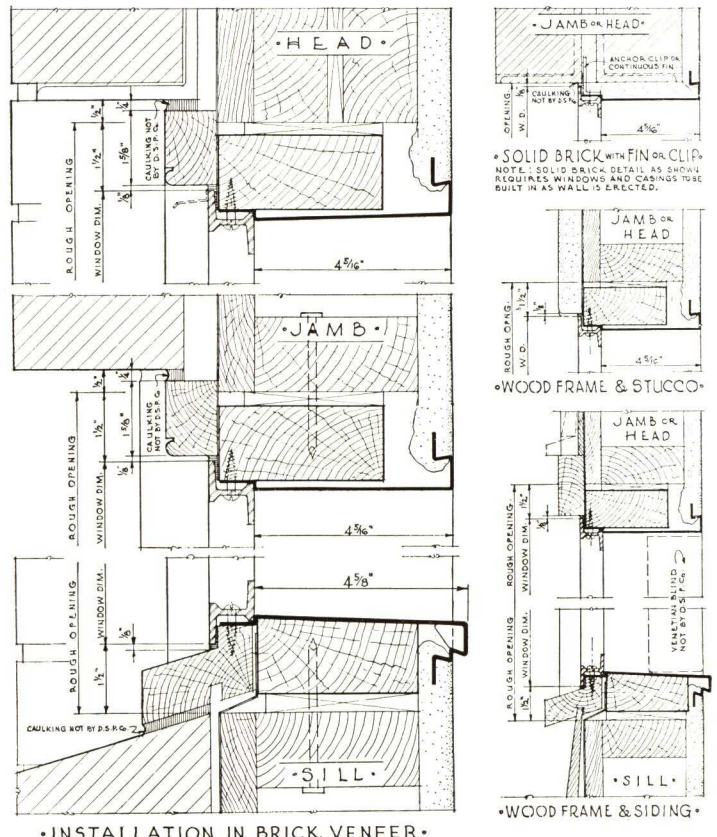
Fenestra pressed Steel Casings provide a simplified and economical means of installing Fenwrought Casements. Take the place of interior wood finish, plaster returns, stools and aprons and eliminate plaster troubles around windows. A smooth, durable, all steel, interior finish that is almost indestructible—cannot swell, shrink, burn, warp or discolor.

Casings are of 18 ga. steel and are made in stock sizes indicated below and in one depth only—4 1/8 in. (Special casings with 18 ga. head and jambs and 16 ga. sills and of varying depths are available where desired for Housing projects.) All members are hot rolled steel annealed smooth, with corners coped and fitted to a hair line crack. Inside face is 3/4 in. wide and is formed into a perforated plaster lock at its outer edge. Sill members project 1/4 in. beyond inside finished wall. Stock casings are Bonderized and given one coat of baked-on grey paint. Shipped already attached to single units of Fenwrought Casements. Cannot be supplied for two or more types combined by mullions.

Used on numerous large housing developments including Hillside Apartments, New York City, Ten Eyck (Williamsburg) Development, Brooklyn, and others.



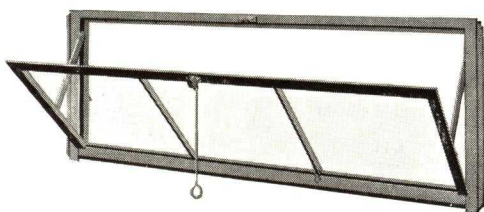
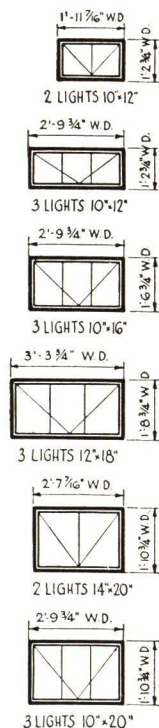
12	22	42	62	82
13	23	43	63	83
14	24	44	64	84
15	25	45	65	85



STEEL CASING DETAILS

A-120

BASEMENT WINDOWS



Built from Fenwrought Casement Sections. Frame is mitered and butt welded at all 4 corners. Vent is mitered and butt welded at head and pivoted-ended and welded at sill. Two-point flat contact weathering is maintained between sash and frame all around the opening. Weather protected even when vents are open.

Ventilators are carried on steel balance arms and tilt in at the top to a position limited by a clip at sill. This clip is easily removed to allow vent to be raised to open position at head of window. A spring latch at head is operated by a 10 in. extension handle. A 14 ga. steel fin welded outside each jamb mem-

ber, imbeds in masonry and forms a guide for the mason in laying up both inside and outside wall. Head fins available at extra cost. Windows have standard Fenestra Bonderized finish (See Page 1).

Steel framed, bronze mesh, outside screens and outside storm sash are available where specified.

EXTENDED DRIP

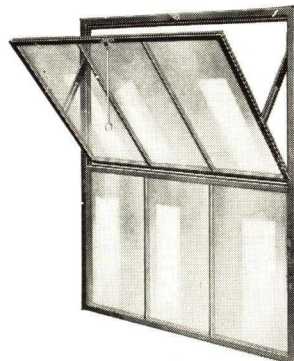


PROTECTED WHEN OPEN

Attached in a jiffy from the inside with an ordinary screw driver. Vertical mullions if desired.

UTILITY WINDOWS

Made in fixed or ventilated types in one size only: 3 ft.-3 3/4 in. wide by 3 ft.-7 1/4 in. high. Construction, hardware, screens and storm sash same as for Basement Windows. Windows have standard Fenestra Bonderized finish (See Page 1).



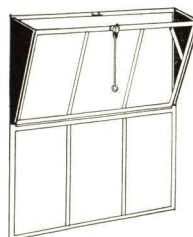
"Utility" Window

Utility Windows are especially adapted to provide light in basements where houses are set close to the grade. The lower panes are below the grade line and a grating over the areaway way makes the window appear 1-light high when viewed from the outside.

Also desirable for use in public and private garages, filling stations, stores, shops and farm buildings. The tilt-in ventilator

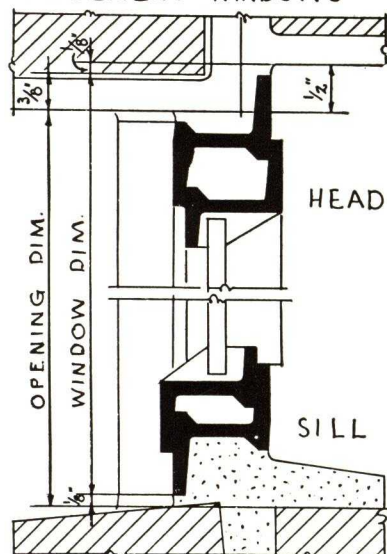
does not interfere with the use of space directly below the window and it admits abundant ventilation without direct draft.

DRAFT GUARDS

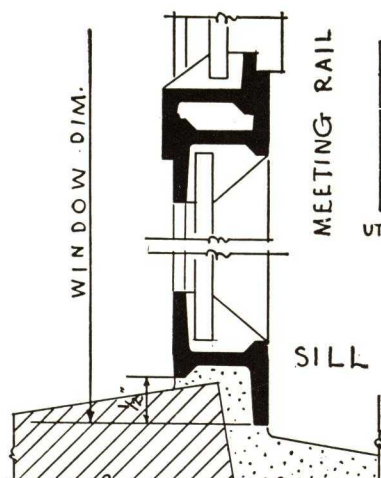


Triangular Draft Guards are available for Utility Windows to close the V-shaped apertures at jambs of ventilators. "Hopper Type" Units thus formed are particularly adaptable to cattle and stock barns. Draft guards are 18-gauge, pressed steel held by clips to the jamb fins (also punched for direct bolting to frames of Utility Windows already installed). The protected vent opening is 20 degrees but ventilator may be opened beyond the draft guards for cleaning.

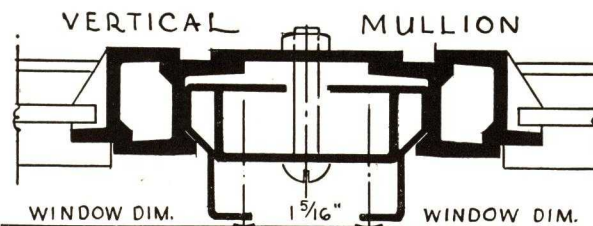
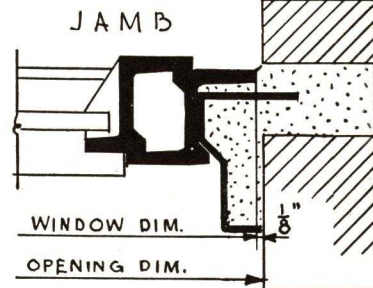
• BASEMENT WINDOWS •



• UTILITY WINDOWS • HEAD DETAIL FOR UTILITY WINDOWS- IS SAME AS FOR BASEMENT WINDOWS.



BASEMENT & UTILITY WINDOWS



BASEMENT & UTILITY WINDOWS

D-106

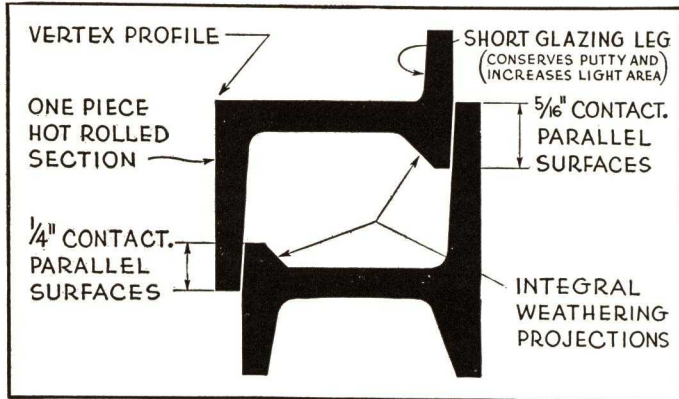
GENERAL WINDOW SPECIFICATIONS

FENCRAFT—FENMARK—PROJECTED FENMARK—DALMO-FENMARK—CUSTOM

These specifications apply particularly to the windows named and are to be used in connection with the individual information regarding these windows given on succeeding pages.

1—SECTIONS

Sections are solid, hot rolled, vertex profile steel, especially designed for the manufacture of casement windows. Weathering projections are rolled INTEGRAL with the sections to provide overlapping, parallel surface contacts of not less than $\frac{1}{4}$ in. at both outside and inside points of closure. Movable sash make both outside and inside contacts against one-piece, hot rolled section at head, jambs and sill.

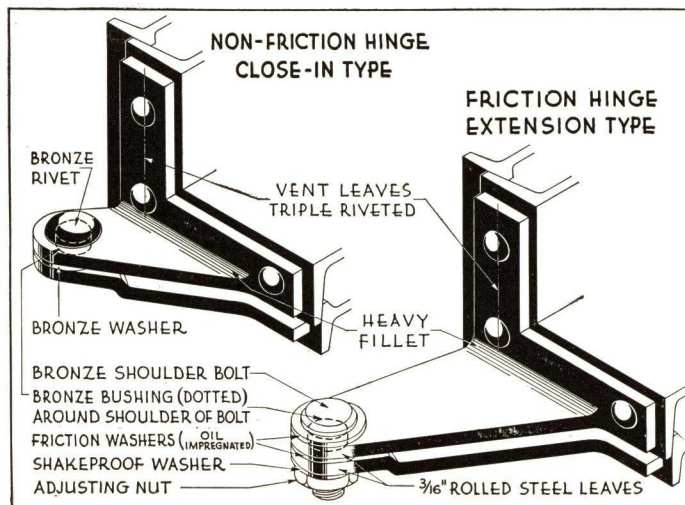


All sections are straightened by rerolling and are individually, electrically tested for straightness. Corners of all ventilators are electrically welded and ground smooth.

2—HINGES

Side Hung Ventilators are hung on "Extension Hinges" or on "Close In Hinges" of especially designed, vertex profile, solid, hot rolled steel. Hinge pins are solid bronze, accurately fitted into flanged bronze bushings. Top and Bottom Hung Ventilators are hung on flat, 5-knuckle hinges.

(Both "Extension" and "Close In" Hinges may be equipped with oil-impregnated, friction washers, eliminating the need of sill adjusters, but these "Friction" Hinges are not recommended where windows are to be screened, as they cannot be used with Fenestra Flat Screens.)



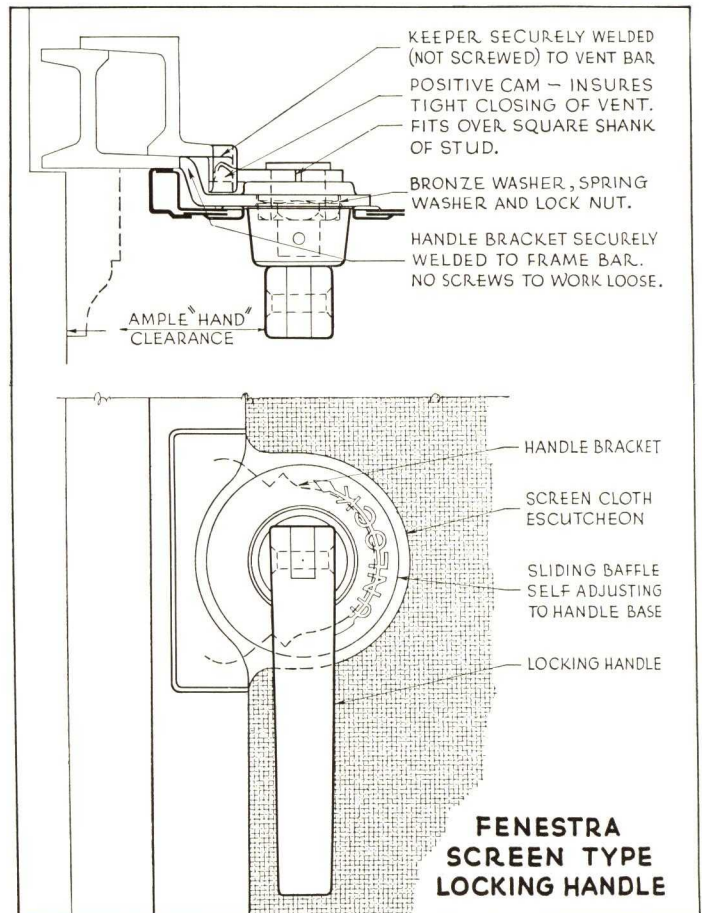
3—WINDOW CLEANING

(Windows with projected ventilators or with single, side-hung ventilators on extension hinges, or with two, adjacent side hung ventilators on close-in hinges, may be cleaned on the outside from the inside. Windows with single ventilators on close-in hinges must be cleaned from the outside.)

4—LOCKING HANDLES

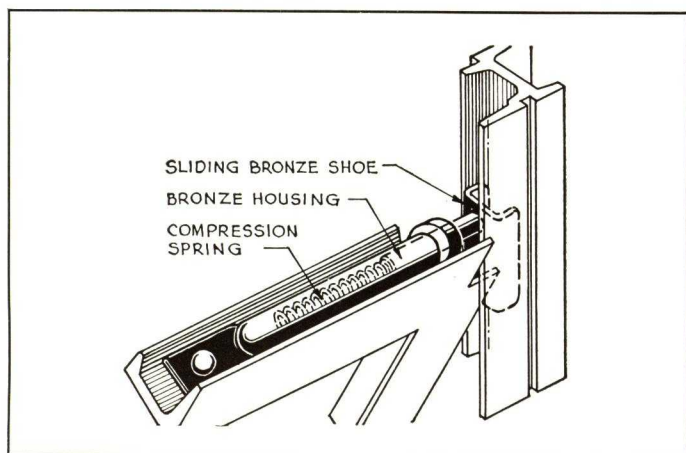
All Locking Handles are of Specification Solid Bronze unless otherwise specified and are of ornamental design attached to ornamental brackets either by screws or friction clevises.

Handles on Side Hung, Screen Type swing leaves are of hinged design to permit their being slipped through screen escutcheons. When windows contain ventilators or swing leaves beyond reach from the floor, handles suitable for pole operation are supplied. (See Locking Handle designs under various window types.)



5—SLIDING SHOES

Projected Ventilators are supported on heavy, spring steel, bronze pivoted side arms and are equipped with two bronze, sliding, friction shoes, the friction being maintained by compression springs of heavy, rust-proofed, music wire, completely enclosed in bronze housings.

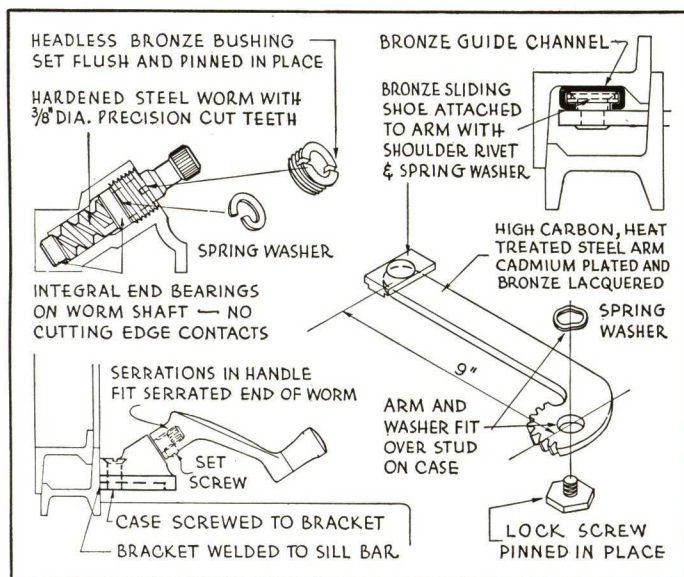


(Projected ventilators used at the sills of windows, tilt in from the top while sliding up from the bottom. Projected ventilators used above the sill usually swing out at the bottom while sliding down from the top, but may tilt in from the top if so specified.)

6—ADJUSTERS

Side Hung Ventilators are either (a) Screen Type, equipped with non-friction hinges and Roto-Adjusters or (b) Standard Type, equipped with friction hinges but no adjusters. Sliding Friction Adjusters can be supplied as specials if so specified.

(The Fenestra Roto-Adjuster is attached at the sill of the casement to permit opening or closing the swing leaf without touching the screen. It consists of a hardened, solid steel shaft with machine cut teeth, the ends of the shaft formed into cylindrical bearings. The



upper end of the shaft carries a spring washer, a headless, Everdur Bronze bushing and a bronze Adjuster Handle.

(The machine cut teeth are meshed with a gear and arm blanked from a single piece of heat treated, high carbon, rolled steel. The outer end of the arm carries a brass shoe which slides in an especially designed, drawn brass channel guide on the under side of the swing leaf.

(Worm shaft and gear are housed in a bronze case which rests on a solid, rolled steel bracket and is held by three screws. The bracket is solidly welded to the casement frame in such a position that the window stool is easily fitted without notching.)

Top Hung Ventilators are either (a) Screen Type with under-screen, Notched Stay Adjusters or (b) Standard Type with Peg and Stay Adjusters. Projected Out Ventilators may be equipped with 15 in. Underscreen, Stay Adjusters and Fenestra Flat Screens at extra cost when specified.

7—SHADING

Most windows are drilled at both jambs near the head for the attachment of shade brackets—brackets to be supplied by the shading contractor. Shade bracket clips, accommodating any standard shade bracket can be supplied at extra cost where specified.

(Where inside swinging, sliding or rolling screens are used care should be taken to locate the shades and drapery brackets with due regard for screen clearance. See Section 9.)

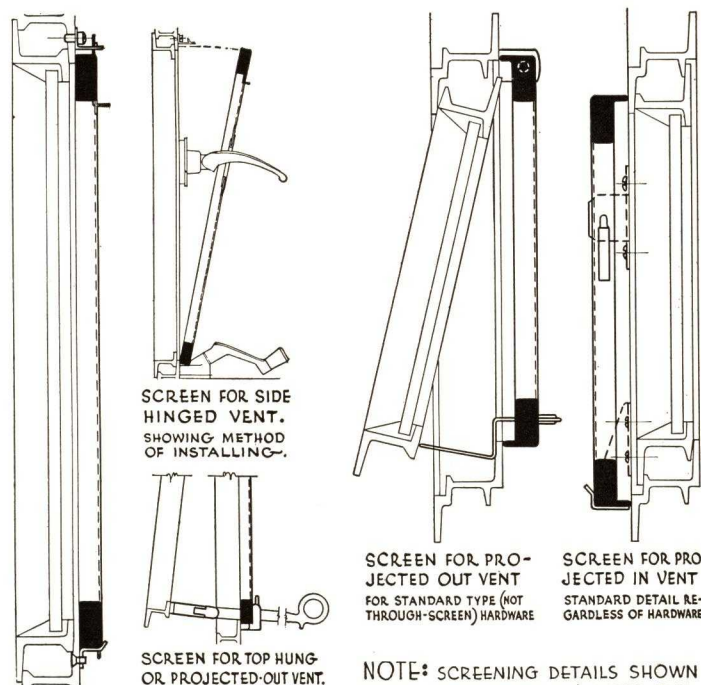
8—MULLIONS

Mullions and Transom Bars are provided between adjacent windows where specified.

(In Fenmark or Projected Fenmark types, the mullions may be omitted where specified and narrow vertical lines may be secured by bolting the jambs of the adjacent windows together. See Plate G-425.)

9—SCREENING

(Fenestra Screen Type Windows with Fenestra Flat Screens are recommended for all Fenmark, Fencraft and Custom Windows where screens are required. Fenestra Standard Type windows do not accommodate Flat Screens but, if necessary, may be screened with swinging, sliding or rolling screens. Fenestra Flat Screens are available for use on Projected Fenmark Windows.)



FENESTRA FLAT SCREENS FOR SCREEN TYPE WINDOWS WITH THROUGH-SCREEN HARDWARE ~ ~

RECOMMENDED FOR ALL FENMARK, FENMARK AND CUSTOM WINDOWS WHEN SCREENS ARE REQUIRED. SCREENS ARE UNDISTURBED IN OPERATING VENTS BUT ARE EASILY REMOVED AND REPLACED FOR STORAGE OR WINDOW WASHING

NOTE: SCREENING DETAILS SHOWN APPLY TO FENMARK, PROJECTED FENMARK, FENCRAFT AND CUSTOM WINDOWS FOR SCREENING OF SIDE HINGED OPEN IN AND BOTTOM HINGED VENTS CONSULT D.S.P. Co. REPRESENTATIVE.

HOLES ARE SUPPLIED IN SASH FOR ATTACHMENT OF SCREEN FITTINGS. CLIPS AND SCREWS FURNISHED WITH SCREENS.

SCREENING DETAILS

FOR FENMARK, PROJECTED FENMARK, FENCRAFT & CUSTOM WINDOWS G-426

Fenestra Flat Screens for all Screen Type, Open-Out Ventilators lie flat against the inside of the window frame and permit complete operation of the swing leaves—opening, closing and locking—without touching the screen. Screens for all Open-In Ventilators are set flat against the outside of the window frame.

Screen have frames of cold rolled steel, with continuous, internal, triangular reinforcement. Frames Bonderized and painted two coats of gray enamel, the first coat baked on. Cloth is 16-mesh, .0113 in. bronze wire. All screens are removable and rewirable. A circular aperture in each screen permits it to fit snugly over and around the locking handle.

(Screens are available with bronze frames or with aluminum frames and aluminum wire cloth. Also with finer than 16-mesh. Extra cost where specified.)

10—PAINTING

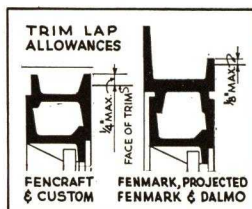
All windows, screens, etc., receive adequate shop painting to protect them during transportation to the building site. Provision should be made for field painting by the painting contractor. One metal protective coating should be applied to thoroughly cleaned surfaces after erection and before glazing. Final painting should be deferred until about three weeks after glazing to allow the putty to set.

At slight extra cost, windows can be supplied with a new rust-resisting finish which includes Bonderizing, painting, and oven baking. See page 1.

11—ERECTION

(Wherever possible, windows should be erected in prepared openings by the window manufacturer after all mason work has been completed.)

(Inside trim or plaster must be kept back to provide clearance for screens, fittings, etc., in accordance with "Trim Lap Allowances" indicated. See also installation details under various window types.)



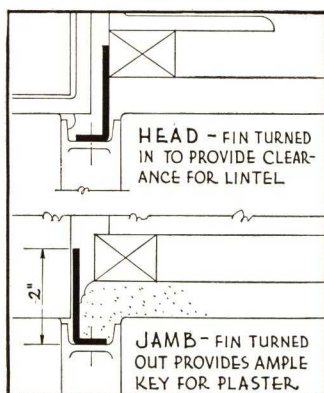
Mastic is supplied by the window manufacturer for sealing at masonry sills and at vertical or horizontal connections between all windows having UNEQUAL leg frame section; and for sealing the entire perimeter of windows having EQUAL leg frame section.

Steel strap anchors are supplied for anchoring windows to building construction unless steel fins or subframes are specified.

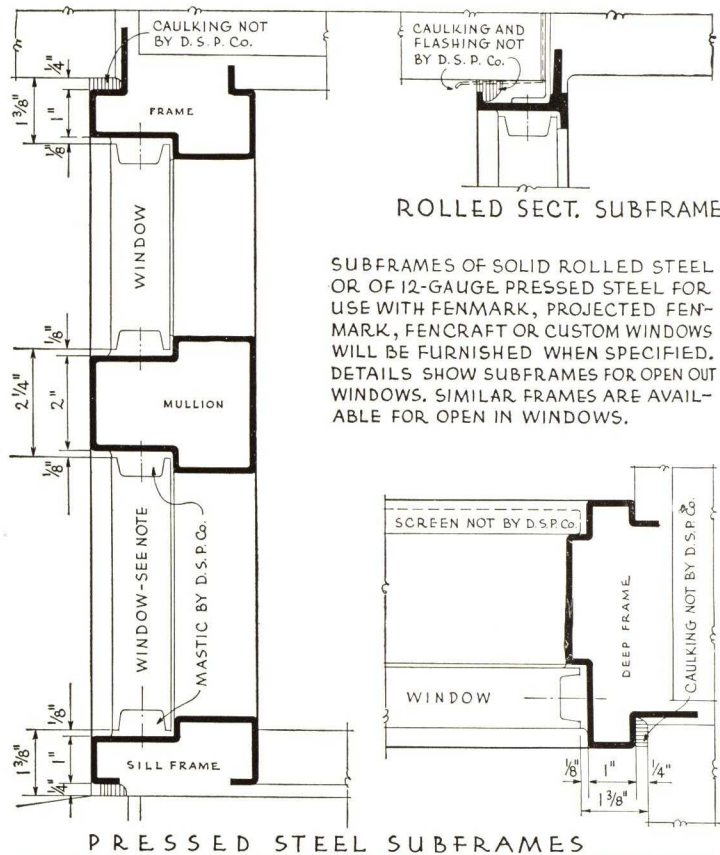
12—STEEL FINS AND SUBFRAMES

Continuous steel fins are available at slight extra cost when specified. They are shipped attached to jambs or head (or both) of windows. Cannot be used at mullions of multiple units. They provide continuous deep anchorage and increase the weathertightness of installation particularly with windows of equal leg frame sections.

Subframes of solid rolled steel or of 12-gauge pressed



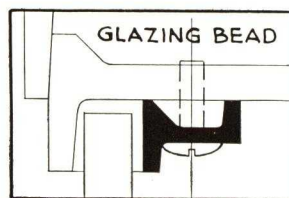
steel available for use with Fenmark, Projected Fenmark, Fenecraft or Custom Windows where specified. Consult the nearest Fenestra representative.



ROLLED OR PRESSED STEEL SUBFRAMES A-530

13—GLAZING

All windows should be glazed on the outside with high grade steel window putty, neatly applied. Each light should be bed-puttied, secured by spring glazing clips furnished by the window manufacturer, and then face puttied.



(Outside putty glazing is recommended in all cases, particularly for Fenmark and Projected Fenmark Windows. Glazing beads can be furnished at extra cost where specified, and, when used, INSIDE glazing is advisable. Plate glass is recommended.)

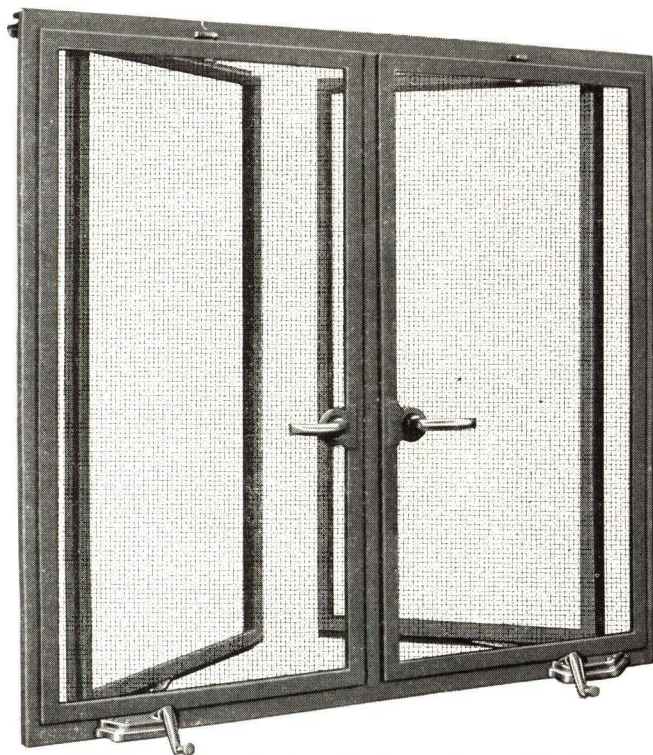
14—ALUMINUM WINDOWS

Fenmark, Projected Fenmark, Fenecraft and Custom Windows may be secured in extruded aluminum sections equipped with white metal hardware and aluminum framed screens. Consult the nearest Fenestra representative.

15—UNDERWRITERS' LABEL WINDOWS

Fenmark, Projected Fenmark, Fenecraft and Custom Windows can be supplied bearing the Underwriters' Label. Glass sizes are limited to a maximum of 48 in. in either dimension and an exposed glass area of 350 sq. in. In Fenmark and Projected Fenmark Types the ventilators may open in or out. In Fenecraft Types the ventilators must open out. In all windows, 1/4 in. glass must be used. In other respects, labeled windows conform to standard Fenestra products.

FENCRAFT CASEMENTS



Fencraft Screen Type Casement With Fenestra Flat Screens.

All General Specifications on Pages 10, 11 and 12 apply except Section 5.

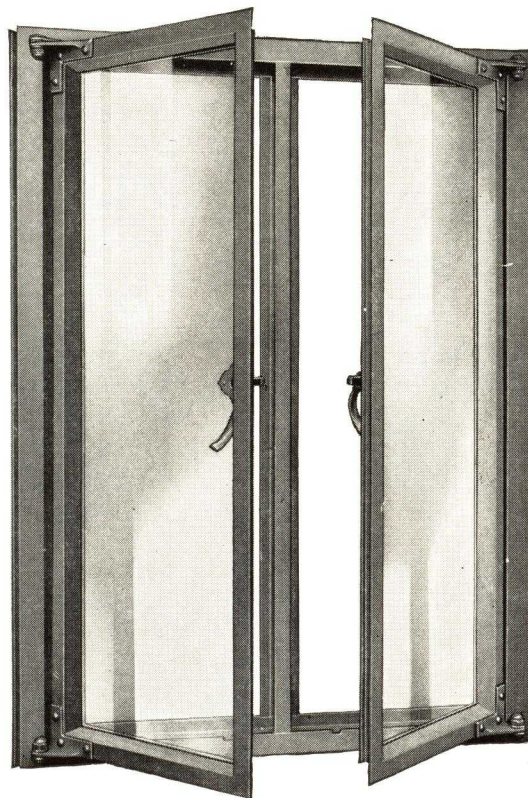
Designed for use in fine residences, clubs, apartments, theaters, churches, hospitals, dormitories, hotels, fraternities, schools, and university buildings, and all structures requiring windows of superior design and quality.

Supplied in both Screen and Standard Types.

(It is important to determine at the outset, which of these types is to be used.)

Frame and ventilator sections are $1\frac{1}{4}$ in. deep from front to back. Frame sections have equal legs. Frame and ventilator corners are mitered, electrically butt welded and ground to a smooth finish. Frame sections may be equipped with continuous steel fins for anchorage if required.

Standard side hung ventilators open out but in certain types may be designed to open in if so specified. Transom types may be top hinged open out or bottom hinged open in. Sill vents



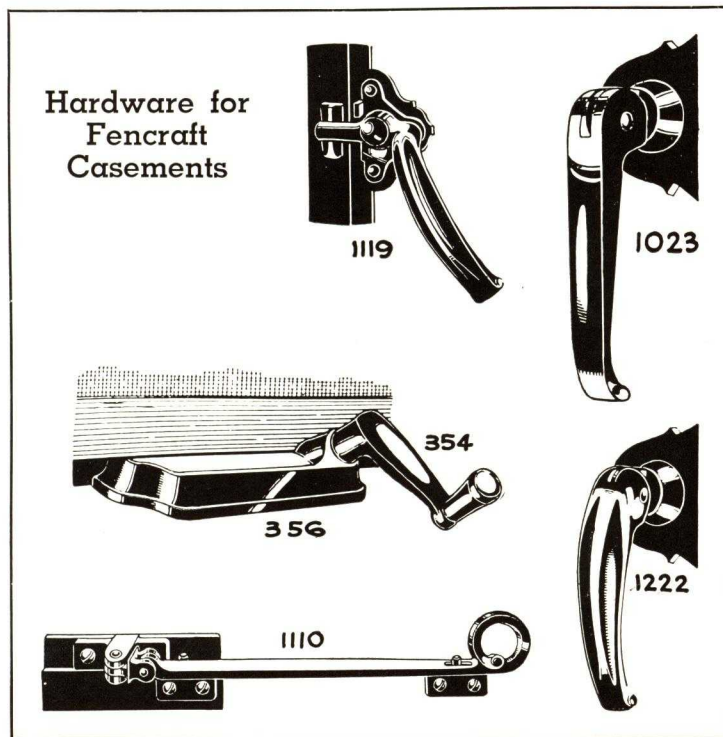
Exterior of Fencraft Standard Type Casement.

are bottom hung open in. Combinations of units may be made to fill almost any sized opening and provide almost any degree of ventilation.

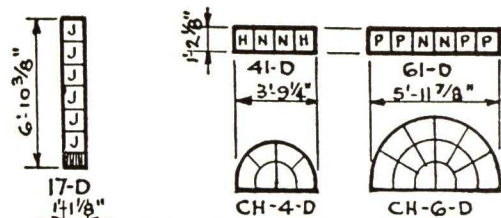
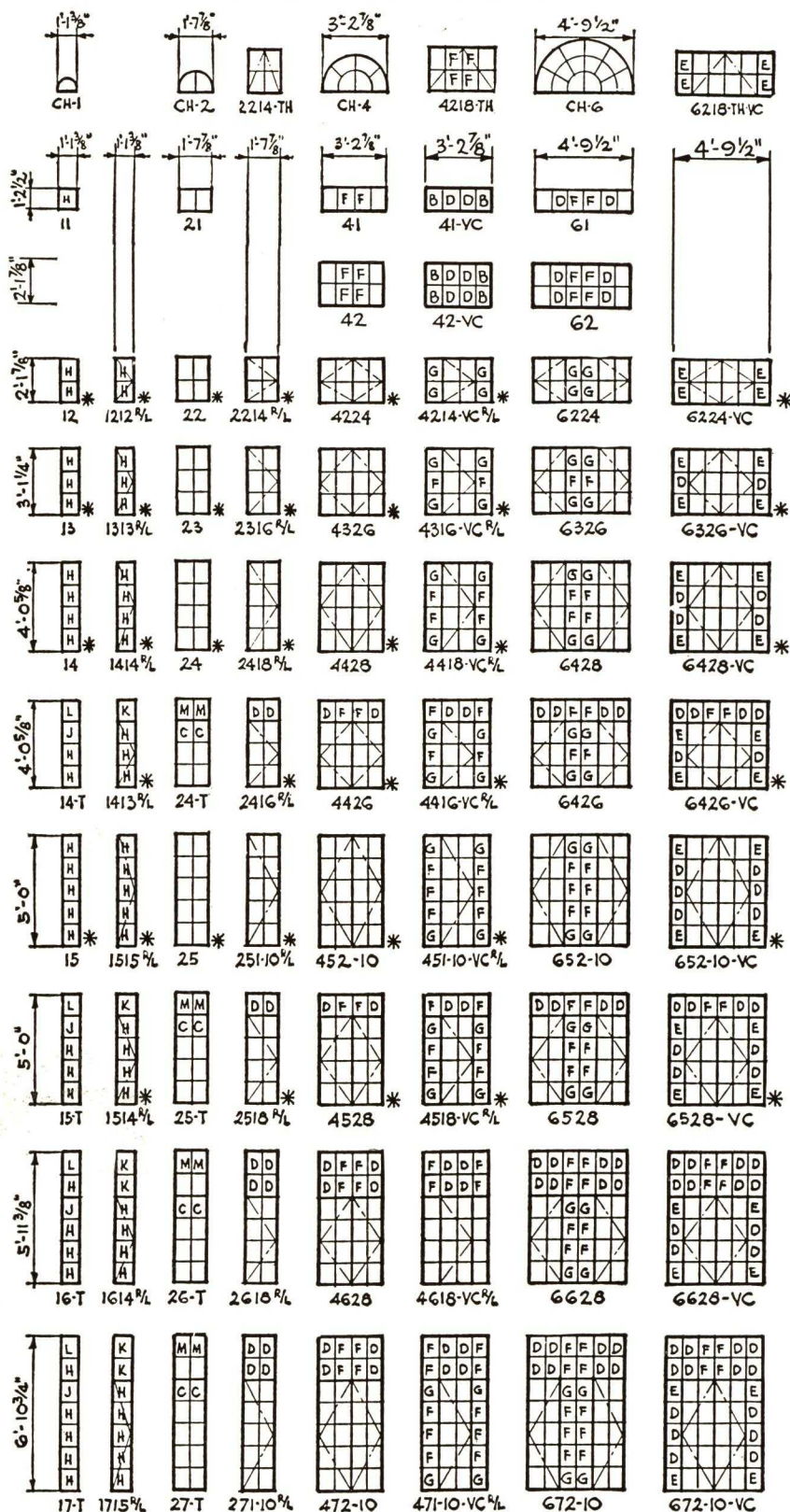
Specification, Bronze hardware is standard. For Screen Types, Handle 1023, Roto-Adjuster 356, Adjuster Handle 354. For Standard Types Handle 1119. Hardware available as special includes Handle 1222, Adjuster Handle 355, Thumb Screw Stay 1101, Transom Stays 1110 and 1108. Extra heavy Roto-Adjuster is available at extra cost were specified.

We strongly urge the use of Quick Shipment types and sizes shown on Page 14 supplied with standard hardware only. These types are available as shown or with muntins wholly or partially omitted to accommodate leaded glass or provide horizontal lights popular in Spanish and Modern architecture.

"Inside Insulating Window" Available for Screen Types if desired. Consult the nearest Fenestra representative.

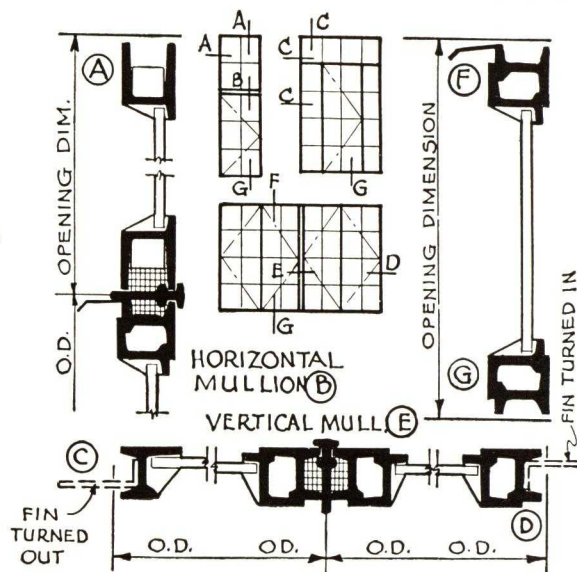
Hardware for
Fencraft
Casements

* TYPES SHOWN WITH ASTERISK ARE QUICK SHIPMENT TYPES, AND ARE FURNISHED WITH MUNTINS AS SHOWN OR WITH MUNTINS OMITTED. ANY TYPE FURNISHED WITH MUNTINS OMITTED WHEN SO SPECIFIED.



UNITS USED WITH DOORS

SIZES SHOWN ON ABOVE TYPES ONLY ARE ACTUAL WINDOW DIMENSIONS.



NOTE

EXCEPT AS NOTED ABOVE (UNITS USED WITH DOORS) ALL SIZES SHOWN ARE OPENING DIMENSIONS AND ALLOW CLEARANCE FOR INSTALLING. SEE DETAILS.

All units are outside putty glazed and have open out vents. No glazing angles and no open in vents permitted.

Hardware for Screened Types includes: Handle No. 1023-SB; Roto-Adjuster No. 356-SB; Roto-Handle No. 354-SB; Non-friction Hinges. Hardware for Non-Screen Types includes: Handle No. 1119-SB and Friction Hinges. (No stay adjusters.)

Details as shown above are standard and are the only ones that can be supplied on Quick Shipment Types.

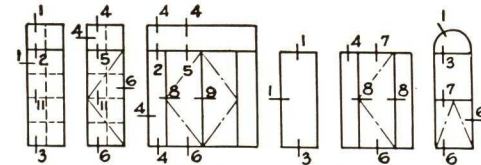
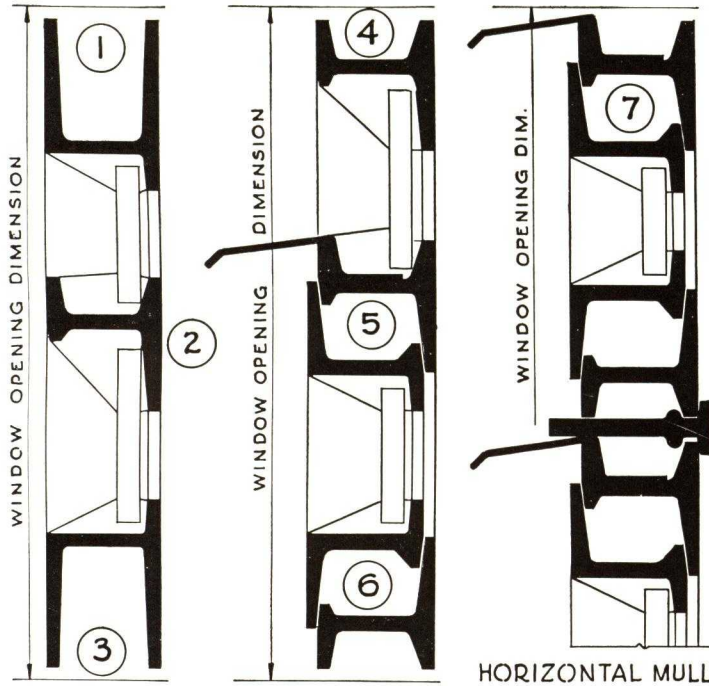
"VC" indicates "Vent in Center"; "R/L" indicates casement may be either "Right" or "Left" Hand. Viewed from outside, a Right Hand Casement is hinged at the right, a Left Hand Casement is hinged at the left.

Drips are supplied over all ventilators at no extra charge. Fins supplied at head and jambs only, at extra cost where specified. State whether fin should turn in or out. (See details.)

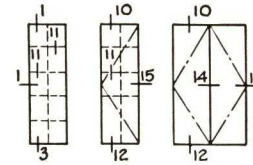
GLASS SIZES

A	8" x 11"	F	9 7/8" x 11"	L	10" x 10 7/8"
B	8 1/4" x 11"	G	9 7/8" x 11 7/8"	M	8" x 10 7/8"
C	8" x 11 7/8"	H	10" x 11"	N	10 1/2" x 11"
D	8 7/8" x 11"	J	10" x 11 7/8"	P	11 1/2" x 11"
E	8 7/8" x 11 7/8"	K	11 5/8" x 11"		

NOTE: LIGHTS NOT LETTERED ARE 8" x 11" (A) EXCEPT THOSE IN CH-UNITS WHICH ARE CUT TO TEMPLATES. ~

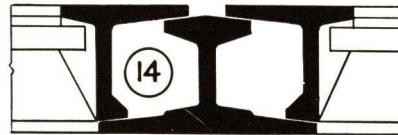


TYPICAL OPEN-OUT TYPES

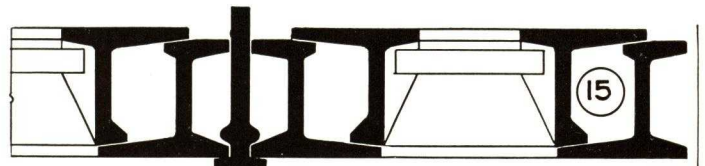
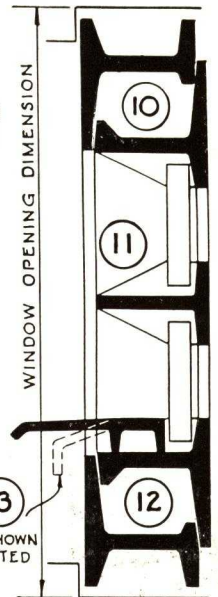


TYPICAL OPEN-IN TYPES

ALL TYPES
FURNISHED WITH
OR WITHOUT
MUNTINS.
OPEN-IN TYPES
HAVE NO BUILT-
IN TRANSOMS
OR SIDELIGHTS



AS SHOWN
DOTTED

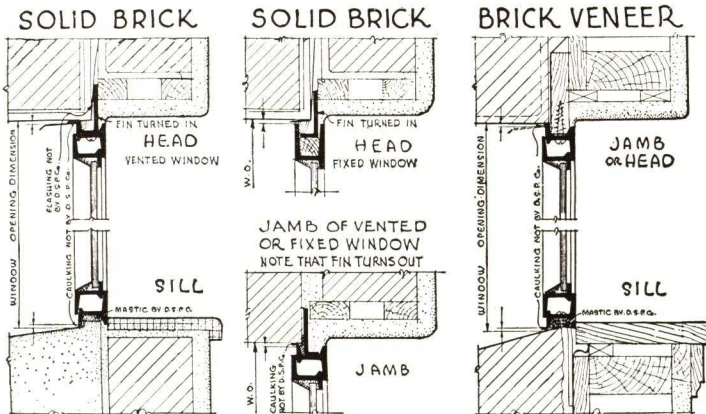


VERTICAL MULLION

WINDOW OPENING DIM.

FENCRAFT CASEMENTS

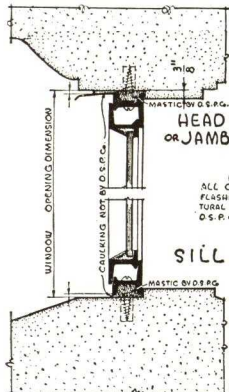
A-526



SOLID BRICK

SOLID BRICK

BRICK VENEER



SOLID STONE

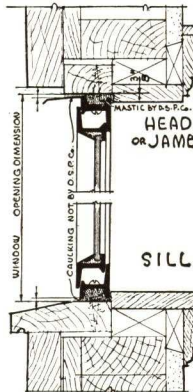
NOTE
USE OF CONTINUOUS STEEL FIN
AS SHOWN ABOVE PROVIDES IMPROVED
INSTALLATION. NOTE IN HEAD DETAILS,
FACE BRICK NEED NOT BE
CHIPPED FOR LINTEL. FINISHES ARE FURNISHED
AT EXTRA COST IF SPECIFIED.
DETAILS ON THIS SHEET APPLY TO
FENCRAFT AND CUSTOM CASEMENTS.

NOTE
ALL CAULKING &
FLASHING AND STRUCTURAL
STEEL NOT SHOWN
BY D. S. P. CO.

HORIZONTAL MULLION

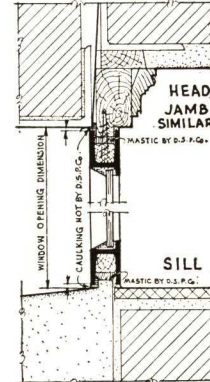
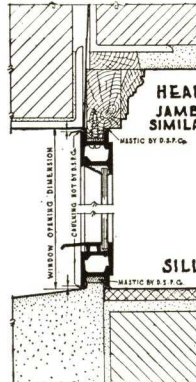
VERTICAL MULLION

HALF TIMBER

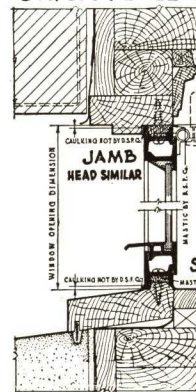


SOLID BRICK

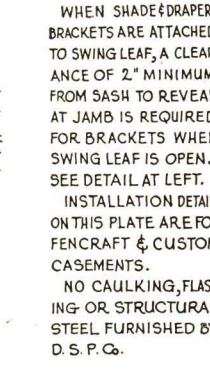
FIXED WINDOW



BRICK VENEER



SOLID STONE


TYPES & SIZES
FENCRAFT OPEN IN ONLY

221-4'-0" O.I.	221-4'-0" O.I.	422-4'-0" O.I.
251-6'-0" O.I.	432-6'-0" O.I.	442-6'-0" O.I.
241-8'-0" O.I.	442-8'-0" O.I.	452-10'-0" O.I.
251-10'-0" O.I.	452-10'-0" O.I.	

NOTES

WHEN SHADE & DRAPERY
BRACKETS ARE ATTACHED
TO SWING LEAF, A CLEAR-
ANCE OF 2" MINIMUM
FROM SASH TO REVEAL
AT JAMB IS REQUIRED
FOR BRACKETS WHEN
SWING LEAF IS OPEN.
SEE DETAIL AT LEFT.

INSTALLATION DETAILS
ON THIS PLATE ARE FOR
FENCRAFT & CUSTOM
CASEMENTS.

NO CAULKING, FLASH-
ING OR STRUCTURAL
STEEL FURNISHED BY
D. S. P. CO.

FENCRAFT & CUSTOM OPEN OUT

A-525

FENCRAFT & CUSTOM OPEN IN

A-308

FENMARK WINDOWS



Fenmark Window With
Fenestra Flat Screens
(Muntins Omitted).

All General Specifications on Pages 10, 11 and 12 apply.

Designed for use in Office Buildings, Hospitals and all types of monumental, educational and public buildings.

Vertical lines especially adapted to modern stepped back designs. Windows lend themselves to combination with metal stools and fully or semi-concealed radiation.

Supplied in Screen and Standard Types.

Frame sections are $1\frac{1}{2}$ in. deep from front to back with unequal legs. Frame corners are mortised and tenoned, air hammer riveted and welded. Ventilator sections and muntins are $1\frac{1}{4}$ in. deep from front to back. Vent corners are electrically butt welded. Muntins often are omitted to permit the use of large single panes of plate glass.

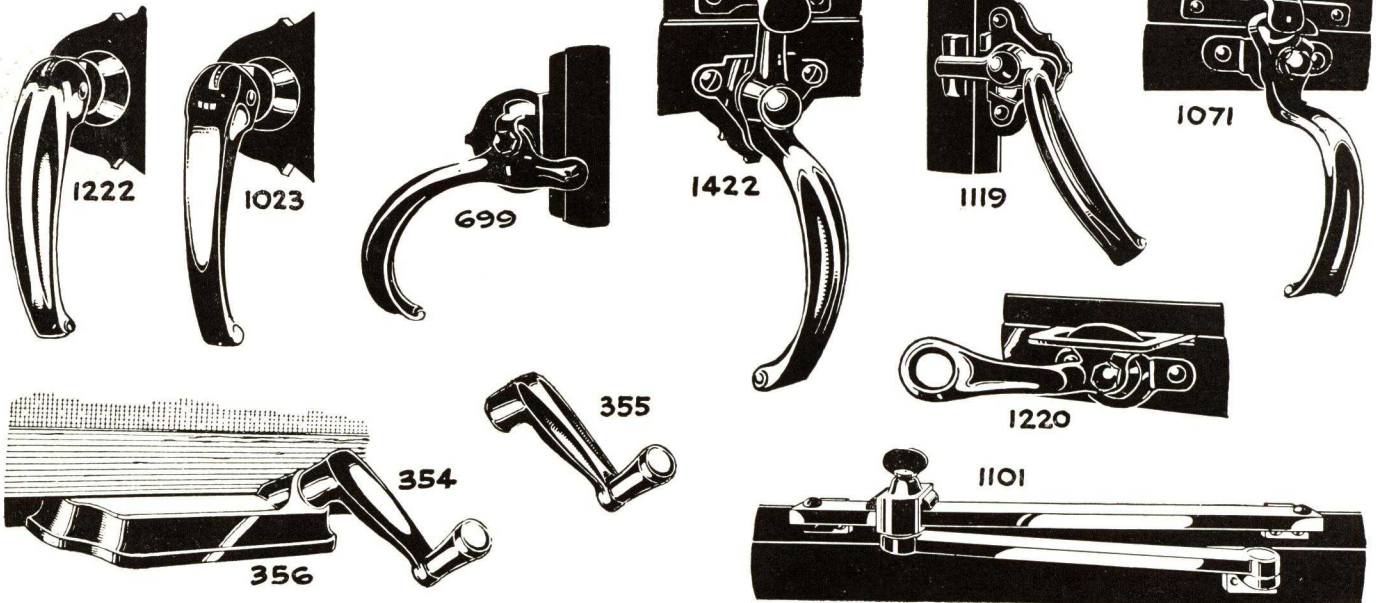
This window features a Projected-In ventilator at the sill which serves as a wind guard, deflecting drafts upward.

Transom Types may be either Projected-In or Projected-Out. Transoms and sill ventilators may be combined with side hung types by means of transom bars to provide windows of almost any height or width and almost any degree of ventilation up to 100%.

Specification, solid bronze hardware (SB) is standard. For Screen Types Handle 1023, Roto Adjuster 356, Adjuster Handle 354. For Standard Types, Handles 699, 1071 and 1220. Hardware available as special includes: Handles 1119, 1422, 1222; Adjuster Handle 355 and Thumb Screw Stay 1101.

We strongly recommend the use of Quick Shipment Types and Sizes shown on Page 17, supplied with standard hardware only.

Hardware for Fenmark Windows



QUICK SHIPMENT DETAILS

• 17 •

PROJECTED FENMARK WINDOWS

All General Specifications on Pages 10, 11 and 12 apply except Section 2.

Designed for use in monumental, educational and public buildings, particularly where weather protection is desired while the ventilators are open. Projected-Out Ventilators in an open position form a canopy above the opening. Projected-In Ventilators shed water toward the outside.

Frame Sections are $1\frac{1}{2}$ in. deep from front to back with unequal legs. Frame corners are mortised and tenoned and air hammer riveted. Ventilator Sections and Muntins are $1\frac{1}{4}$ in. deep from front to back. Vent corners are electrically butt welded.

Projected Fenmark Windows are similar in construction to Fenmark Types except that all ventilators are of the "projected" type opening in or out as specified.

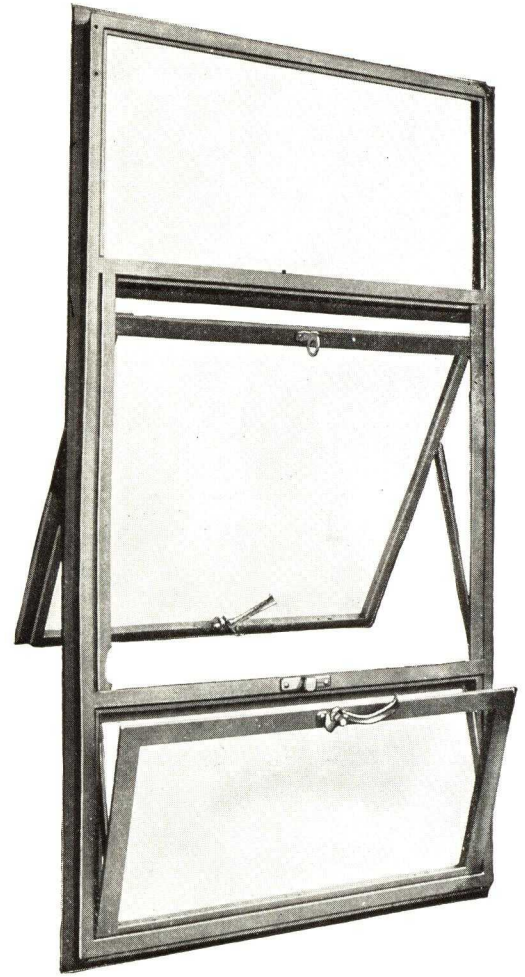
For operation of ventilators note particularly Section 5 of the General Specifications.

Where screens are desired with Projected-Out Ventilators, Fenestra Flat Inside Screens and a 15 in. Underscreen Stay Adjuster are available at slight extra cost. (See Sections 6 and 9, General Specifications.)

Ventilators usually are arranged so that all glass may be cleaned on both sides from inside of the room.

Specification, solid bronze hardware (SB) is standard. For Projected-Out Types, Handles 733 and 914, Pole Ring 151 or Stay 1108, friction shoes, alignment stops. For Projected-In Types, Handles 1071 and 1220, friction shoes.

We strongly urge the use of Quick Shipment types and sizes shown on Page 19 supplied with standard hardware only.

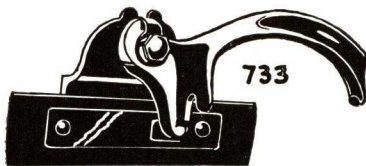


Projected Fenmark Window With Projected-Out and Projected-In Ventilators.

Hardware for Projected Fenmark Windows



914



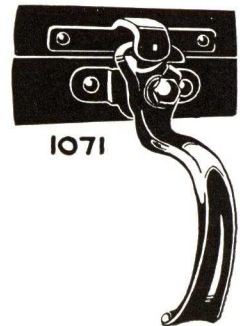
733



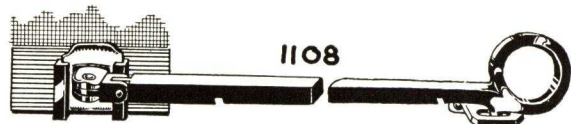
1220



151



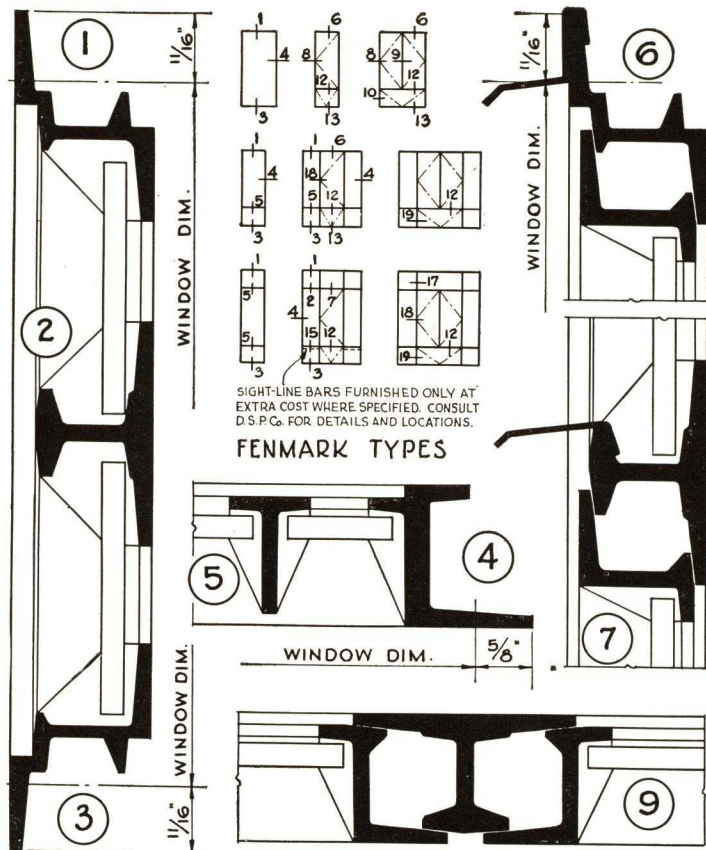
1071



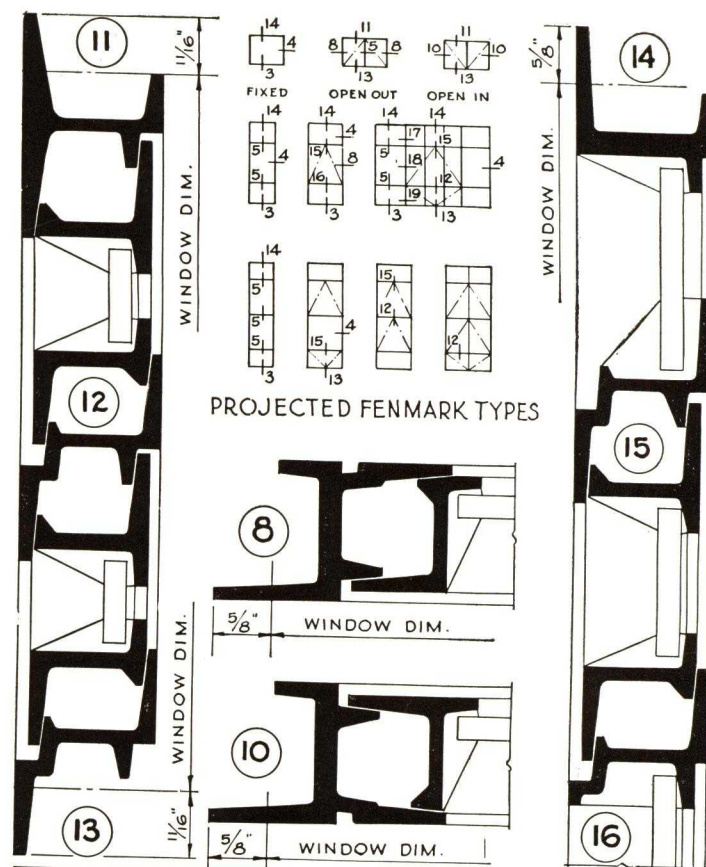
1108

Glass widths and heights are given, both for fixed lights and for lights in ventilators. Be sure to use "Fixed Glass" widths with "Fixed Glass" heights and "Vent Glass" widths with "Vent Glass" heights.

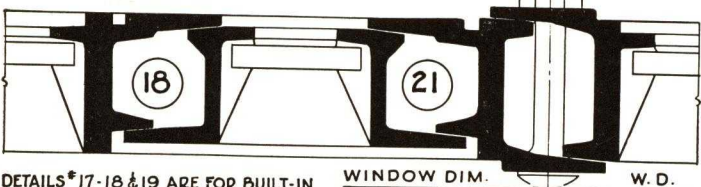
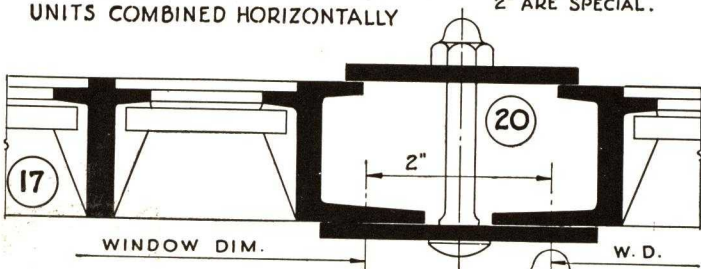
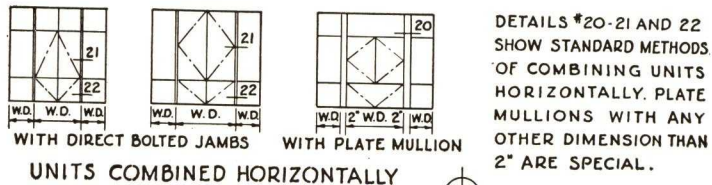
GLASS SIZES SHOWN FOR TYPES IN GROUP AT LEFT APPLY AS WELL TO TYPES IN GROUPS ABOVE. FIXED & VENT GLASS SIZES APPLY AS PER TYPE DESIGN.



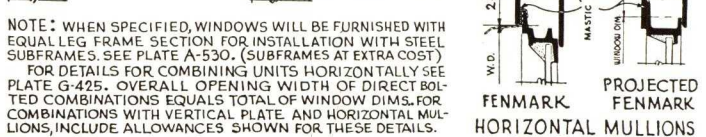
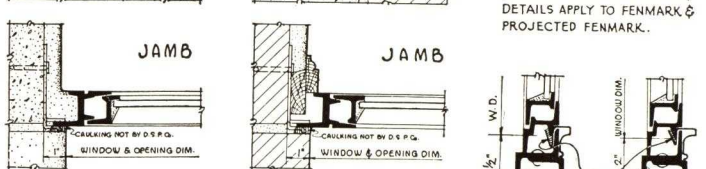
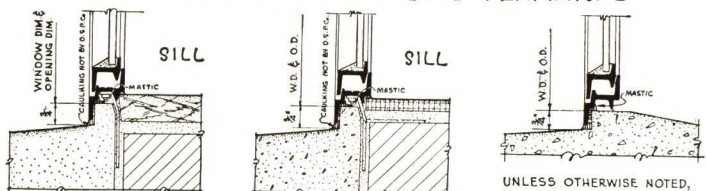
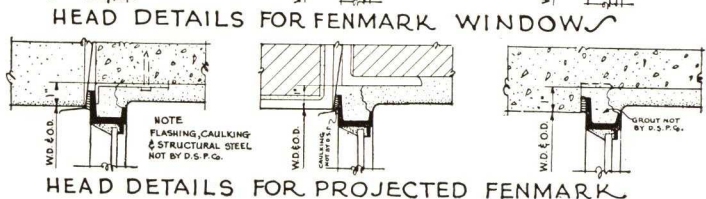
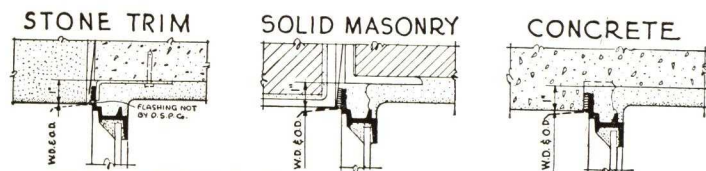
FENMARK & PROJECTED FENMARK G-423



FENMARK & PROJECTED FENMARK G-424

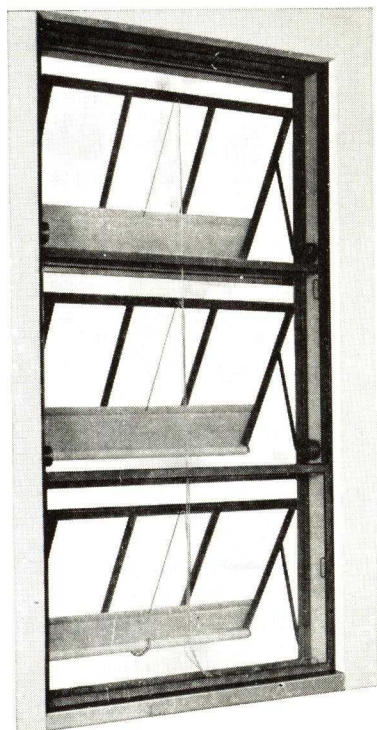


FENMARK & PROJECTED FENMARK G-425



FENMARK & PROJECTED FENMARK G-422

DALMO-FENMARK WINDOWS



Dalmo-Fenmark Window

All General Specifications on Pages 10, 11 and 12 apply except Section 2.

Standard Projected Fenmark Windows with Dalmo operating mechanism are designed for 100% ventilation in schools, hospitals, and office type structures where unusual speed, ease and flexibility in opening and closing are essential.

All vents open simultaneously by opening the sill ventilator. The latter may then be closed leaving upper vents open. By reopening the sill vent all vents are automatically reconnected and may be closed by closing the sill vent. No clutch or lever mechanism necessary. No pressed metal, built-up or factory sections used anywhere. See Section 1 General Specifications.

The Dalmo Fenmark is the only window on the market in which ventilators may be operated in unison by means of a mechanism entirely concealed.

Spring steel side arms supporting the upper vents are carried through the frame sections and pivoted into solid steel, welded, extension brackets, protrude only $3\frac{1}{8}$ in. inside the window and concealed by steel housings. Side arms on sill vents are pivoted to the frame.

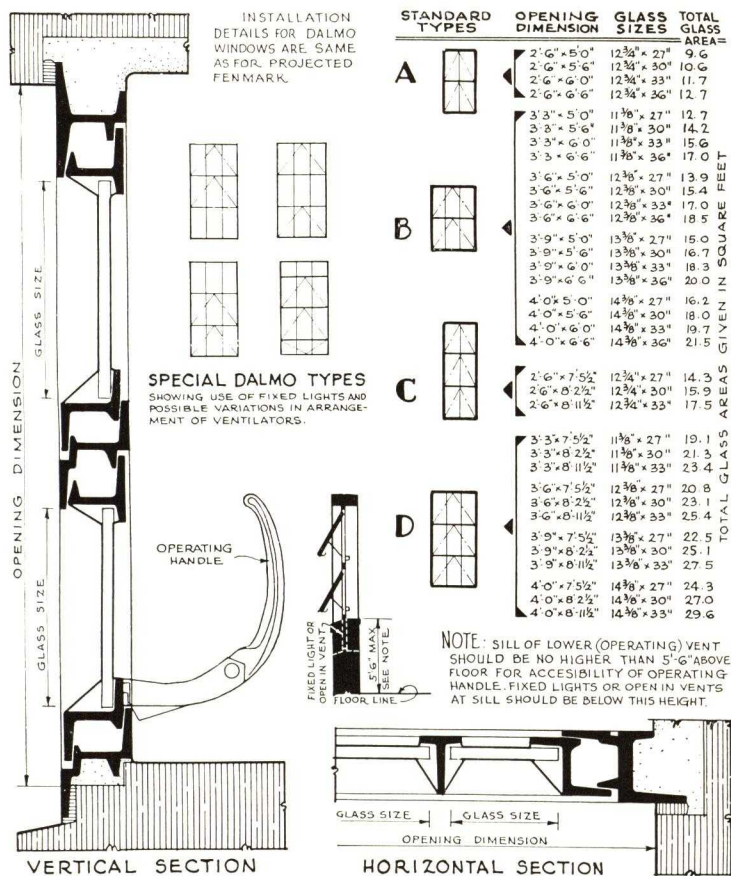
Ventilators are hung on U-shaped, vertically sliding shoes and are connected by concealed connecting bars. A solid bronze trip mechanism is located on each jamb bar to automatically release the lower ventilator after all vents have been opened.

All ventilators are locked in a closed position by a bronze locking handle at the sill of the lower vent.

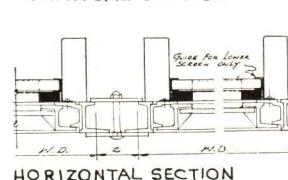
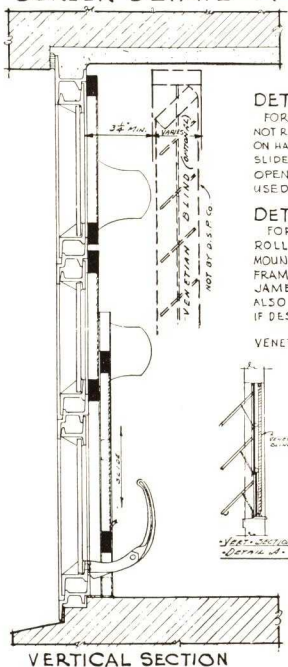
Each vent may be shaded on its under side to act as an awning. Metal shade guides for attachment at the ventilator jambs are available at extra cost. Vents are punched and shade brackets and cord rollers are included.

Available at extra cost where specified, are screw type adjusters with bead chain control for individual operation of units out of reach of floor; or concealed worm and gear operators providing crank or chain operation for multiple window bays or for units with sills out of reach or with sills so near floor that normal operation is inconvenient.

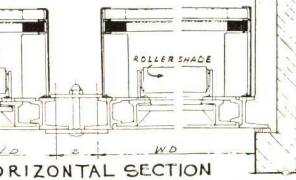
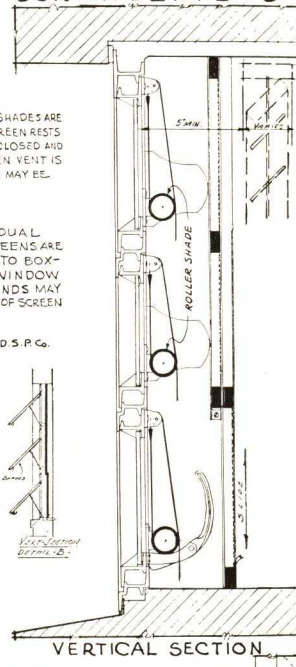
Consult your nearest Fenestra representative for details.



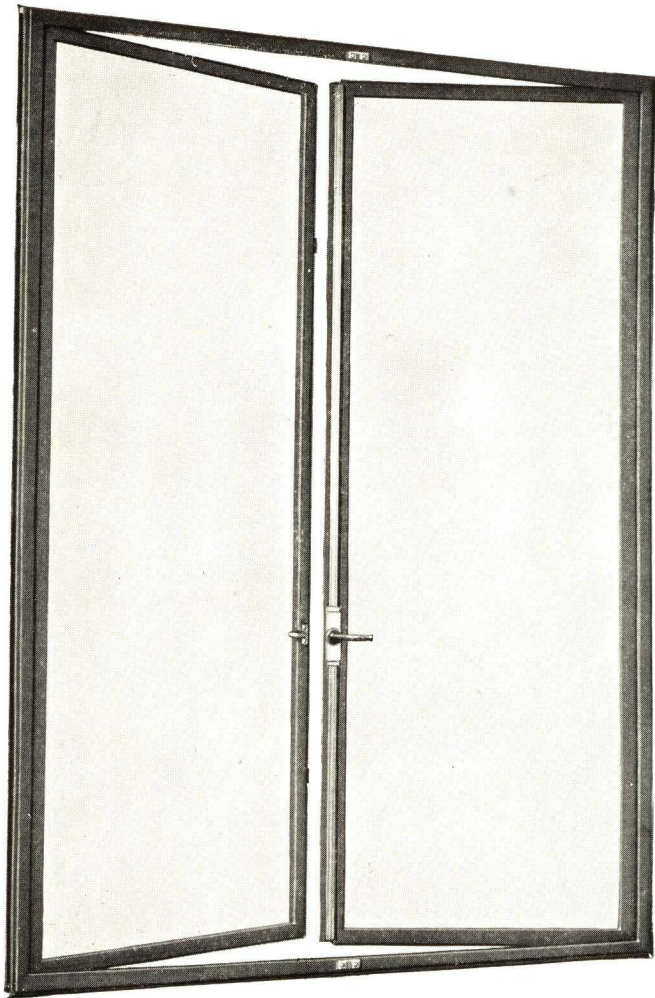
SCREEN DETAIL - A-



SCREEN DETAIL - B-



CUSTOM CASEMENTS



Custom Casement, Folder Type, With Bronze Cremone Bolt.

All General Specifications on Pages 10, 11 and 12 apply except Section 5.

Fenestra Custom Casements are heavy, solid section, steel windows designed for use in monumental, public and educational buildings and in fine residences, clubs, theaters, hospitals and so on. They are especially desirable where large sized units are required as the unusual weight of the sections permits single units, 100% ventilated, up to 3 ft. wide by 8 ft. high and double ventilated, "folder type" units (without meeting rail) up to 5 ft. wide by 8 ft. high.

Frame and ventilator sections are $1\frac{3}{4}$ in. deep from front to back. Frame sections have equal legs. Frame and ventilator corners are mitered and electrically butt welded.

(Frame sections equipped with continuous steel fins for anchorage, at extra cost where specified.)

Made in both Screen and Standard Types but Screen Types must be made with meeting rail. Folder types non-screened or equipped with sliding, rolling or hinged screens.

Side hung ventilators usually are designed to open out but may be designed to open in if so specified.

Transom types with ventilators projected, top-hinged to open out or bottom hinged to open in, are available—also bottom hinged, open-in, sill ventilators. Transoms and sill ventilators may be combined with side hung units by means of transom bars to provide windows of almost any height or width or degree of ventilation, up to 100%.

Large panes of glass, one to each leaf, usually are used with putty and spring glazing clips. Muntins can be supplied where specified.

Specification bronze hardware, coinage finish, always is supplied unless otherwise specified. Screen type hardware includes: Handles 1222 or 1023, Roto-Adjuster 356 with Handles 355 or 354. (Adjuster 396 and Handle 397 for swing leaves over 2 ft. 0 in. wide.) Single leaf Standard types have Handle 1119 with friction butts. Double leaf Standard types have Cremone Bolt 1294 with Handle 1293 and Finger Pull 1130. Transom Adjusters include: 1101, 1110, 1108.

(Extra heavy Roto-Adjuster on Screen types or concealed Friction Adjuster 1168 on Standard types can be supplied at extra cost with non-friction butts.)

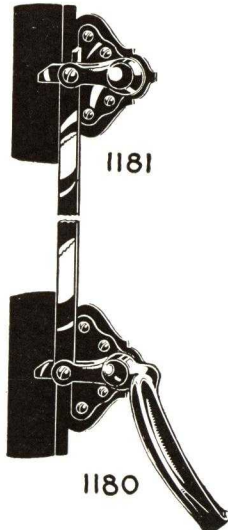
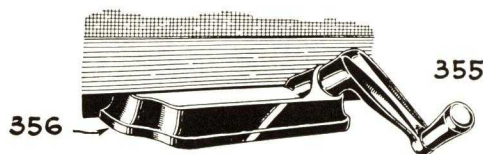
(For single ventilators over 5 ft. high or with vertical centers more than 6 ft. 3 in. above the floor, Double Locking Devices 1180 and 1181 are recommended.)

"Inside Insulating Window" available for Screen Types if desired.

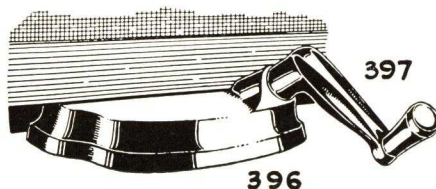
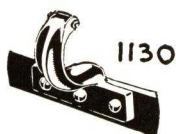
Hardware for Custom Windows

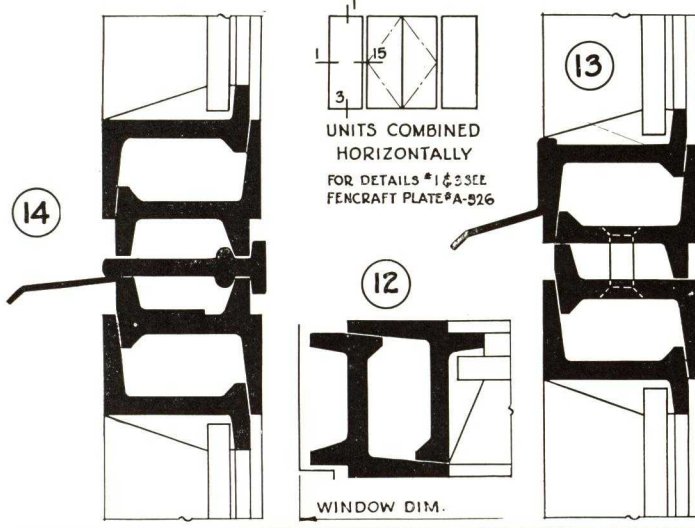
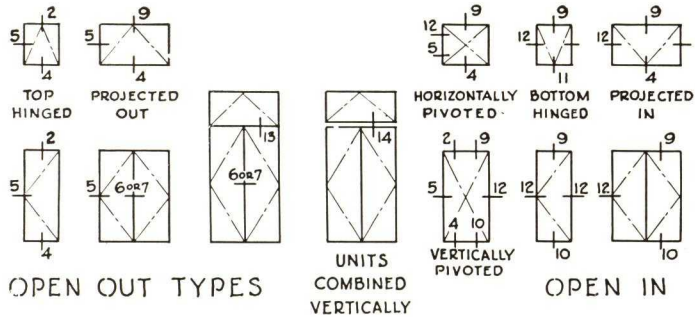


1294



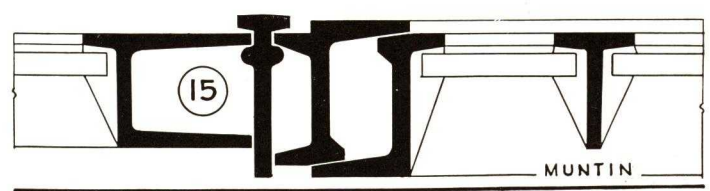
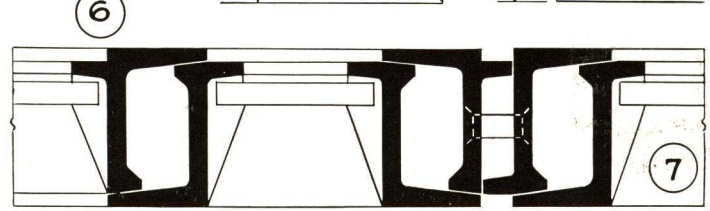
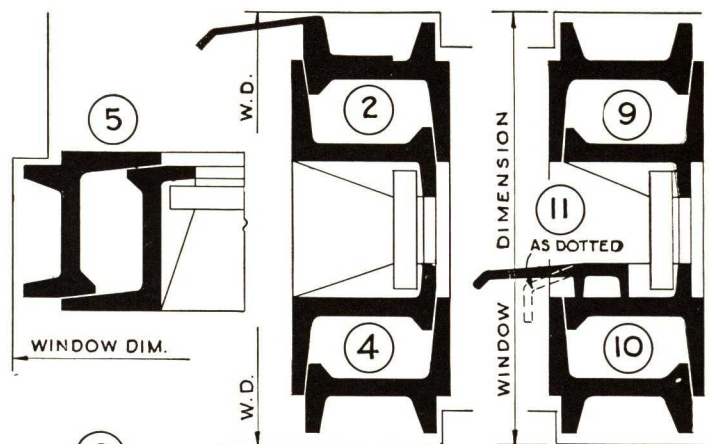
1293





CUSTOM BUILT CASEMENTS

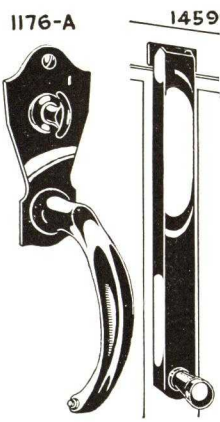
E-102



CUSTOM BUILT CASEMENTS

E-101

CASEMENT DOORS



Fenestra Casement Doors and Frames are supplied in standard sizes as assembled units for use either individually or in combination with Fencraft or Fenwrought side lights and transoms.

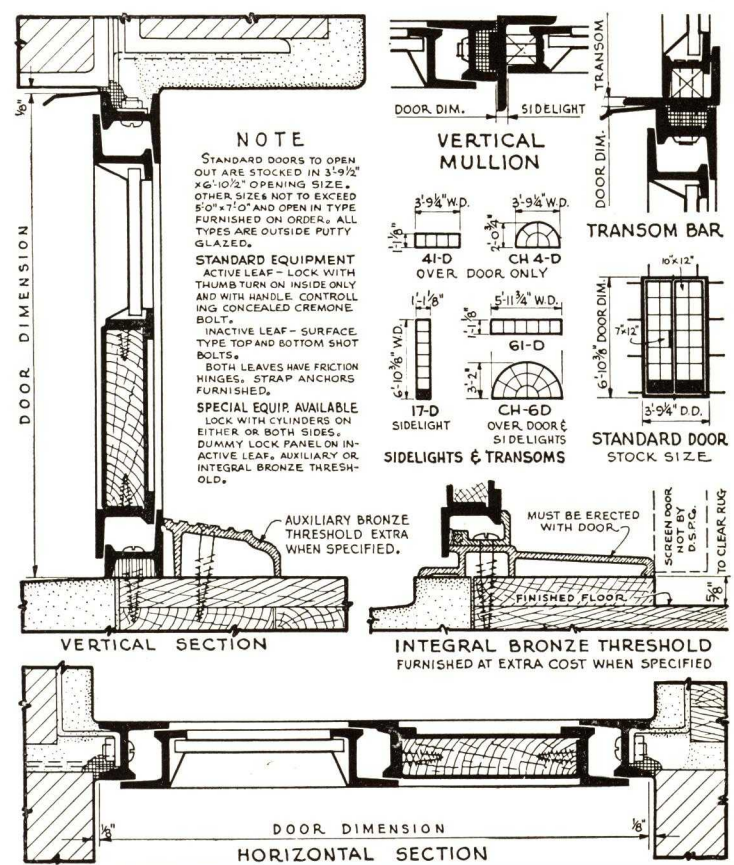
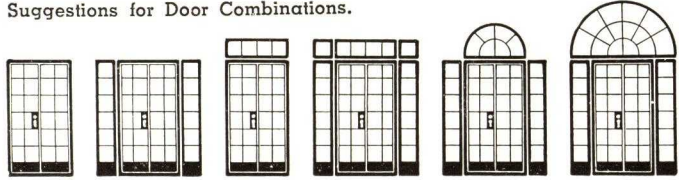
Both doors and frames are made from 1 1/4 in., cold rolled, solid steel sections with corners mitered, electrically welded and ground smooth. Lower portion of the door is a 16-gauge, double kick plate with Celotex sound deadener. Upper portion is of interlocked steel sections accommodating plate glass inserted from the outside. Doors are already fitted and hung in the frames on close-in, friction butts. Extruded bronze thresholds are available at extra cost.

Specification bronze hardware is standard. Handles (1176-A) on both sides of the active leaf actuate a concealed, bronze, cremone bolt. A bronze thumb turn is supplied on the inside. Bronze top and bottom shot bolts (1459) are supplied on the inactive leaf.

These doors are not recommended for outside entrances or heavy traffic locations. Screen doors are not supplied.

Custom Doors of heavy 1 3/8 in. section are available where specified.

Suggestions for Door Combinations.



CASEMENT DOOR DETAILS

B 304

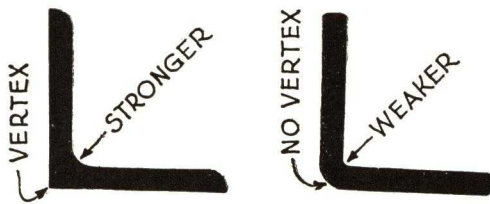
PIVOTED AND PROJECTED WINDOWS

GENERAL SPECIFICATIONS

1—SECTIONS

Sections are of American rolled, dead soft, open hearth steel, $1\frac{3}{8}$ in. from front to back, with a "Vertex" at each angle.

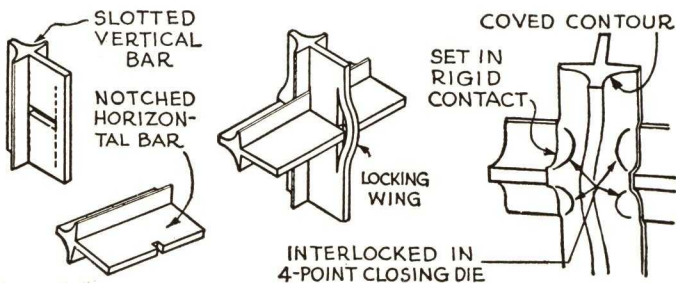
(Dead soft steel fabricates easily. Hard steel tends to fracture in fabrication.)



(A "vertex" angle is one in which the sides of the angle are rolled out full to the point of intersection. Such an angle has greater thickness than a pressed steel angle which has no vertex. Hence it has greater strength at the corner where strength is needed.)

2—THE FENESTRA JOINT

The frames and the ventilators are mortised and tenoned and air hammer riveted at all corners. Muntin bars are continuous from head to sill and from jamb to jamb, a construction made possible by the Fenestra Joint, which is the strongest known means of interlocking vertical and horizontal bars.



(To form the Fenestra Joint, the vertical bar is slotted and spread. Then the notched horizontal bar is threaded through the vertical. Both bars are tightly interlocked in a four-point closing die which clamps them into rigid-weather-tight contact that makes welding unnecessary.)

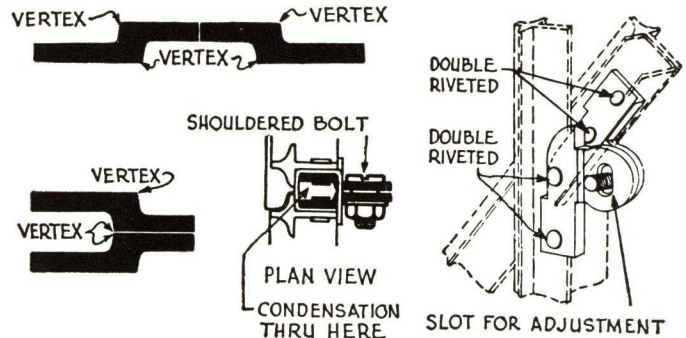
3—THE BUTTS

All ventilators are pivoted horizontally and supported on external, adjustable butts of solid rolled steel, double riveted through both the window bars and the weathering.

(All butts are of "vertex" section to give maximum strength in supporting the ventilator. They are located 2 in. above the ventilator centerline unless otherwise specified, but may be set 4 in. below the top of the ventilator if desired.)

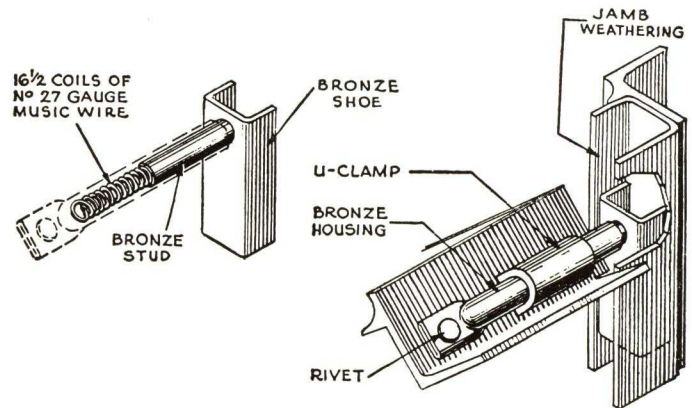
Each butt is cut and formed to permit the free passage of condensation from above the butt and guide it down to an exit at the ventilator sill. The "ears" of each butt protrude on the inside

of the window so as to be easily accessible and the sash member of the butt is slotted to permit adjustment up or down as necessary. Butt pins are $\frac{3}{8}$ in. solid steel and are "shouldered" so that the ventilators, turning on these shoulders, never bind no matter how tightly the nut on the butt pin is screwed down.



4—SLIDING SHOES

Projected Ventilators are supported on heavy, bronze pivoted, spring steel side arms and are equipped with bronze sliding, friction



shoes (two per vent), the friction being maintained by compression springs of heavy, rust-proofed music wire, completely enclosed in bronze housings.

(Projected-In Ventilators used at the sills of windows tilt in at the top while sliding up from the bottom. Projected Ventilators used above the sill usually swing out at the bottom while sliding down from the top, but may tilt in from the top if so specified.)

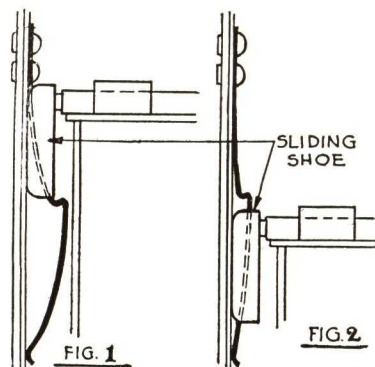
5—ALIGNMENT STOPS

Each Projected-Out Ventilator is equipped with two alignment control bronze springs riveted in the jamb channels to limit the downward travel of the friction shoes and stop all ventilators in open alignment at about 60 degrees, but pressure on these springs permits the shoes to slide past so that the ventilators may be opened further.

Each Projected-In Ventilator has a solid steel stop to limit its opening to about 90 degrees.

STEEL ALIGNMENT SPRING FOR OPEN OUT VENTS.

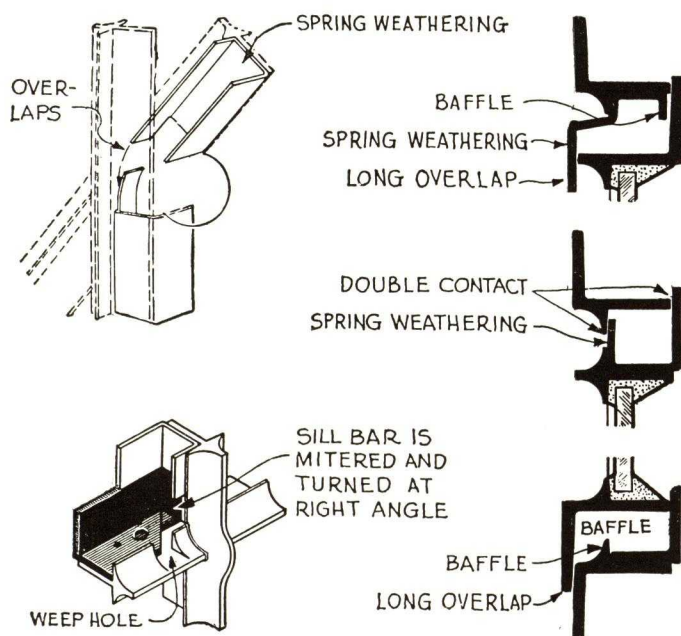
IN FIG. 1-ALIGNMENT SPRING HAS STOPPED DOWNWARD TRAVEL OF SHOE. IN FIG. 2-SPRING, COMPRESSED BY THUMB, ALLOWS SHOE TO SLIDE PAST.



6-WEATHERING

All Pivoted and Projected Windows have continuous, two-point flat contact weathering between sash and frame all around the opening.

At the head, a long, down-standing leg on the outside and an air-deflecting baffle on the inside form an effective weather-guard. Weathering at the jambs is a U-shaped channel with no "vertex" in order to insure springiness. At the butt, the weathering is so cut that the weather member on the ventilator overlaps the weathering on the frame as the window closes, forming complete protection. At the sill, the weathering is mitered and turned at right angles so that condensation is guided away from the inside of the window toward nearby "weep-holes" which carry it to the outside.



7-HARDWARE

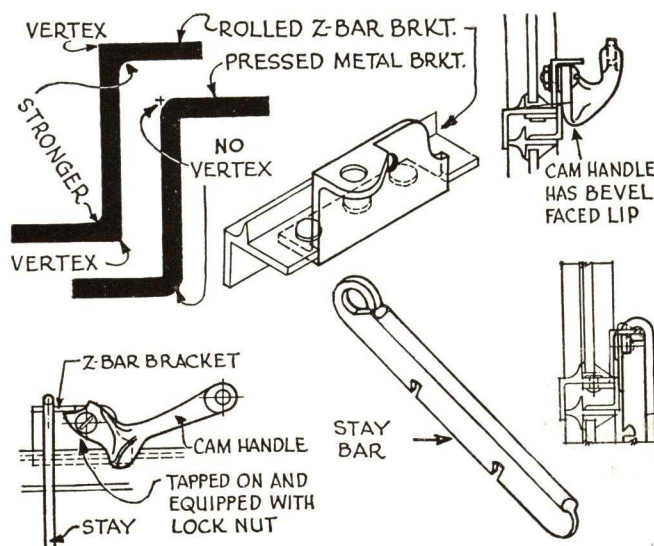
A solid steel, Z-bar bracket, rolled of "vertex" section, is supplied—triple riveted to the sill bar of the ventilator—the strongest known means of attaching hardware.

Horizontally Pivoted Hardware

Horizontally Pivoted Ventilators may be operated in any one of five different ways.

1. Cam Handle and Stay Bar attached to the Z-bar bracket.
2. Cam handle and Chain attached to the Z-bar bracket.

3. Spring Catch and Chain attached to the Z-bar bracket.
4. Spring Catch and Chain attached at the head.
5. Mechanical Operator.



The Cam Handle is cast with a bevel faced lip and a weighted handle. It is tapped to the Z-bar bracket and is further held by a locking nut. As the ventilator closes the handle rides up and drops over the edge of the weathering, forming an automatic latch. Light downward pressure on the handle locks the vent and pulls the springy weathering at the jambs into tight contact with the frame.

Spring catches and pulley bracket are of steel. Chain is galvanized. Sufficient chain is provided to extend downward to within easy reach from the floor. Chain cleats are supplied to hold the ventilators in an open position.

Commercial Projected Hardware

Hardware for Commercial Projected Open-Out Ventilators includes a weighted cam handle attached to the Z-bar bracket at the sill and a pole ring at the head of the ventilator. (Stay Bars are not necessary. Chain operation cannot be supplied.)

Hardware for Commercial Projected Open-In Ventilators consists of a cam handle at the head for band operation. If the ventilator is out of reach from the floor a spring catch or handle with eye for pole operation is supplied (or a spring catch and chain for chain operation).

8-ERECTION

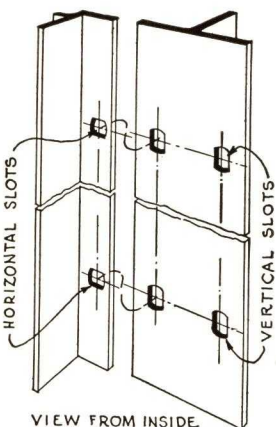
All windows should be erected in prepared openings, set plumb and true, properly aligned and securely anchored before glazing.

In all multiple unit openings where the vertical mullions are not anchored to the sills—and in all cases where any ventilator comes to the sill of the windows—and in all cases where the window is more than 5 ft. 0 in. wide, standard Fenestra sill anchors should be used, two anchors for windows up to 6 ft. 6 in. wide and four anchors for windows wider than 6 ft. 6 in.

(Mortar grouting, pointing, etc., should be included in the masonry specifications to be done by the mason contractor.)

The Fenestra Construction Co., a subsidiary of the DETROIT STEEL PRODUCTS CO., is prepared to erect Fenestra Windows, glaze and paint them, where desired; the work being done under a separate contract.

9—MULLIONS



Two or more windows may be used side by side in the same opening when joined by the Fenestra Vertical Mullion. This is a "T" section. The web of the T usually is turned out and the wings of the T are lapped over and bolted to the frame members of the adjoining windows.

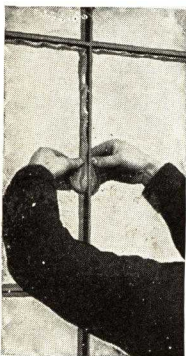
Vertical slots in the wings of the mullion correspond to horizontal slots in the window jamb bars and permit both vertical and horizontal adjustment to meet erection condition as the bolts are inserted.

Two or more windows, may be used one above another in the same opening when joined by structural horizontal mullions (transom bars), which vary in construction depending on the width of the opening. See Page 29.

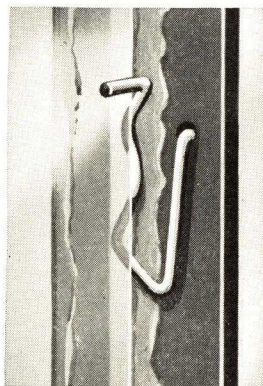
10—GLAZING

Glass for standard types of Horizontally Pivoted and Commercial Projected windows is cut in lights 12 x 18 in. or 14 x 20 in. but ventilator lights which abut on the top, sides or bottom of the ventilator must be trimmed 1 in. along the abutting edge. One-quarter inch glass is preferable, either rough wire or factory ribbed. One-eighth inch factory ribbed, or double strength glass may be used.

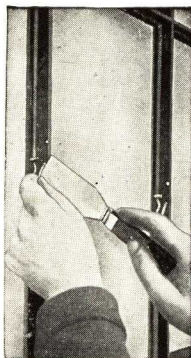
Putty must be high grade, steel window putty. Ordinary wood sash putty cannot be used.



Bed Puttying.



Glazing Clip in place.



Inserting Glazing Clips.

14" 20"	13" 19"	14" 19"	13" 19"	14" 20"
14" 20"	13" 19"	14" 19"	13" 19"	14" 20"
14" 20"	14" 20"	14" 20"	14" 20"	14" 20"

Ventilator lights which abut on top, sides or bottom of ventilator trim 1" on the abutting edge.

All Pivoted and Projected Windows are glazed from the inside, glass being set in a bed of putty and secured by copper plated, spring glazing clips supplied by the window manufacturer. Four clips should be used for each fixed light and six clips for each ventilator light. After the clips are inserted, face putty should be applied.

11—PAINTING

All windows are given one dip coat of red mineral paint before shipment. Further painting should be done by the painting contractor in the field. One field coat is desirable after erection and before glazing and a finish coat should be applied about three weeks after glazing, when the putty has had time to set.

12—BONDERIZING

At slight extra cost, Pivoted and Projected Windows can be supplied with a new finish which includes Bonderizing, painting, and oven baking. This process, never before applied to steel windows on a production basis, gives the steel sections a phosphated, crystalline surface structure which is rust-resisting; guards against flaking, chalking, peeling, and abrasion and makes the priming coat last three to five times longer.

The Bonderizing process is largely responsible for the fine finishes on automobile fenders and refrigerators and when applied to steel windows, provides a tough, durable base coat that improves the appearance and lasting qualities of all finish coats which may be applied later.

13—UNDERWRITERS' LABEL

Underwriters' Labels can be supplied on both Horizontally Pivoted and Commercial Projected Windows.

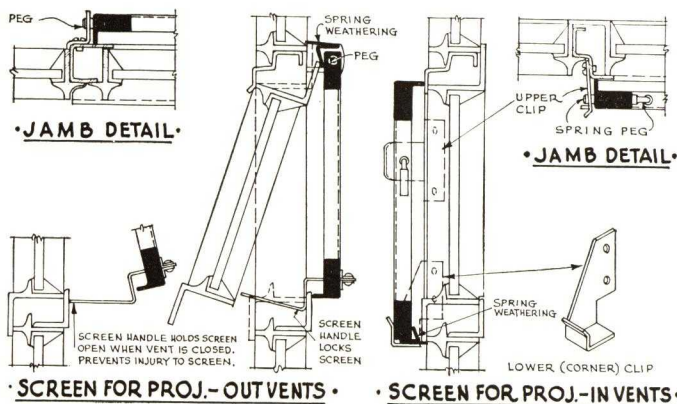
Windows must not be more than 7 x 12 ft. overall. (Either dimension may be used for width or height.) The total area per ventilator must not be more than 3,000 sq. in. and ventilators must be operated individually. Glass must be 1/4 in. wire, and single light dimensions are limited to 48 in. in either width or height with an exposed area of not over 350 sq. in. Glass must be held in place by glazing angles.

14—SCREENING

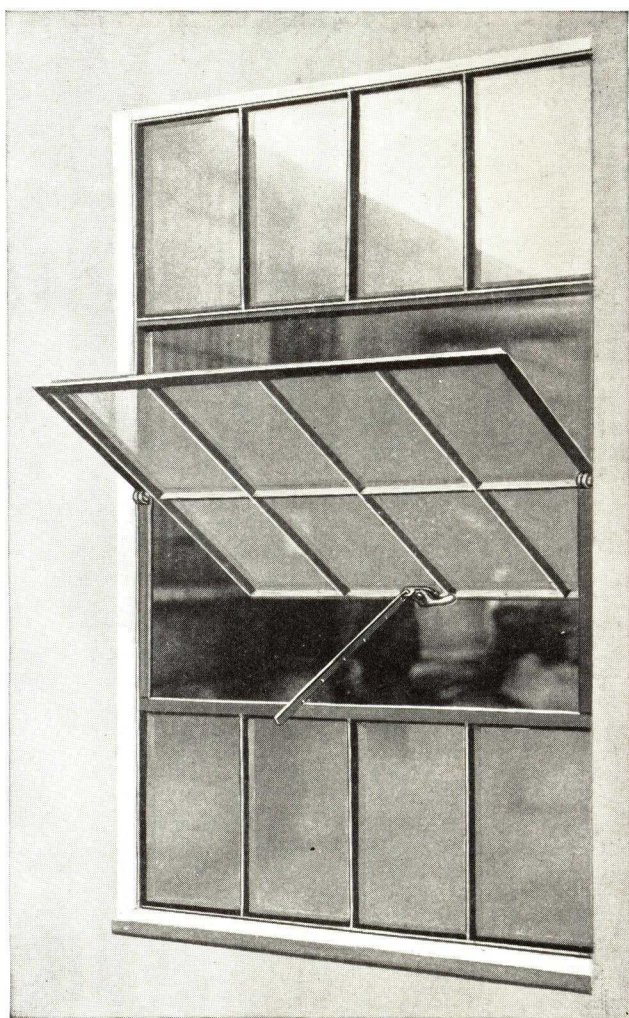
Metal screens can be supplied for both Pivoted and Projected Types.

For Horizontally Pivoted Ventilators the screens are so arranged that the upper half of the screen is outside the ventilator and the lower half is inside.

Where screens are an important item, we suggest the use of Commercial Projected Windows with open-in ventilators and screens on the outside. If specified, Projected-Out Ventilators may be used with screens on the inside. (See details below.)



HORIZONTALLY PIVOTED WINDOWS



Horizontally Pivoted Window. Type 44181.

All sections of the General Specifications, Pages 24 to 26 apply except Sections 4 and 5.

Fenestra Horizontally Pivoted Windows have been standard material in all types of industrial and commercial construction for years. There use is general all over the United States in such buildings as factories, warehouses, mills, power plants, lofts, garages, piers, round houses, hangars, and shops.

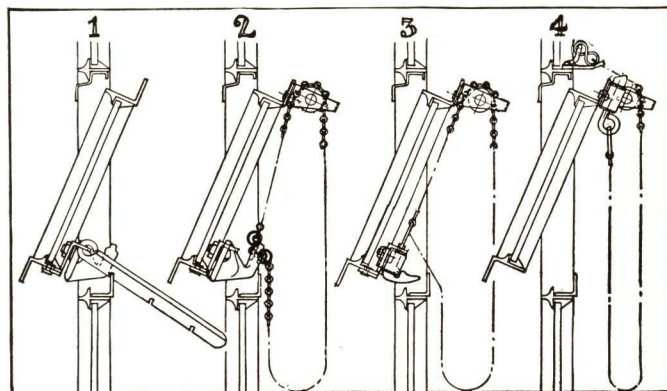
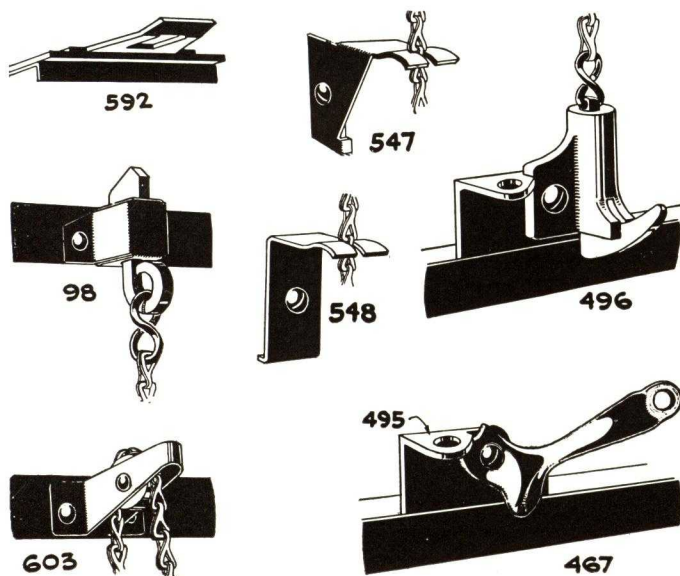
Frame members are solid rolled, vertex profile steel sections with corners mortised and tenoned and air-hammer riveted. Ventilators are symmetrically located and are pivoted horizontally. (Section 3, General Specifications.) In an open position, the upper portion of the ventilator is inside the building and the lower portion is outside.

Ventilators may be operated by hand, individually, using any of the four methods shown below. No. 1 is Z-Bar Bracket 495; Cam Handle 467; Stay 860. No. 2 is Z-Bar Bracket 495; Cam Handle 467; Chain passing up over Roller Bracket 603. No. 3 is Z-Bar Bracket 495; Spring Catch 496; Chain passing up over Roller Bracket 603. No. 4 is Spring Catch 98 with Keeper 592. Chain Cleats 547 or 548 are supplied as necessary. Ventilators also may be operated in banks by mechanical operators.

Although Horizontally Pivoted Windows may be screened, where screening is a major factor, we recommend the use of Commercial Projected Types in the same sizes. (See Page 26.)

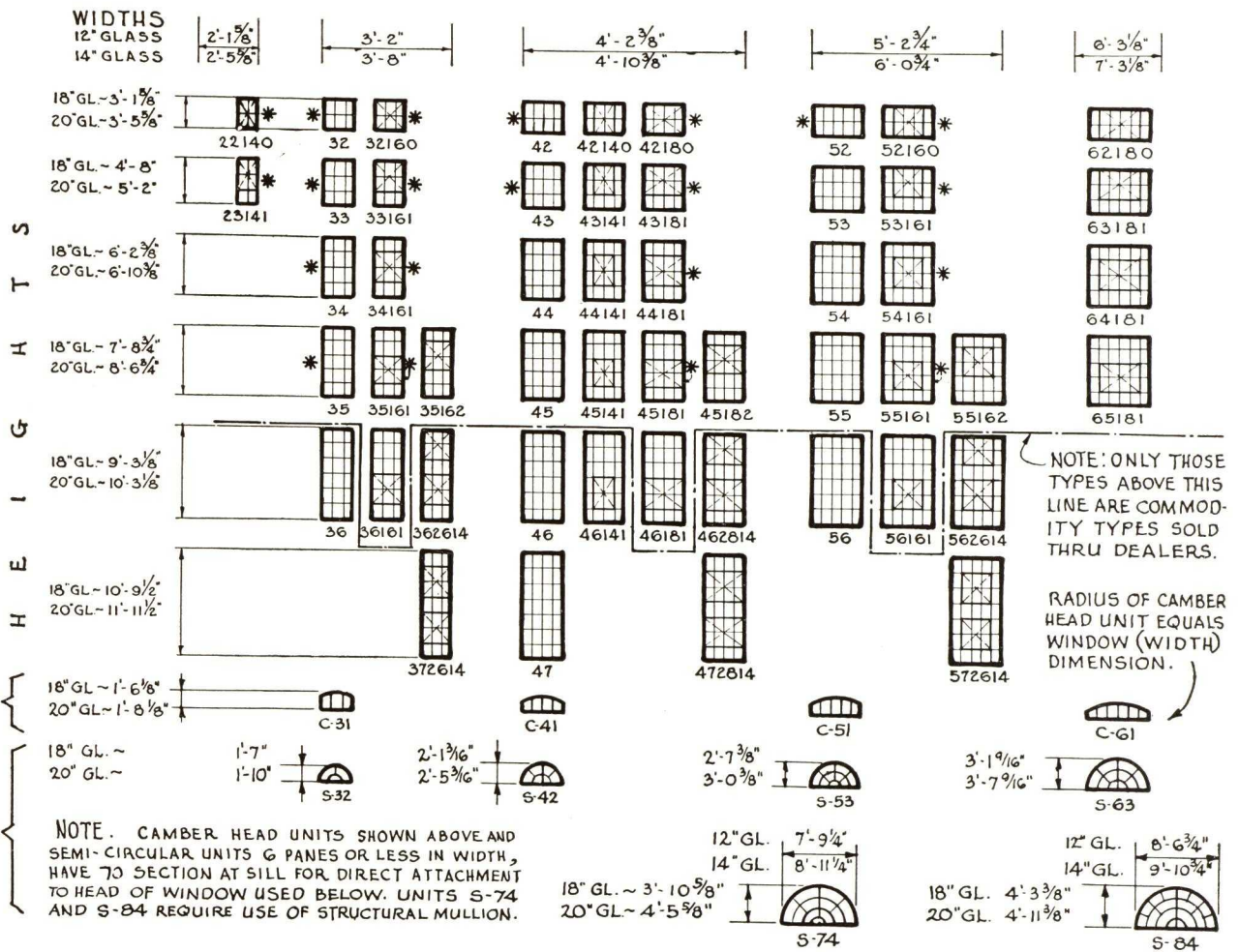
Stock, Standard and Listed Special Types of Pivoted Windows are shown on Page 28, combinations of units to fill multiple openings on Page 29 and installation details on Page 32.

Bonderized at extra cost where specified.



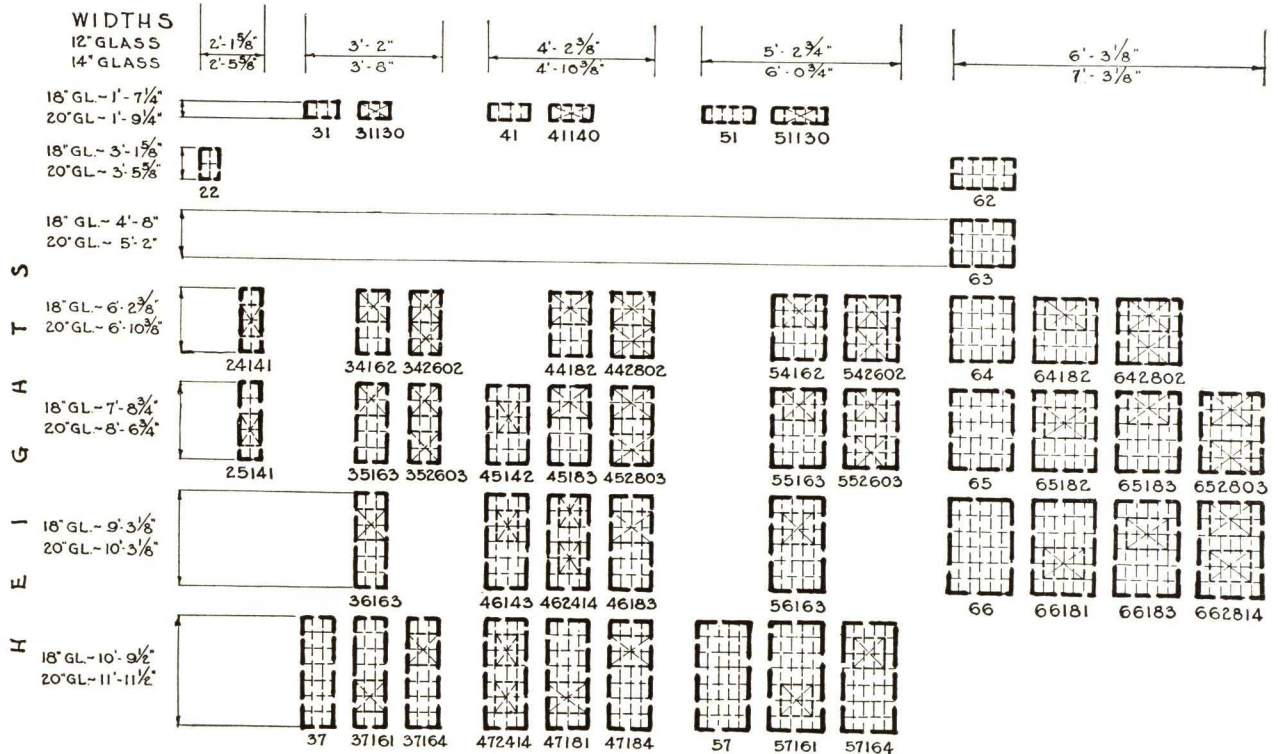
STANDARD AND STOCK TYPES

* TYPES STARRED ARE STOCKED IN ALL WAREHOUSES. FOR TYPES NOT STARRED BARS ONLY ARE STOCKED AT FACTORY FOR ASSEMBLY AS REQ'D.



LISTED SPECIAL TYPES

GLASS SIZE COMBINATIONS ARE 12" x 18" AND 14" x 20"
LISTED SPECIAL UNITS ARE BUILT AT THE FACTORY AS REQ'D.

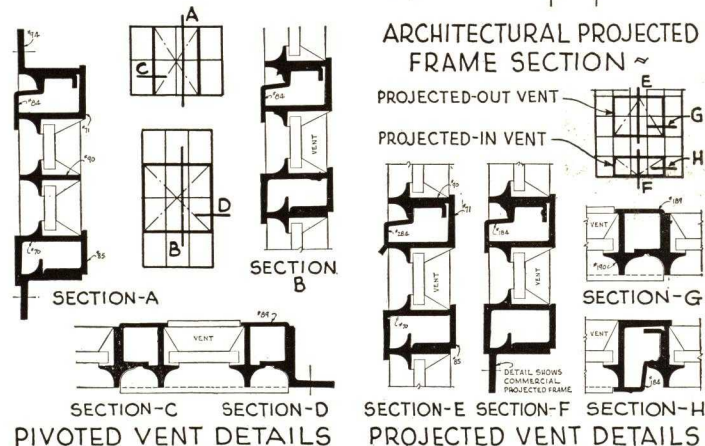
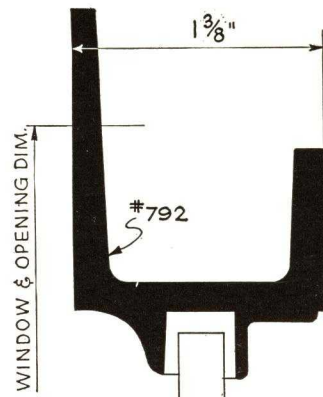
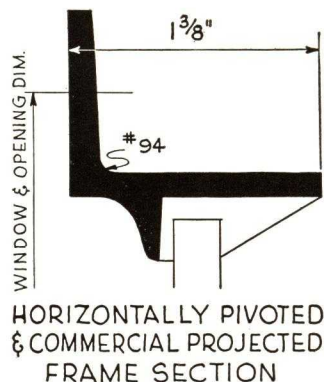


PIVOTED TYPES AND SIZES

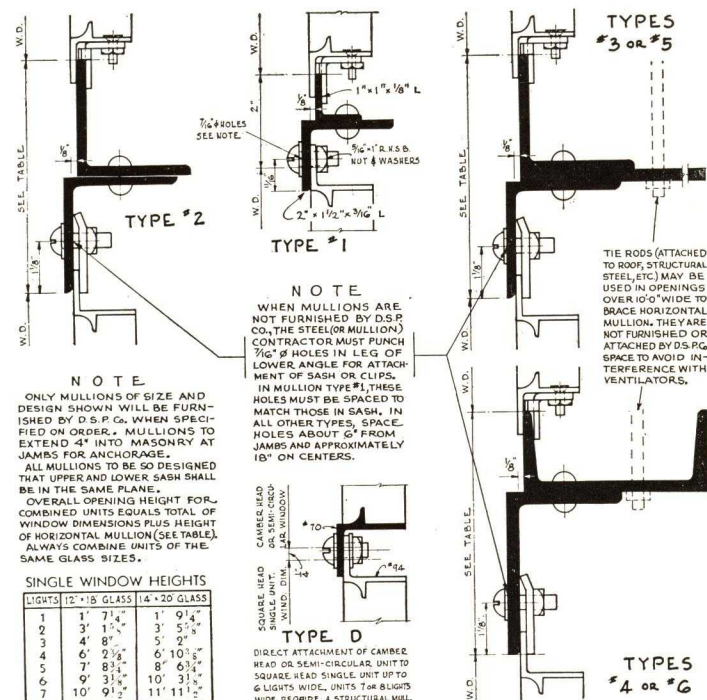
L-116

SYMMETRICAL COMBINATIONS OF UNITS

12" x 18" Glass	14" x 20" Glass	Type and Arrangement of Units	Total Lights	No. Units	No. of VERT. MULLS.
SINGLE WINDOW WIDTHS			Wide	Wide	
1' 1 1/4"	1' 3 1/4"	.....	1	1	0
2' 1 5/8"	2' 5 5/8"	.....	2	1	0
3' 2 3/8"	3' 8"	.....	3	1	0
4' 2 3/8"	4' 10 3/8"	.....	4	1	0
5' 2 3/4"	6' 0 3/4"	.....	5	1	0
6' 3 1/8"	7' 3 1/8"	.....	6	1	0
MULTIPLE WINDOW WIDTHS					
4' 5 1/4"	5' 1 1/4"	2-2	4	2	1
6' 6"	7' 6"	3-3	6	2	1
8' 6 3/4"	9' 10 3/4"	4-4	8	2	1
9' 10"	11' 4"	3-3-3	9	3	2
10' 7 1/2"	12' 3 1/2"	5-5	10	2	1
10' 10 3/8"	12' 6 3/8"	3-4-3	10	3	2
11' 10 3/4"	13' 8 3/4"	3-5-3	11	3	2
12' 8 1/4"	14' 8 1/4"	6-6	12	2	1
12' 11 1/8"	14' 11 1/8"	4-4-4	12	3	2
13' 2"	15' 2"	3-3-3-3	12	4	3
13' 11 1/2"	16' 1 1/2"	4-5-4	13	3	2
14' 11 7/8"	17' 3 7/8"	5-4-5	14	3	2
15' 2 3/4"	17' 6 3/4"	3-4-4-3	14	4	3
16' 0 1/4"	18' 6 1/4"	5-5-5	15	3	2
16' 6"	19' 0"	3-3-3-3-3	15	5	4
17' 0 5/8"	19' 8 5/8"	5-6-5	16	3	2
17' 3 1/2"	19' 11 1/2"	4-4-4-4	16	4	3
17' 6 3/8"	20' 2 3/8"	3-3-4-3-3	16	5	4
18' 1"	20' 11"	6-5-6	17	3	2
18' 6 3/4"	21' 4 3/4"	3-4-3-4-3	17	5	4
19' 1 3/8"	22' 1 3/8"	6-6-6	18	3	2
19' 4 1/4"	22' 4 1/4"	4-5-5-4	18	4	3
19' 7 1/8"	22' 7 1/8"	3-4-4-4-3	18	5	4
20' 7 1/2"	23' 9 1/2"	4-4-3-4-4	19	5	4
21' 5"	24' 9"	5-5-5-5	20	4	3
21' 7 7/8"	24' 11 7/8"	4-4-4-4-4	20	5	4
21' 10 3/4"	25' 2 3/4"	3-3-4-4-3-3	20	6	5
22' 8 1/4"	26' 2 1/4"	3-5-5-5-3	21	5	4
23' 2"	26' 8"	3-3-3-3-3-3	21	7	6
23' 8 5/8"	27' 4 5/8"	5-4-4-4-5	22	5	4
23' 11 1/2"	27' 7 1/2"	3-4-4-4-4-3	22	6	5
24' 2 5/8"	27' 10 5/8"	3-3-3-4-3-3-3	22	7	6
24' 9"	28' 7"	4-5-5-5-4	23	5	4
25' 2 3/4"	29' 0 3/4"	4-3-3-3-3-3-4	23	7	6
25' 9 3/8"	29' 9 3/8"	5-5-4-5-5	24	5	4
26' 0 1/4"	30' 0 1/4"	4-4-4-4-4-4	24	6	5
26' 9 3/4"	30' 11 3/4"	5-5-5-5-5	25	5	4
27' 3 1/2"	31' 5 1/2"	4-4-3-3-3-4-4	25	7	6
27' 10 1/8"	32' 2 1/8"	5-5-6-5-5	26	5	4
28' 1"	32' 5"	5-4-4-4-4-5	26	6	5
28' 10 1/2"	33' 4 1/2"	6-5-5-5-6	27	5	4
29' 10 7/8"	34' 6 7/8"	5-6-6-6-5	28	5	4
30' 1 3/4"	34' 9 3/4"	4-5-5-5-4	28	6	5
30' 11 1/4"	35' 9 1/4"	6-6-5-6-6	29	5	4
31' 1 5/8"	36' 11 5/8"	6-6-6-6-6	30	5	4
32' 2 1/2"	37' 2 1/2"	5-5-5-5-5-5	30	6	5
33' 5 3/4"	38' 7 3/4"	4-4-5-5-5-4-4	31	7	6
34' 3 1/4"	39' 7 1/4"	4-6-6-6-6-4	32	6	5
35' 6 1/2"	41' 0 1/2"	4-5-5-5-5-5-4	33	7	6

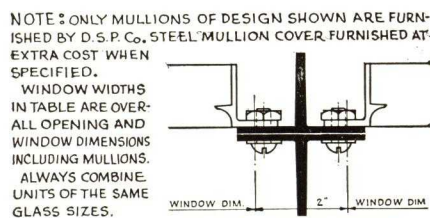
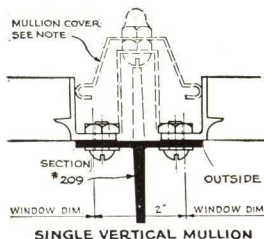


STANDARD SECTIONS ~ HORIZONTALLY PIVOTED, COMMERCIAL PROJECTED & ARCHITECTURAL PROJECTED M-108



SINGLE WINDOW HEIGHTS				
LIGHTS	12" x 18" GLASS		14" x 20" GLASS	
1	1'	7 1/4"	1'	9 1/4"
2	3'	1 1/2"	3'	5 5/8"
3	4'	8"	5'	2"
4	6'	2 3/8"	6'	10 1/8"
5	7'	8 1/2"	8'	6 3/4"
6	9'	3 1/2"	10'	3 1/4"
7	10'	9 1/2"	11'	11 1/2"

Lights Wide		Mullion Type	Steel Angles		Steel Plate	Structural Channel	Weight per Foot of Mullion	Between Wind. Dims.
12" x 18" glass	14" x 20" glass	Read	Size	Size				
Single Units 6 lights or less	No. 1	2	see detail	none	none	none	3.0 lbs.	2'
3 to 9	3 to 8	No. 2	2 1/2" x 2 1/2" x 3/4"	none	none	none	6.5 lbs.	5'
10 to 13	9 to 11	No. 3	2 1/2" x 2 1/2" x 3/4"	6" x 3/4"	none	none	11.5 lbs.	3 1/2'
14 to 13	9 to 11	No. 4	3 1/2" x 2 1/2" x 3/4"	none	4"	none	10.5 lbs.	5 1/4'
14 to 16	12 to 16	No. 5	3" x 3" x 3/4"	6" x 3/4"	none	6"	17.5 lbs.	6 1/4'
14 to 18	12 to 16	No. 6	4" x 3" x 3/4"	none	none	none	15.5 lbs.	6 3/4'



VERTICAL MULLIONS (HORIZONTALLY PIVOTED COMMERCIAL PROJECTED)

L-126

HORIZONTAL MULLIONS (HORIZONTALLY PIVOTED COMMERCIAL PROJECTED)

L-127

COMMERCIAL PROJECTED WINDOWS

All sections of the General Specifications, Pages 24 to 26, apply except Section 3.

Commercial Projected Windows are designed for all types of industrial and commercial buildings, factory offices, and particularly for window openings where screening and shading are important factors.

Each ventilator opens entirely inside or entirely outside the plane of the window permitting easy attachment of screens, roller shades, wire guards, blinds, etc. Ventilators are supported on bronze pivoted, spring steel side arms and open in or out as specified.

Projected-In Types, with fixed screens attached on the outside, as shown in the lower right hand corner, usually answer all screening requirements.

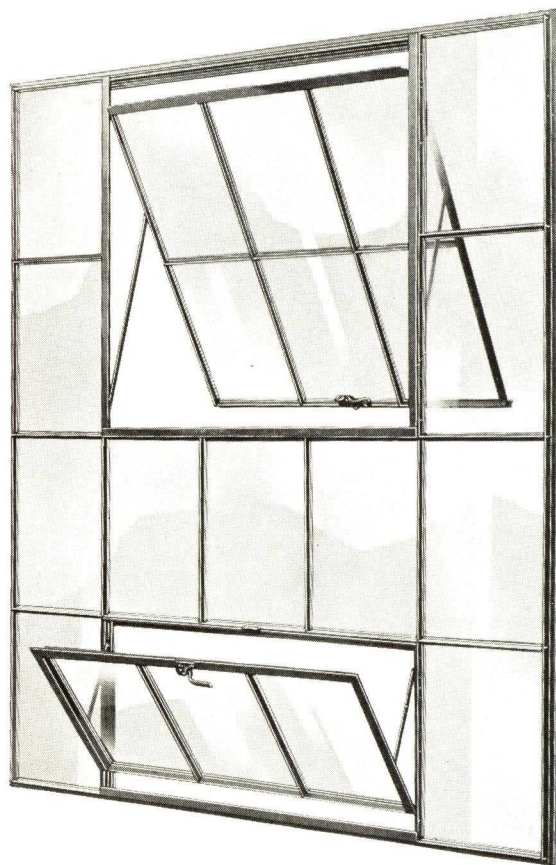
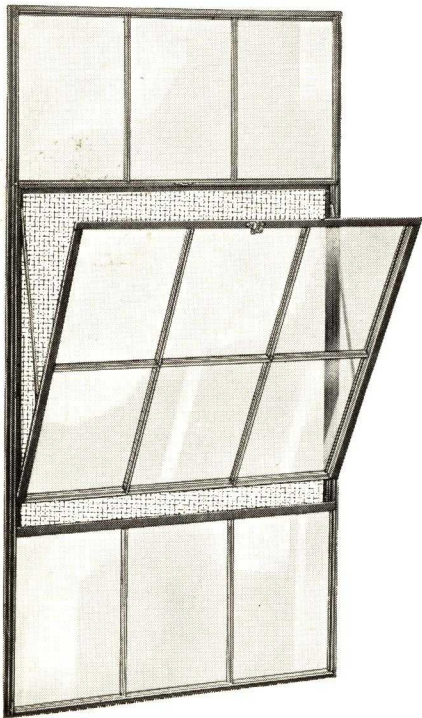
Standard types and sizes are shown on Page 32. For method of vent hanging, see Sections 4 and 5, General Specifications. Materials, construction and installation details are exactly the same as for Horizontally Pivoted Windows.

Hardware, as shown on Page 31, is standardized in iron (bronze at extra cost). Hardware for Open-Out Ventilators includes: Handle 150, Pole Ring 151. Hardware for Open-in Ventilators includes: Handles 1171 or 1220; Spring Catch 39 or 739.

Windows are glazed from inside, glass being bed puttied, held by spring glazing clips and face puttied.

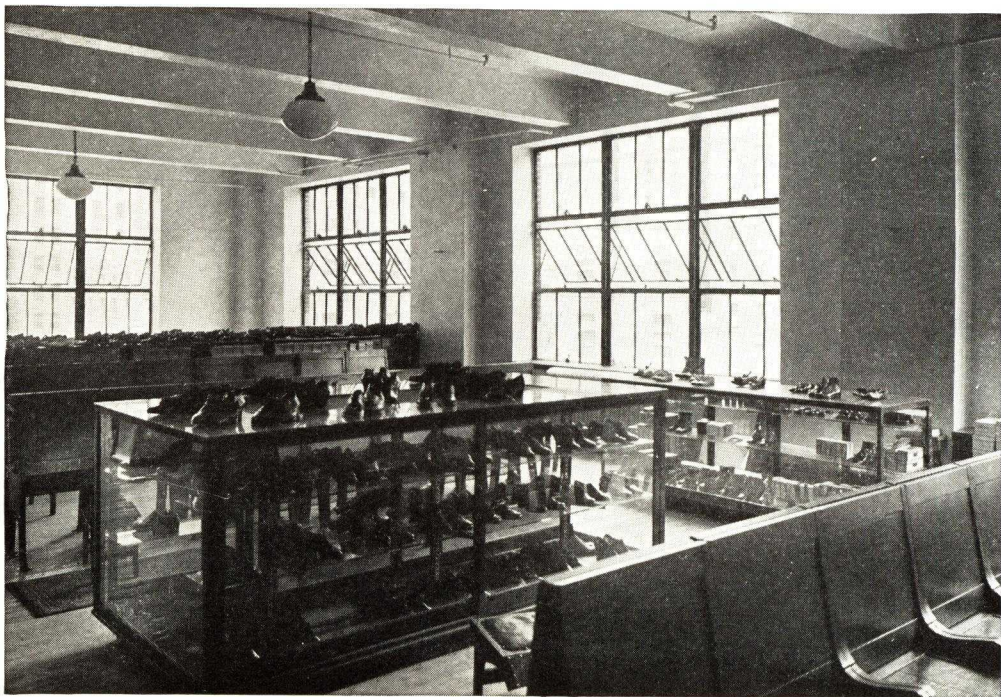
Projected-Out Vents form a protecting canopy above the window opening. May be opened in rainy weather. Also insure unobstructed aisle or storage space under the window. Projected-In Vents act as wind guards at the sill; deflect air currents upward and toward the opposite wall.

Below: Type 34161, with projected-in vent to facilitate screening on the outside.



Above: Type 5423602, with upper vent projected-out and lower vent projected-in.

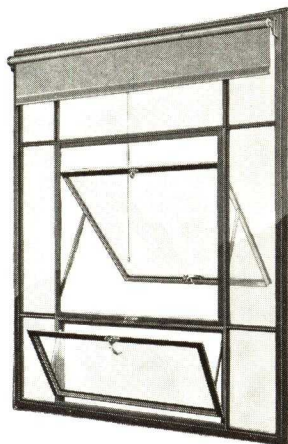
Below: Retail sales department of the Hens Kelly Shoe Co., Buffalo, N. Y. Fenestra Commercial Projected Windows.



ARCHITECTURAL PROJECTED WINDOWS

FRAME $1\frac{3}{8}$ IN. DEEP

Architectural Projected Windows are designed for use in office type buildings, schools and commercial structures of all types where the architectural effect desired is somewhat more elaborate than that supplied by either Horizontally Pivoted or Commercial Projected Windows.



Type 4056.

Standard Types are shown on Page 32 and include the use of comparatively large glass lights in the ventilators with narrow side lights and fixed transoms.

Architectural Projected Windows have frames of hot rolled, vertex profile steel channel section as indicated on Page 29.

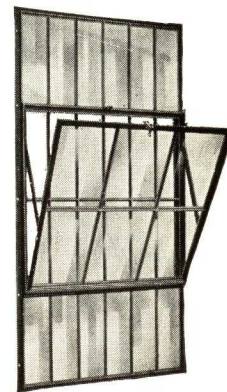
In other respects, General Specifications on Pages 24 to 26 apply except Sections 3 and 10.

Hardware as shown below, is standardized in bronze. Iron hardware is available where specified. Hardware for Open-Out Ventilators includes: Handles 733 or 914, Pole Ring 151. Hardware for Open-In Ventilators includes: Handles 1071, 1171 or 1220; Spring Catch 39 or 739.

Windows are glazed from the inside. Glass is bed puttied and held by steel glazing angles mitered at the corners.

SECURITY WINDOWS

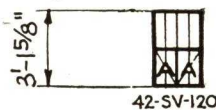
The Fenestra Security Window provides a modern steel window and protective steel grille in one unit, replacing the old-fashioned and costly wood windows with separate iron grilles, for use in the rear and side elevations of store and commercial buildings generally.



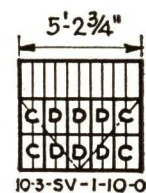
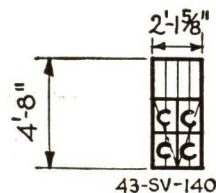
The Security Window, made in eight sizes, consists of a main frame $1\frac{3}{8}$ in. deep from front to back with muntin bars spaced to provide 6x18 in. openings. On the inside of the main frame is superimposed a projected-in ventilator with bars spaced to provide 12x17 in. openings. Ventilators are supported by steel side arms.

Openings in the ventilator and in the main frame above and below the ventilator are to be glazed but those immediately in front of the ventilator are left unglazed to act as a grille.

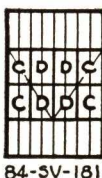
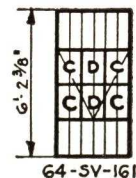
STOCK TYPES & SIZES



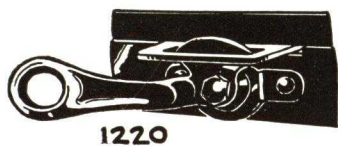
MUNTINS IN VENTS SHOWN BY HEAVY LINES. GLASS IS OMITTED FROM GRILLE DIRECTLY IN FRONT OF VENT. ~



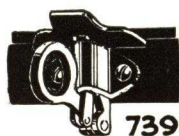
GLASS SIZES	
A	9 3/4" x 13 1/2"
B	12" x 13 1/2"
C	9 3/4" x 15 3/4"
D	12" x 15 3/4"



GLASS IN FIXED PANES (ALL LIGHTS IN GRILLE) ARE 5 7/8" x 18" ~ ~ ~



1220



739



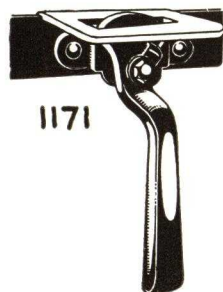
39



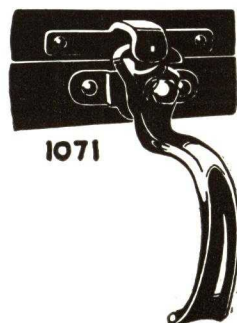
151



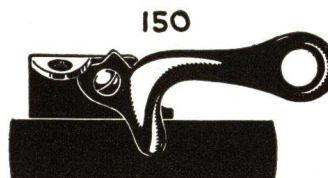
733



1171



1071



150

























914

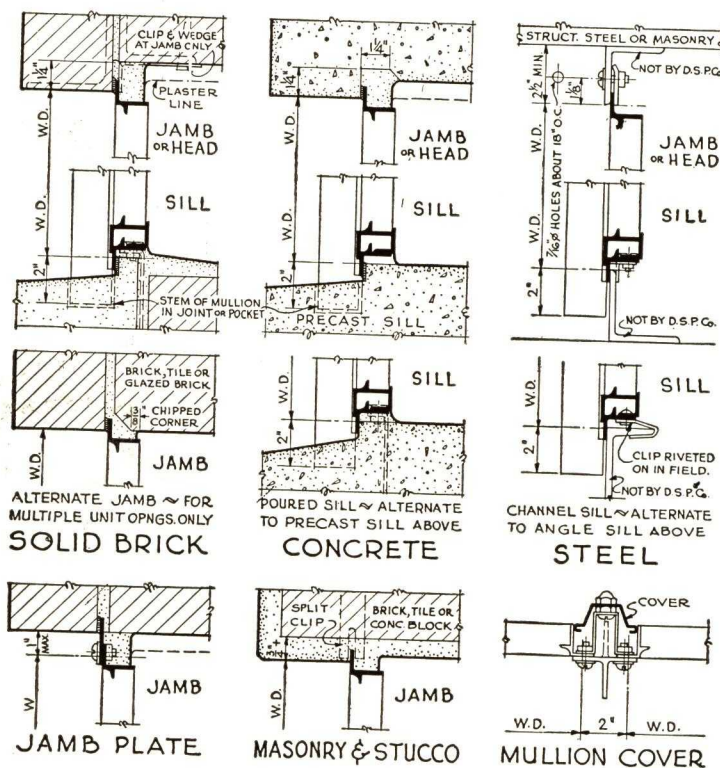
STOCK AND STANDARD TYPES

E		I		G		H		T		S	
18"GL - 5'1 5/8"	22140	32160	42140	52160	62140	72160	82140	92160	102140	112160	122140
18"GL - 5'5 1/8"	23141	33161	43141	53161	63141	73161	83141	93161	103141	113161	123141
18"GL - 4'8"	24141	34161	44141	54161	64141	74161	84141	94161	104141	114161	124141
20"GL - 5'2"	25142	35162	45142	55162	65142	75162	85142	95162	105142	115162	125142
18"GL - 6'2 3/8"	26143	36163	46143	56163	66143	76163	86143	96163	106143	116163	126143
20"GL - 6'10 3/8"	27144	37164	47144	57164	67144	77164	87144	97164	107144	117164	127144
18"GL - 7'8 3/4"	28145	38165	48145	58165	68145	78165	88145	98165	108145	118165	128145
20"GL - 8'6 3/4"	29146	39166	49146	59166	69146	79166	89146	99166	109146	119166	129146
18"GL - 9'3 1/8"	30147	40147	50147	60147	70147	80147	90147	100147	110147	120147	130147
20"GL - 10'3 1/8"	31148	41148	51148	61148	71148	81148	91148	101148	111148	121148	131148
18"GL - 10'9 1/2"	32149	42149	52149	62149	72149	82149	92149	102149	112149	122149	132149
20"GL - 11'11 1/2"	33150	43150	53150	63150	73150	83150	93150	103150	113150	123150	133150
<p>WIDTHS</p> <p>12" GLASS 2'1 5/8"</p> <p>14" GLASS 2'1 5/8"</p>											

LISTED SPECIAL TYPES

S	10" GL. - 6'2 3/8"									
	20" GL. - 6'10 3/8"	24141	34162				54162			
T	18" GL. - 7'8 3/8"									
	20" GL. - 8'6 3/8"	25141	35163	352603	3523603	45142	55163	552603	5523603	
H	18" GL. - 9'5 3/8"									
	20" GL. - 10'3 3/8"	36163	46143	462414			56163			
E	18" GL. - 10'9 1/2"									
	20" GL. - 11'1 1/2"	37161	37164	3725604	472414		57161	57164	5723604	
WIDTHS										
	12" GLASS	2'1 3/4"	3'2"	4'2 3/8"					5'2 3/4"	
	14" GLASS	2'5 5/8"	3'8"	4'10 3/8"					6'2 3/4"	

COMMERCIAL PROJECTED

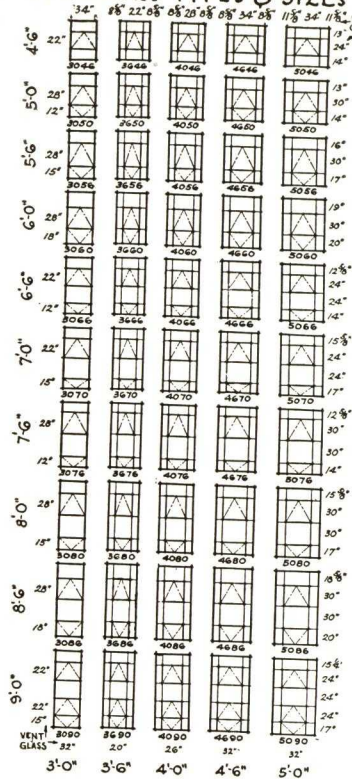


SILL DETAILS SHOWN FOR CONCRETE
CAN BE USED AS ALTERNATES TO DETAIL
SHOWN FOR SOLID BRICK (OR OTHER MASONRY).
STEM OF VERTICAL MULLION MAY BE TURNED
OUT OR IN. WHEN STEM IS TURNED OUT, GREATER

STIFFNESS IS SECURED. NOTE IN SILL DETAILS THAT STEM OF MULLION ANCHORS INTO SILL, EITHER AT A JOINT OR INTO A POCKET PREPARED FOR IT.

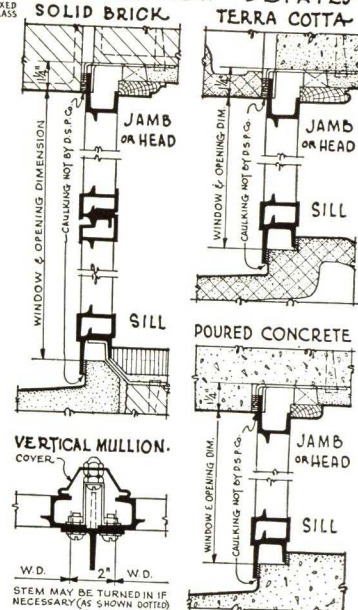
PIVOTED & COMMERCIAL PROJECTED

STANDARD TYPES & SIZES



SIZES SHOWN ARE WINDOW & OPENING-
DIMENSIONS FOR SINGLE UNITS.

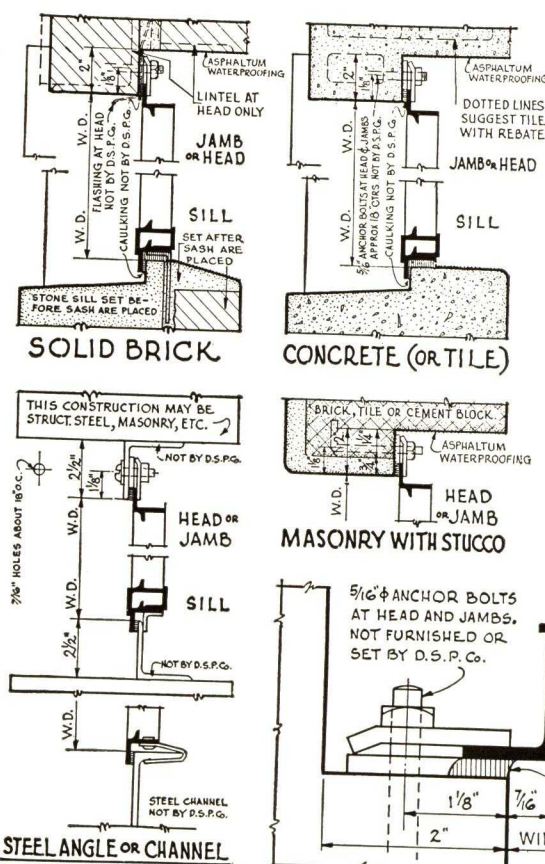
INSTALLATION DETAILS



TO FIGURE OPENING WIDTHS OF COMBINED UNITS, ADD 2" FOR EACH VERTICAL MULLION. STONE VENEER DETAIL IS SIMILAR TO SOLID BRICK. ORNAMENTAL METAL DETAIL IS SIMILAR TO TERRA-COTTA. INSTALLATION INTO PREPARED OPENINGS AS SHOWN IS RECOMMENDED. GLAZING ANGLES (FURN BY D.S.P.Co.) ARE STANDARD. PUTTY GLAZED IF DESIRED. GLASS, PUTTY & GLAZING NOT BY D.S.P.Co.

ARCHITECTURAL PROJECTED

G-209



NOTE
THESE DETAILS FOR
INSTALLATION OF
STEEL WINDOWS INTO
PREPARED OPENINGS
ARE RECOMMENDED
FOR PREVENTION OF
CORROSION. THEY
SHOW WATERPROOF-
ING AND CAULKING
AROUND THE ENTIRE
OPENING, FLASHING
AT HEAD OF MASONRY
DETAIL AND ACCESS
IBILITY OF HEAD AND
JAMBS FOR PAINTING ETC.

FLASHING AT HEAD,
ANCHOR BOLTS ON
18" CENTERS AT HEAD
AND JAMBS OF MAS-
ONRY OPENINGS, NOT
FURNISHED OR SET
BY D.S.P. Co.

THE APPLICATION OF ASPHALTUM WATER-PROOFING AROUND MASONRY OPENINGS IS RECOMMENDED. NOT FURNISHED OR APPLIED BY D.S.P. Co. CAULKING NOT BY D.S.P. Co. EXCEPT UNDER SEPARATE CONTRACT.

5/16" ϕ ANCHOR BOLTS
AT HEAD AND JAMBS.
NOT FURNISHED OR
SET BY D.S.P. Co.

- CAULKING NO.
BY D.S.P. Co.

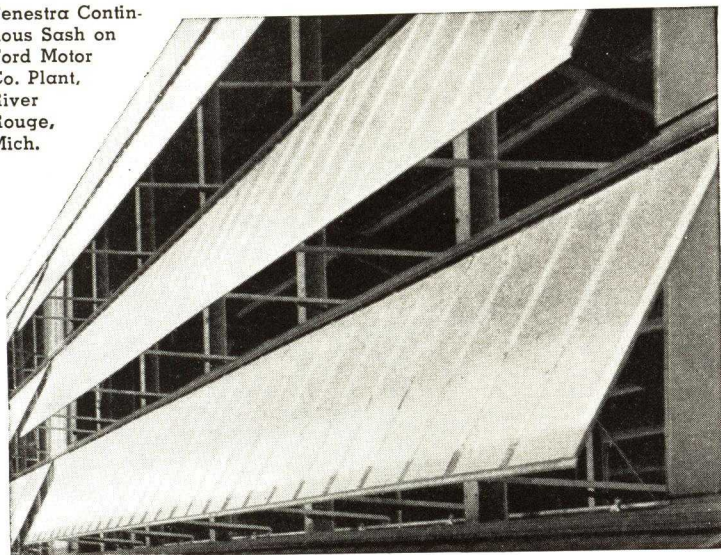
PIVOTED AND COMMERCIAL PROJECTED L-124

CONTINUOUS WINDOWS

Fenestra Continuous Windows are steel panel frames usually about 3 ft. to 6 ft. high and 20 ft. long, designed to be connected end to end, hinged to the building construction and mechanically operated as single units perhaps 100 ft. or more in length.

These windows are intended primarily for use in monitor and saw-tooth-roof construction where the plane of the window is on a slope. However, they may be used, where necessary, when the windows are in a vertical plane.

Fenestra Continuous Sash on Ford Motor Co. Plant, River Rouge, Mich.



Standard units are made in any height (not exceeding 6 ft. 0 in.) and 20 ft. 0 in. long.

Units less than 20 ft. long should be designed to some multiple of 4 ft. 0 in. in length (that is 4 ft., 8 ft., 12 ft., or 16 ft.). Where this is impossible, they should be designed to some multiple of 2 ft. 0 in. in length (8 ft., 10 ft., 12 ft., 14 ft., etc.).

All members of Fenestra Continuous Windows are especially designed, hot rolled, solid steel, vertex sections. Head and jamb sections are special angles. Muntins are "T" Sections 1 3/8 in. deep. Sills are especially designed with long, down-standing legs bent at the end to make close contact with the building construction.

All members are accurately fitted and rigidly riveted at joints to form standard panel units which are joined end to end (at time of erection) by splice plates bolted to head and sill members midway between muntins.

A stationary panel 2 ft. 0 in. wide is supplied as a finishing panel between any swinging section and the adjacent building construction and a stationary panel 4 ft. 0 in. wide is supplied between any two adjacent swinging sections.

Joints between any swinging sections and stationary panels are covered and protected by an especially formed, 13-gauge, steel channel with legs turned in. One leg of this channel is bolted to the end angle of the swing section and the other leg protrudes so as to overlap the end angle of the stationary panel as the window closes.

Where required, storm panels 2 ft. 0 in. wide are supplied (at extra cost). These storm panels are attached to the end and intermediate stationary panels and underlap the swing section. All storm panels are provided with a formed, continuous drip board set over the sill flashing.

Fenestra Continuous Top Hung Windows are equipped with heavy, hot dipped, galvanized steel butts with 1 1/8 in. brass pins. These butts are spaced 4 ft. 0 in. on centers and are rigidly riveted to the head angle of the windows. Bolts are supplied for attachment to the building girts.

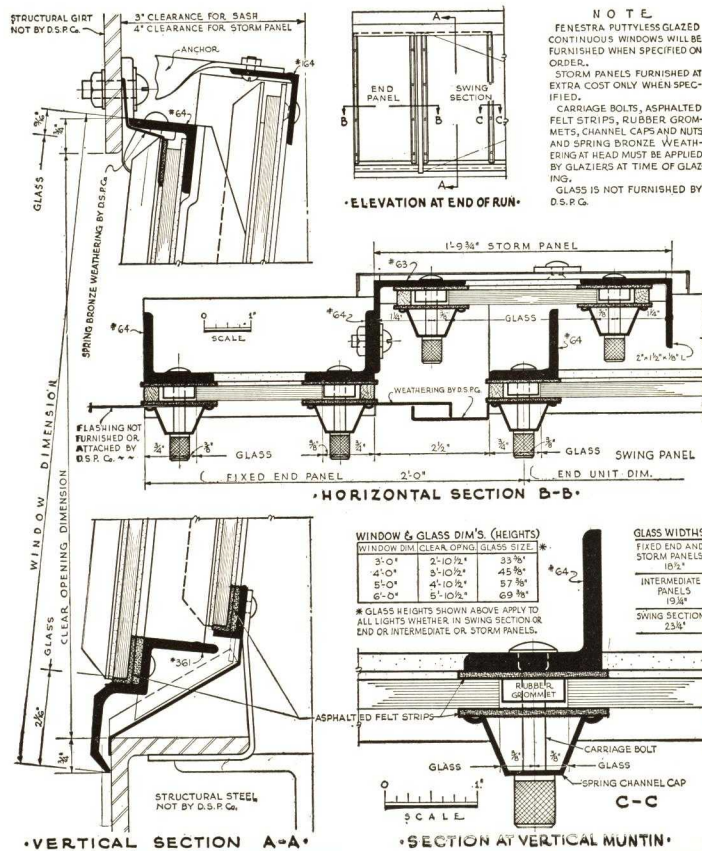
Where the Continuous Windows are to remain fixed in the opening (no provision for operation) the butts at the head are eliminated and heavy steel angle clips are provided for bolting to the window head and to the building girts. Flat steel clips are furnished for bolting to the sill of the window, the clips being bent around the steel sill girts to hold the window rigidly in place at the bottom.

All Fenestra Continuous Windows should be erected by the Fenestra Construction Co. (a subsidiary of Detroit Steel Products Co.) under a separate contract.

All Continuous Windows are given one dip coat of red mineral paint by the manufacturer before shipment. The painting contractor, as part of his contract, should apply an additional coat of paint after erection but before the windows are glazed. Further painting should then be deferred until at least three weeks after glazing to permit the putty to set. One or more additional coats may then be applied as desired.

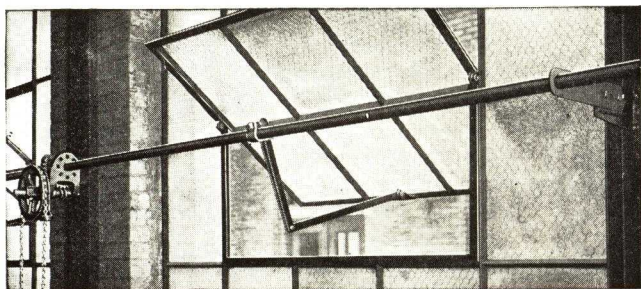
Fenestra Continuous Windows should be glazed with 1/4 in. rough wire glass. Putty must be a high grade of steel window putty. Ordinary wood window putty cannot be used. The windows are glazed from the outside, the glass being set in a heavy bed of putty and secured at the muntins and end angles by angle clips and bolts.

Where specified, Continuous Windows arranged for puttyless glazing are supplied at extra cost. In this type, muntins are angles instead of T bars and glass is resiliently mounted on asphalt coated felt strips at jambs and sill. An additional felt strip is laid over the glass at the jambs and muntins and the glazing is completed by use of formed, galvanized steel caps held by bolts with knurled nuts. Spring bronze weathering is supplied at the head. This arrangement saves time and labor in glazing and glass breakage due to expansion variation is greatly reduced.

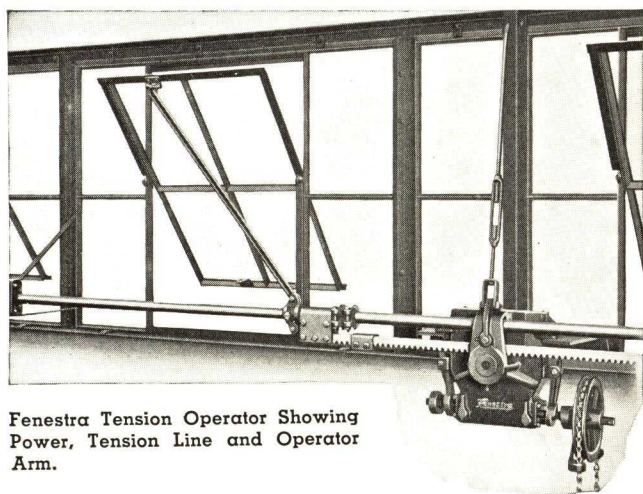
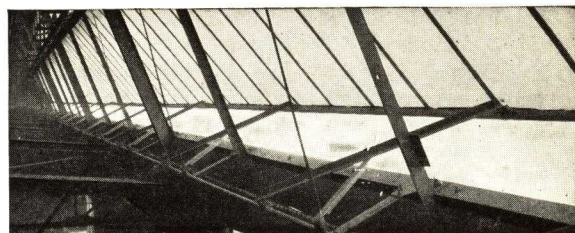
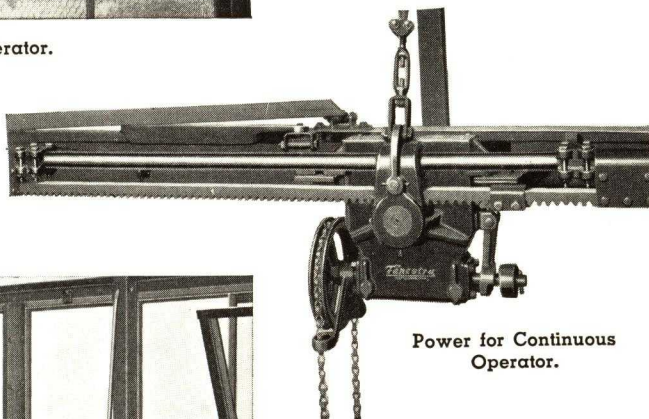
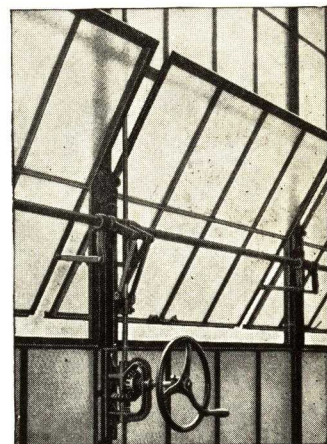


CONTINUOUS WINDOWS ~ PUTTYLESS TYPE P-112

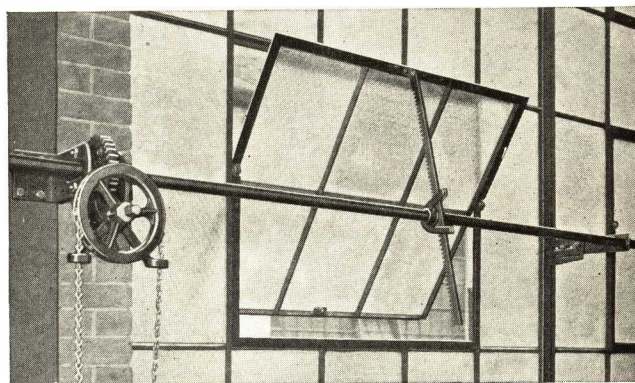
OPERATING DEVICES



Worm and Gear Operator.

Continuous
Operator—Right.Fenestra Tension Operator Showing
Power, Tension Line and Operator
Arm.Power for Continuous
Operator.

Screw Type Operator.



Rack and Pinion Operator.

Fenestra Operating Devices are not sold as separate products, but only as methods of mechanically opening and closing Fenestra Windows. Erection should always be handled by the Fenestra Construction Company or an authorized Fenestra agent.

Due to the variety of conditions encountered, it is advisable that a Fenestra Engineer be consulted to insure a practical and economical layout. The types shown are standardized designs which are adequate to meet most conditions.

All painted operator parts and fittings receive a priming coat of grey paint at the factory. Specifications should provide for finish painting by painting contractor after erection.

Fenestra Worm and Gear Operator is designed for manual operation, controlling horizontally pivoted or projected ventilators in single or multiple tiers. The power consists of a machine-cut, cast-iron worm, equipped with ball thrust bearings, operating a cast-iron segmental worm gear assembled in a steel housing. The power, for chain or mitre gear and pipe control, is located preferably in the center of the run, but may be located at the end.

Fenestra Continuous Operator is designed to operate continuous windows, either manually or electrically in single or multiple banks. Heavy construction and extreme care in assembly give this operator unusual strength and reliability. The power may be located at either end of the run, not closer than 20 ft. to the end. Operator arms are spaced about 10 ft. on centers.

Tension Operator is designed to operate long runs of horizontally pivoted ventilators. In general construction and design Tension operator is similar to Continuous operator. Power and transmission lines are the same, except that each power is equipped with a double stop so that all movement is stopped and power cut off both when the vents are closed and when they are fully open. Power may be attached at either end of the run not closer to the end than 20 ft. Operator limited (single power) to 300 ft.

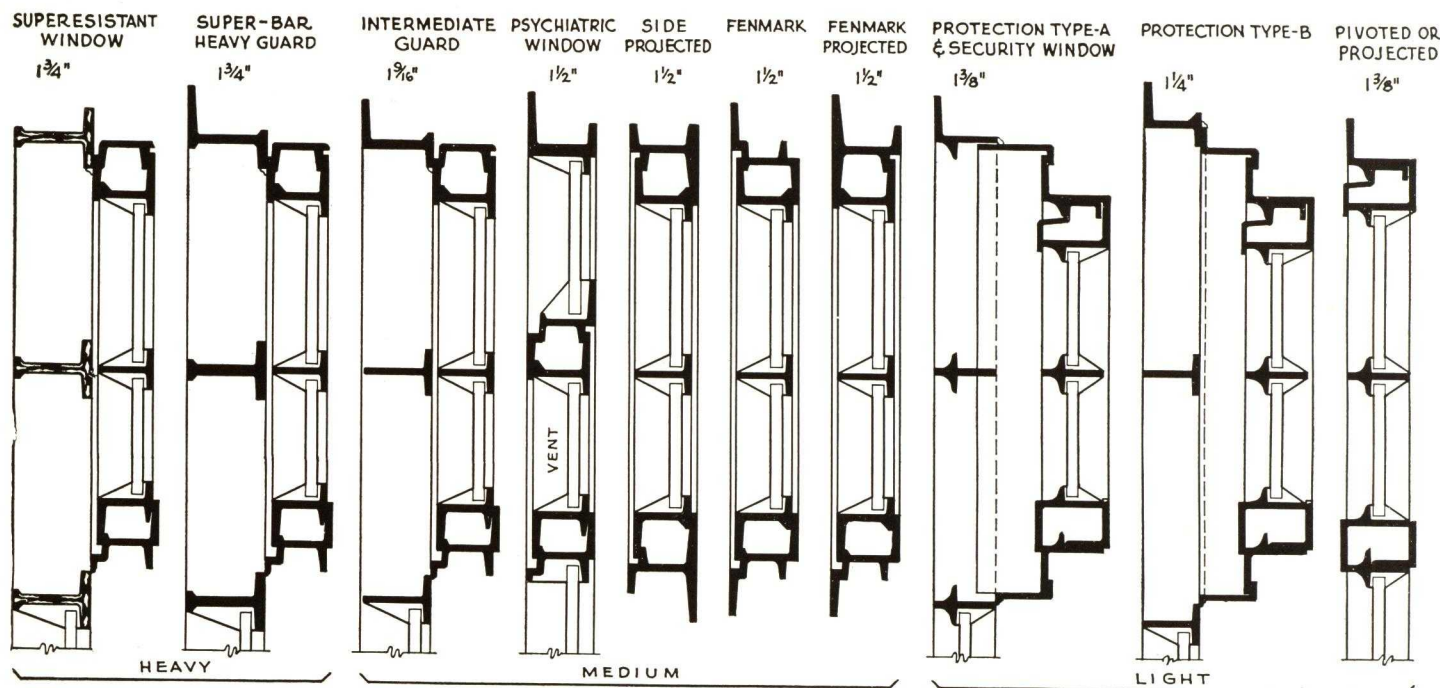
Fenestra Screw Type Operator is designed for neat, inconspicuous appearance. The vertical pipe, horizontal transmission line and ventilator arms lie snugly against the inside face of window. The power may be manually or electrically controlled. This device is particularly suitable for high openings containing vertical tiers of ventilators.

Fenestra Rack and Pinion Operator is similar to worm and gear, except that the operator arms are straight racks engaging pinions on the transmission line. Considerably longer runs may be controlled from one power. Operation may be by chain or mitre gear and vertical pipe, or an electrical hook-up may be used. Rack and pinion operator will handle short runs of Fenestra Continuous Windows.

DETENTION WINDOWS

Detention institutions may be divided into two classes: (a) those caring for psychopathic and mentally diseased patients, such as hospitals, "homes," asylums, etc. and (b) corrective institutions including penitentiaries, prisons, jails and detention schools. Both types of institution may need "light" detention (moderate restriction) in certain rooms or certain buildings and "heavy" detention (absolute confinement) in others.

The design of Fenestra Detention Windows is determined largely by the degree of restriction needed and by the architectural effect desired. Types of detention windows shown here are only a few of the many which are available. Any windows required to afford a degree of detention should be scrutinized closely. Fenestra engineers will be glad to assist in choosing or designing windows to best meet individual conditions.



SUPER-RESISTANT WINDOWS

Super-resistant Windows have the appearance of heavily built industrial windows but provide maximum detention without the use of separate bar guards. They are designed with fixed light grilles, frames and muntins being tool-resisting steel. Sections are 1 3/4 in., hot rolled, with matrix of soft, low-carbon steel. In this matrix are imbedded steel inserts which are non-annealable and resistant both to hack-saw and breast-drill. Muntins in the grille extend 9 in. into the masonry if so specified. Intersections are interlocked and welded in such a manner that they cannot be sawed. Open-in ventilators are superimposed inside the fixed

grille. Ventilators and grille above and below the ventilators are glazed but grille immediately in front of the ventilators is left open.

Installed in the State Vocational School, Coxsackie, N. Y.; Tatnall Prison, Reids-



ville, Ga.; Anamosa State Hospital, Anamosa, Iowa, and in numerous other institutions.

SUPERBAR (HEAVY GUARD) WINDOWS

Superbar Windows have fixed grilles of 1 3/4 in. section weighing slightly more than 2 lbs. per lineal foot. Glass lights 6x9 in. Frame corners and muntin intersections are welded inside and out, muntin joints being so formed that their construction is not revealed. Open-in ventilator is solidly welded to inside the grille. The fact that ventilators open in at the top assures ample fresh air, without direct drafts, regardless of weather conditions. Degree of opening is limited by "tamper-proof" stops removable only by means of a master tool. Operated by hand or pole individually, or in groups, mechanically. Applicable to exterior walls of cell blocks without the use of separate bar guards. Windows of similar design may be had with sections 1 1/2 in.

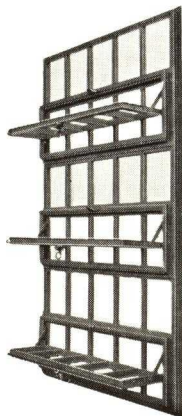
and 1 1/4 in. deep.

These windows have been installed on Alcatraz Island, Calif.; Tatnall Prison, Reidsville, Ga.; State Penitentiary, Jefferson City, Mo.; Federal Penitentiary, Atlanta, Ga.; Erie County Penitentiary, Wende, N. Y.; Clinton Prison, Dannemora, N. Y. and hosts of others.

INTERMEDIATE GUARD WINDOWS

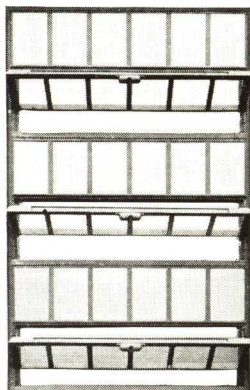
Intermediate Guard Windows have a fixed grille of standard 1½ in. section with an open-in ventilator superimposed on the inside. Glass lights 6x9 in. Ventilators may be designed to provide as much ventilation as desired and are usually mechanically operated in banks. Adapted to court openings in corridors, dormitories, recreation buildings, etc.

Used in the Federal Penitentiary, Milan, Mich.; Intermediate Reformatory, Algoa, Mo.; New Eastern Penitentiary, Graterford, Pa.; Sing Sing Prison, Ossining, N. Y.; State Reformatory, Mansfield, Ohio; New State Penitentiary, Statesville, Ill.; and in many other locations.



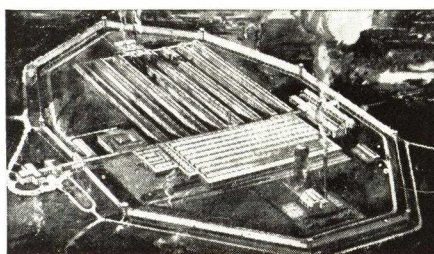
PSYCHIATRIC WINDOWS

Psychiatric Windows are made of Projected Fenmark, heavy casement sections with open-in ventilators accommodating 6x9 in. glass.



Ventilators limited to a maximum opening of 5 in. Ventilators are one-light-high and may provide 100% ventilation or may be alternated with fixed sections if desired. A special two-light-high vent for convenience in washing is available and may be unlocked and opened farther than 5 in.

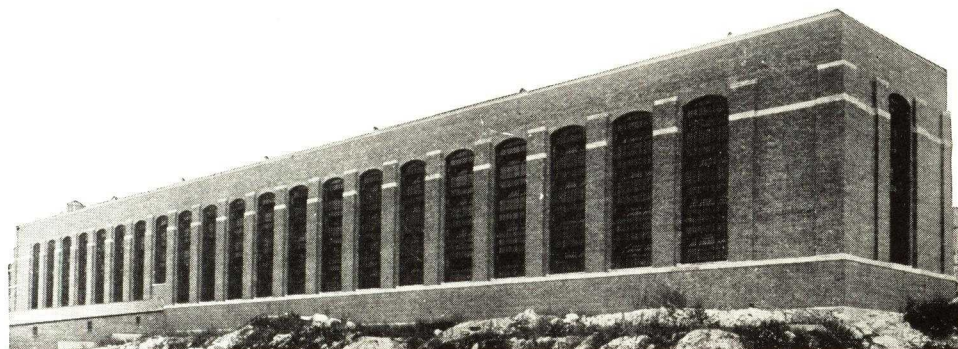
These windows have been adopted as standard by the New York State Department of Public Works. Used in Pilgrim Hospital, Brentwood, N. Y.; Rockland State Hospital, Rockland, N. Y. Similar windows have been used in State Hospital, Fairfield, Conn.; State Hospital, Ypsilanti, Mich.; State Hospitals at Utica and Rochester, N. Y.; State Hospital, Howard, R. I.; and in numerous others.



New Eastern Penitentiary, Graterford, Pa.



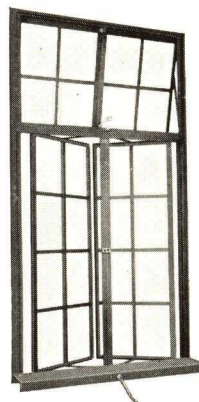
State Vocational School, Cossackie, N. Y.



Shop Building at Sing Sing Prison, Ossining, N. Y.

SIDE PROJECTED WINDOWS

Side Projected Windows are built from heavy casement sections, detention being secured by limiting all movable portions to a maximum opening of 5 in. Two side-projected leaves (a single leaf cannot be used) are opened at the same time by a screw-type device concealed under the steel stool and are locked individually by cams concealed in the vertical meeting rail. Unit widths are limited to 3 ft. 0 in. minimum and 4 ft. 6 in. maximum. Side-projected leaves are limited to 5 ft. 0 in. maximum height. A single removable handle is used for operating. These windows are particularly clean cut in appearance, have no projecting hardware and are easily screened or shaded on the inside.



Side-Projected Windows have been or are being used in the State Hospital, Athens, Ohio; Psychiatric Clinic, Fulton, Mo.; Cuyahoga County Detention Home, Cleveland, Ohio; Jackson County Parental School, Kansas City, Mo.; State Hospital, Columbus, Ohio; Industrial Home for Girls, Chillicothe, Mo.; and in many other institutions.

FENMARK AND PROJECTED FENMARK WINDOWS

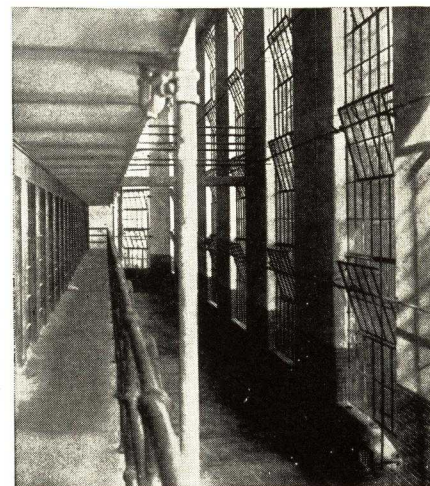
These windows are standard Fenmark Types with muntins spaced to provide approximately 6x9 in. glass lights and ventilators equipped with stops to limit their opening to a maximum of 5 in. The upper portion of the window has side hung open-out swing leaves, the lower portion being equipped with a projected-in sill ventilator. This sill ventilator is one of the outstanding features of this type and is particularly desirable wherever ventilation without direct draft is a factor.

Fenmark Detention Windows were specified and used by Architects Hoener, Baum and Froese in the Psychiatric Clinic, an addition to the main group of buildings at State Hospital No. 1, Fulton, Mo.

Projected Fenmark Detention Windows are standard Projected Fenmark Types with standard cam acting lock and keeper but limited as to glass size and ventilator opening area. Their construction is identical with that described under Psychiatric Windows.



Pilgrim State Hospital, Brentwood, N. Y.



Wisconsin State Prison, Waupun, Wis.

PROTECTION TYPE WINDOWS

Protection Type-A Windows have a fixed grille of standard $1\frac{3}{8}$ in. deep sections with a projected-in ventilator superimposed on the inside. Construction is same as for Security Windows (see Page 31) but they may be obtained in any size not exceeding 6 ft. 6 in. wide by 9 ft. 6 in. high. Protection Type-B Windows are similar to Type-A except for grille which is constructed of $1\frac{1}{4}$ in. deep sections. (See Page 36.)

Protection Type Windows have been used in numerous small jails and lock-ups where light detention was sufficient, but their chief function is to provide protection rather than detention. In institutions, they could be used to advantage in store rooms and warehouses to discourage pilfering. In commercial buildings they are ideal for the side and rear elevations of stores where they offer a single unit taking the place of the old fashioned wood windows with separate iron grilles.

PIVOTED AND COMMERCIAL PROJECTED WINDOWS

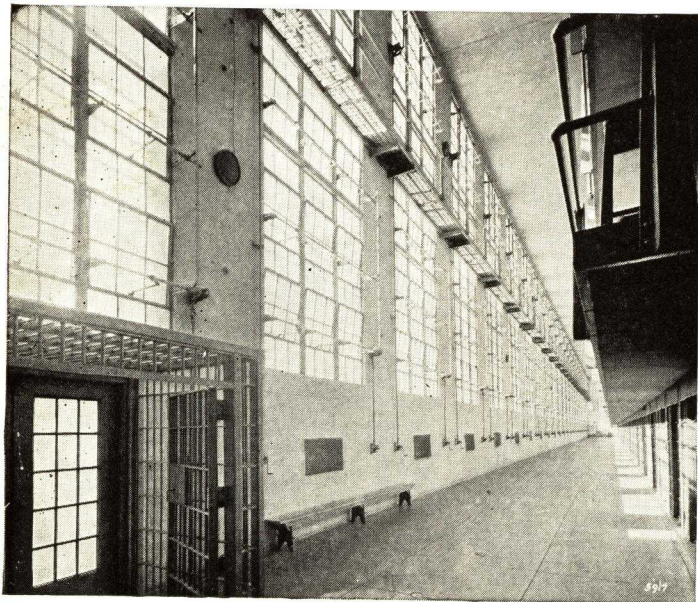
Horizontally Pivoted and Commercial Projected Detention Windows are made from $1\frac{3}{8}$ in. sections with one-pane high ventilators and glass lights 6x9 in. Maximum opening is limited to 6 in.

These light detention units are used frequently in workshops, recreation buildings and dining halls inside the institution walls. Several tiers of ventilators often are joined by double connecting bars and mechanically operated from one centrally located station.

Commercial Projected Types are particularly desirable where screening is a major factor as in kitchens, cafeterias, etc.

Pivoted and Commercial Projected Windows have been installed in numerous institutions including: Michigan State Prison at Jackson; Illinois State Penitentiary at Pontiac, Ill.; Federal Penitentiary at Lewisburg, Pa.

While Fenestra Detention Windows are designed to make bar guards unnecessary, the use of such guards does not imply the elimination of Fenestra Windows. Many standard types of Fenestra, including even light casement types have been used successfully with bar guards either outside or inside, typical examples being the administration building in the Federal Penitentiary at Milan, Mich. and the Federal Penitentiary at Lewisburg, Pa. In both of these institutions, Fenwrought Casements were used with bar guards on the inside.



Cell Block at Illinois State Penitentiary, Pontiac, Ill.

FENESTRA INSTITUTIONAL DOORS

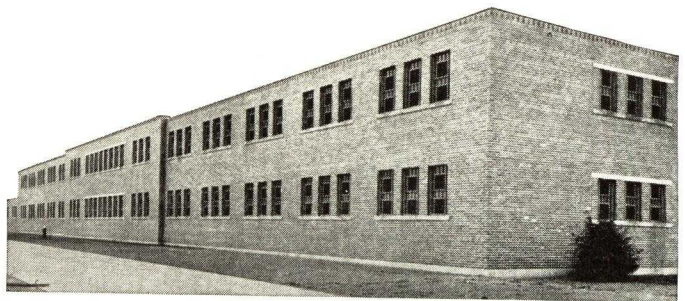
Fenestra Industrial Doors have been used in standard types and sizes in numerous hospitals and prisons, particularly in the service departments and shop buildings. They may be adapted, also, for moderate detention, by spacing muntins to provide restricted glass lights and by the use of special hardware.

At Tatnall State Penitentiary in Reidsville, Ga., four types of Fenestra Industrial Doors were used in the kitchen and in the utility and manufacturing buildings. These included double swing, accordion, double sliding "Round-the-Corner," both four and six leaf doors.

In the Federal Penitentiary at Milan, Mich., Fenestra channel frame steel doors were used in both exterior and interior openings throughout the entire group of buildings except doors opening from the administration building into the corridors which led to cell blocks and dormitories.

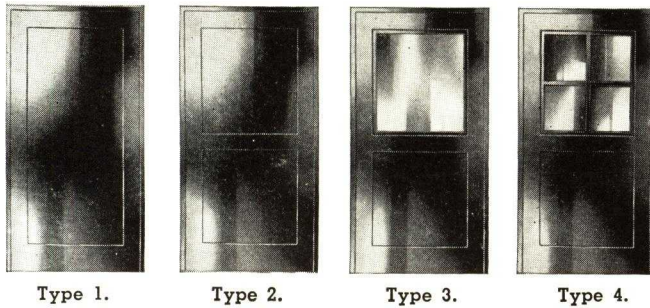


Fenestra Fenmark Side-Projected Detention Windows, Transom Type. Cuyahoga County Detention Home and Juvenile Court Building, Cleveland, Ohio



Federal Prison, Milan, Mich. This dormitory and cell block, equipped with Fenestra Superbar Windows, faces the street with no surrounding wall.

FIRESHIELD DOORS



Single and double swing, hollow steel doors, shipped complete with hardware and door-frames (but not glazed). Four door designs; ten door sizes. Choice of five locks, three hinge designs, eight hardware finishes.

Designed for exterior and interior use in stairway entrances, service halls, class rooms, store rooms, industrial offices, dressing rooms, and the service departments of hotels, apartments and public buildings generally.

Stiles and rails are 16-gauge, formed and welded steel tubes (head, jamb and intermediate members, $4\frac{1}{4}$ in. wide; sill stile, $6\frac{1}{4}$ in. wide) with corners mitered, welded and ground smooth. Panel in Type 1 is 16-gauge, patent leveled steel; all other panels are 18-gauge. All panels are spot welded to stiles and rails. All doors have beveled edge on lock stile and are mortised and reinforced to receive hinges, locks and door checks.

Ornamental, rolled steel, cove moulding on the inside of lower panel supplied at extra cost where specified.

Glass is not furnished. Quarter inch plate or factory ribbed glass is recommended set in steel window putty and held by steel glazing angles which are already fitted and attached.

Door Frames are 16-gauge steel formed into channels with integral rebates and stops. Frames are designed in three standard depths, $5\frac{1}{2}$ in., $7\frac{1}{2}$ in. and 10 in. Sill anchors, masonry anchors, and spreader bars are included. Frames are shipped either knocked down or assembled as specified.

Door Widths		Door Heights
Single Doors	Double Doors	
2' 6"	5' 0"	6' 6"
2' 9"	5' 6"	6' 9"
3' 0"	6' 0"	7' 0"

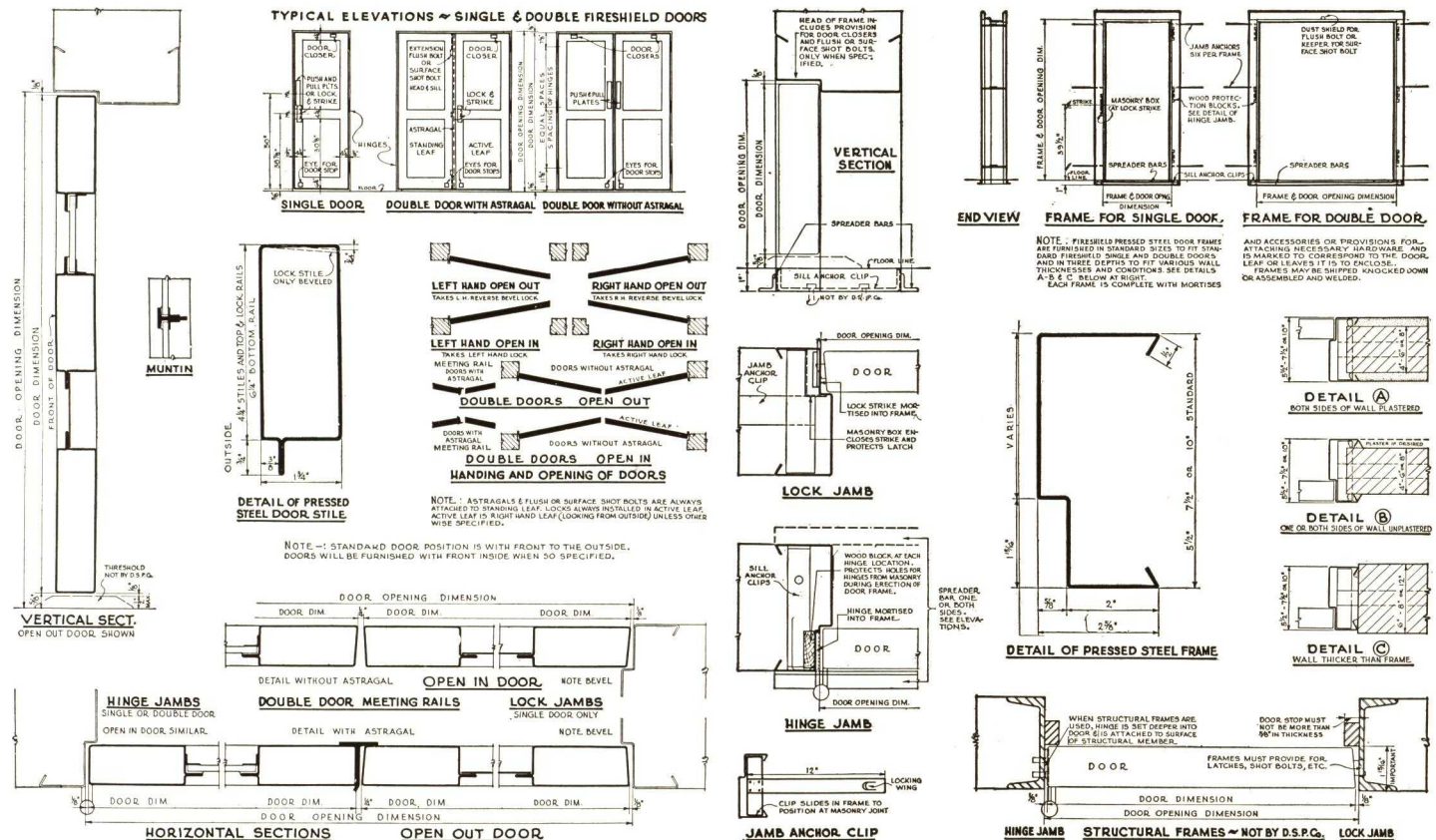
Any width may be combined with any height shown. Special doors, 3 ft. 9 in. by 7 ft. 0 in. and 7 ft. 6 in. by 7 ft. 0 in. also are available.

Doors and frames are given one protective coat of gray paint at the factory before shipment. At extra cost, when specified, they will be Bonderized and given a gray paint finish.

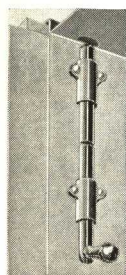
Doors may be obtained with jute faced corrugated sound deadening section in all stiles and rails, at extra cost. (Such doors cannot be Bonderized.)

Transom frames equipped with either fixed lights or ventilators, available to fit any standard Fireshield Door width.

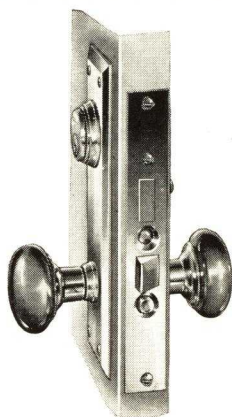
Fireshield Doors (swing type) with insulated panels and with stiles and rails insulated or non-insulated as required, can be supplied to meet all Underwriters' requirements for labeled doors in Classes B, C, D and E.



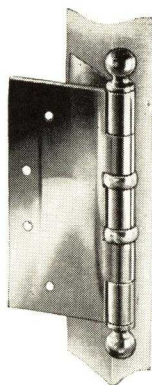
FIRESHIELD DOOR HARDWARE



1499

Surface
Shot Bolt.

1487



1484

Other hardware, available where specified, includes: Pull Handle and Plate, 1490; Push Plate, 1491; Flush Bolt, 1492; Floor Stop with Hook, 1493; Floor Stop without Hook, 1494; Door Closer, 1462; Door Closer Bracket, 1466.

COMPARABLE FINISHES FOR HARDWARE

D.S.P. Co. & U. S. Stand.	Description	SAR- GENT	McKIN- NEY	RUSSELL & ERWIN	YALE	COR- BIN	STAN- LEY
U. S. 9	Polished Bronze	P	B	11	BZ10	8	A
Stock Standard—Immediate shipment.							
U. S. 4	Dull Brass	OB	OB	9	AY22	EA	F
U. S. 6	Sanded Brass	RD	XBS	O9C	AX28	SKA	SF4
*U. S. 18	Bower Barff	BB	....	46	FX80	F	....
*U. S. 19	Bower Barff (imitation)	BN	EDB	47	FX90	KF	H
U. S. 9 Special	Dull Bronze (oil rubbed)	O3P	DA	13NL	BY23	ED	A9
These finishes not stocked—no extra charge—3 weeks shipment.							
U. S. 14	Nickel Plated	N	N	4	NZ10	E	N
U. S. 26	Chromium Plated	CM	C	24	DZ10	CR	CM

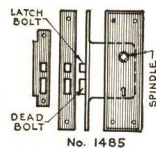
Extra charge—3 weeks shipment.

*When U. S. 18 finish is required, this is supplied for all items except butts which will have U. S. 19 finish.

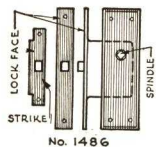
COMPARABLE LOCKS

D.S.P. CO. LOCKS
(Include 2" Knobs)

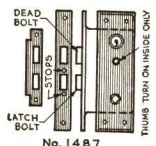
D. S. P. Co. Lock Set



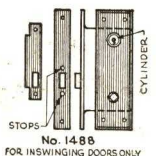
1485—Three tumbler, bit key lock, bronze front and strike. Bronze latch bolt operated from either side by knobs. Dead bolt operated from either side by key.



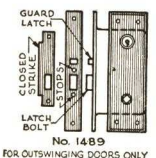
1486—Simple latch lock. Bronze latch bolt operated from either side by knobs. No key.



1487—Cylinder lock. Bronze latch bolt, dead bolt, front and strike. Cylinder outside; thumb turn inside. Outside knob set by stops in face of lock.



1488—Cylinder lock. Bronze latch bolt, front and strike. Outside knob set by stops in face of lock. No dead bolt.



1489—Cylinder lock. Bronze latch bolt, guard bolt, front and strike. Guard bolt automatically locks latch bolt (prevents picking). Outside knob set by stops. No dead bolt.

SARGENT YALE & TOWNE RUSSELL & ERWIN CORBIN

Design	Tarlton (TC)	Utopian BR (DH) ST (BU)	Berkley (Berk)	Portland BR 702 ST 602
1485	Lock 2" Knobs 5249 1772F	820 DO-35	0370 3/4 386	785 3/4 1419 1/2
1486	Design Lock 2" Knobs 4634 4635 1772F	Utopian BR (DH) ST (BU) 1003 1000 DO-35	Berkley (Berk) 029 021 025 386	Portland BR 702 ST 602 045 090 1419 1/2
1487	Design Lock 2" Knobs As above 6745 As above	As above 7790 As above	As above 11248 1248 As above	As above 1343 As above
1488	Design Lock 2" Knobs As above 6745 1/2 As above	As above 7790 As above	As above 11248 1/2 1248 1/2 As above	As above 1323 As above
1489	Design Lock 2" Knobs As above 6705 1/2 As above	As above 7656 As above	As above 11456 As above	As above As above

COMPARABLE IN DESIGN AND FUNCTION TO

COMPARABLE BUTTS

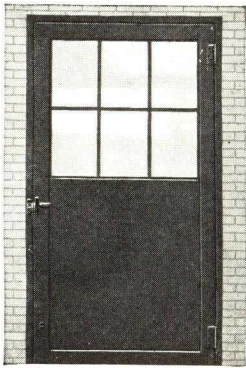
Description	D. S. P. Co.	STANLEY	McKINNEY
Plain Steel plated	1482	179	T-2714
Ball bearing Steel plated	1483	BB-179	TB-2768
Ball bearing Bronze polished	1484	BB-193	TB-3366

All butts are 4 1/2 in. by 4 1/2 in. full mortise template butts.

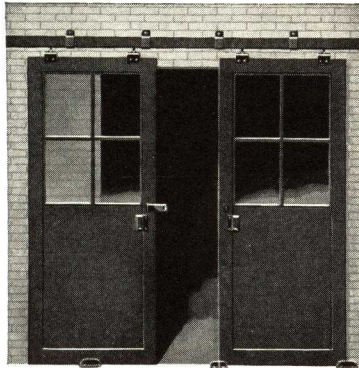
NOTE: Fenestra Fireshield Door Locks are similar in design and function to manufacturers' standard as listed, except that they are equipped with larger and heavier U. S. Government standard fronts and strikes. These locks are designed for exclusive use with Fenestra Fireshield Doors and are not carried in stock by other manufacturers listed. Except as noted, locks are for use on inswinging or outswinging doors. Locks are not reversible but are handed to fit door. The hand and swing of door must be specified.

When doors are used in structural frames, strikes can not be attached unless frames are mortised to receive them.

INDUSTRIAL DOORS



Fenestra Swing Door



Fenestra Double Sliding Doors

Fenestra Industrial Doors are designed for service openings in all types of commercial, industrial, institutional and public buildings. They may be single or double, swing or slide. Standard steel frames are available for swing doors 10 ft. 0 in. or less in height and their use is strongly recommended. Frames not supplied for sliding doors. All doors glazed from inside with $\frac{1}{4}$ in. plate glass, bed putted and held by steel glazing angles, mitered at corners and fitted and shipped attached. (Glass not furnished.)

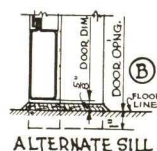
Doors and frames are given one standard shop coat of metallic primer before shipment. When desired, doors within certain limits of size will be furnished with a Bonderized and baked-on paint finish. Consult Fenestra representative for details.

INDUSTRIAL DOORS—SERIES-FT

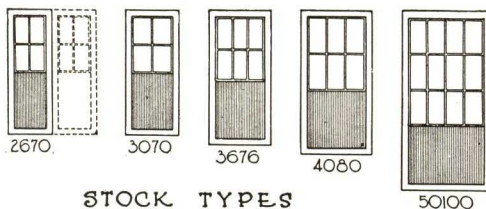
Series-FT Doors have stiles and rails of 5 in. by $1\frac{3}{4}$ in., 14-gauge pressed tube, with corners mitered, welded and ground smooth. Lower panels are of sheet steel, spot welded, 18-gauge in doors up to 4 ft. 0 in. wide, 14-gauge in wider doors. Muntins are membered and welded into stiles and rails. Maximum opening for swing doors, 10x15 ft.; for slide doors, 16x15 ft.



VERTICAL SECT.



ALTERNATE SILL



STOCK TYPES

NOTES

ALL TYPES SHOWN ARE FURNISHED EITHER SINGLE SWING OR DOUBLE SWING AS INDICATED BY DOTTED LINES AT TYPE 2670.

FOR FRAME DETAILS FOR SWING DOORS SEE PLATE Y-504. JAMBS OF FRAMES ARE MADE TO ANCHOR 1" INTO FLOOR. SEE SILL DETAIL AT LEFT.

TO ALLOW FOR SETTING THRESHOLD A CLEARANCE OF $\frac{5}{8}$ " HAS BEEN PROVIDED BETWEEN BOTTOM OF DOOR AND FLOOR LINE. WHEN THRESHOLD IS NOT DESIRED, THIS CLEARANCE MAY BE REDUCED BY CUTTING OFF ENDS OF FRAME OR BY SETTING THEM DEEPER THAN 1" BELOW THE FLOOR LINE.

THRESHOLD MAY BE FORMED IN THE FLOOR FINISH AS AT (A) OR AN AUXILIARY THRESHOLD OF WOOD OR METAL MAY BE USED AS AT (B).

THRESHOLDS ARE NOT FURNISHED BY D.S.P. CO. FOR DETAILS OF DOORS WITH ALL KICK PLATE PANELS SEE PLT Y-503

STOCK SIZES									
DOOR	SIZE OF DOOR	SIZE OF OPENING	GLASS	DOOR	SIZE OF DOOR	SIZE OF OPENING	GLASS	DOOR	SIZE OF DOOR
	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH
SINGLE SWING									
2670	2'-5"	6'-11 1/2"	2'-6"	7'-0"	9'-1 1/2"	15'-0"	2'-5"	6'-11 1/2"	2'-6"
3070	2'-11"	6'-11 1/2"	3'-0"	7'-0"	12'-0"	15'-0"	2'-11"	6'-11 1/2"	3'-0"
3676	3'-5"	7'-5"	3'-6"	7'-6"	10'-0"	15'-0"	3'-5"	7'-5"	3'-6"
4080	3'-11"	7'-11"	4'-0"	8'-0"	12'-0"	15'-0"	3'-11"	7'-11"	4'-0"
50100	4'-11"	9'-11 1/2"	5'-0"	10'-0"	12'-0"	22'-0"	4'-11"	9'-11 1/2"	5'-0"
DOUBLE SWING									
3070	2'-5"	6'-11 1/2"	5'-0"	7'-0"	9'-1 1/2"	15'-0"	2'-5"	6'-11 1/2"	5'-0"
3676	2'-11"	6'-11 1/2"	6'-0"	7'-0"	12'-0"	15'-0"	2'-11"	6'-11 1/2"	6'-0"
4080	3'-5"	7'-5"	7'-0"	7'-6"	10'-0"	15'-0"	3'-5"	7'-5"	7'-0"
50100	3'-11"	7'-11"	10'-0"	8'-0"	12'-0"	22'-0"	3'-11"	7'-11"	10'-0"
50100	4'-11"	9'-11 1/2"	10'-0"	10'-0"	12'-0"	22'-0"	4'-11"	9'-11 1/2"	10'-0"

STRUCTURAL FRAME FOR DOOR

FRAME & STOP NOT FURNISHED BY D.S.P. CO.

DD D.O.D.

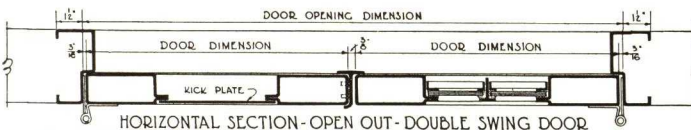
5/8" MAX

IMPORTANT

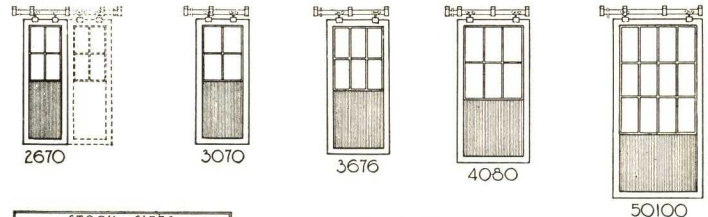
DOOR DIMENSION

DOOR OPENING DIMENSION

OPEN IN SWING DOOR

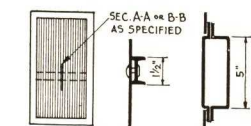
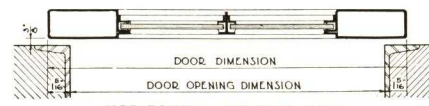
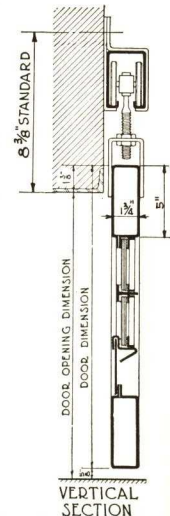


HORIZONTAL SECTION-OPEN OUT-DOUBLE SWING DOOR



STOCK SIZES									
DOOR	SIZE OF DOOR	SIZE OF OPENING	GLASS	DOOR	SIZE OF DOOR	SIZE OF OPENING	GLASS	DOOR	SIZE OF DOOR
	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH
SINGLE SLIDE									
2670	2'-5"	6'-11 1/2"	2'-6"	7'-0"	9'-1 1/2"	15'-0"	2'-5"	6'-11 1/2"	2'-6"
3070	2'-11"	6'-11 1/2"	3'-0"	7'-0"	12'-0"	15'-0"	2'-11"	6'-11 1/2"	3'-0"
3676	3'-5"	7'-5"	3'-6"	7'-6"	10'-0"	15'-0"	3'-5"	7'-5"	3'-6"
4080	3'-11"	7'-11"	4'-0"	8'-0"	12'-0"	15'-0"	3'-11"	7'-11"	4'-0"
50100	4'-11"	9'-11 1/2"	5'-0"	10'-0"	12'-0"	22'-0"	4'-11"	9'-11 1/2"	5'-0"
DOUBLE SLIDE									
3070	2'-5"	6'-11 1/2"	4'-9"	6'-10"	9'-1 1/2"	15'-0"	2'-5"	6'-11 1/2"	4'-9"
3676	2'-11"	6'-11 1/2"	5'-0"	6'-10"	12'-0"	15'-0"	2'-11"	6'-11 1/2"	5'-0"
4080	3'-5"	7'-5"	6'-9"	7'-4"	10'-0"	15'-0"	3'-5"	7'-5"	6'-9"
50100	3'-11"	7'-11"	7'-0"	7'-10"	12'-0"	22'-0"	3'-11"	7'-11"	7'-0"
50100	4'-11"	9'-11 1/2"	9'-9"	9'-10"	12'-0"	22'-0"	4'-11"	9'-11 1/2"	9'-9"

NOTE: ALL TYPES SHOWN ARE FURNISHED EITHER SINGLE OR DOUBLE SLIDE AS INDICATED BY DOTTED LINES AT TYPE 2670 SLIDING DOORS ARE SHIPPED

ELEVATION SEC. A-A SEC. B-B
DETAILS OF ALL KICK-PLATE DOOR
ANY TYPE SWING OR SLIDE DOOR MAY HAVE ALL KICK PLATE PANEL WHEN SO SPECIFIED.HORIZONTAL SECTION THRU
SINGLE SLIDING DOORHORIZONTAL SECTION THRU
DOUBLE SLIDING DOOR

VERTICAL SECTION

STOCK SIZES, SERIES-FT DOORS

SINGLE DOORS					DOUBLE DOORS				
Swing	Opening	Slide	Opening	Slide	Swing	Opening	Slide	Opening	Slide
Width	Height	Width	Height	Width	Width	Height	Width	Height	Width
2' 6"	7' 0"	2' 3"	6' 10 1/2"	5' 0"	7' 0"	4' 9"	6' 10 1/2"	6' 10 1/2"	6' 10 1/2"
3' 0"	7' 0"	2' 9"	6' 10 1/2"	6' 0"	7' 0"	5' 9"	6' 10 1/2"	6' 10 1/2"	6' 10 1/2"
3' 6"	7' 6"	3' 3"	7' 4 1/2"	7' 0"	7' 6"	6' 9"	7' 4 1/2"	7' 4 1/2"	7' 4 1/2"
4' 0"	8' 0"	3' 9"	7' 10 1/2"	8' 0"	8' 0"	7' 9"	7' 10 1/2"	7' 10 1/2"	7' 10 1/2"
5' 0"	10' 0"	4' 9"	9' 10 1/2"	10' 0"	10' 0"	9' 9"	9' 10 1/2"	9' 10 1/2"	9' 10 1/2"

INDUSTRIAL DOORS—SERIES-RT

Series-RT Doors meet certain conditions of size and severe usage where doors of lighter, pressed tube construction would be unsatisfactory. Constructed of rolled steel tube of two sizes— $1\frac{1}{2} \times 2\frac{1}{2}$ in. tube for doors up to and including 10 ft. 0 in. high, and $3 \times 2\frac{1}{2}$ in. tube for larger sizes. Normal maximum opening is 12x15 ft. (See types on plates Y-550 and Y-551.) Where larger openings are required (not exceeding 17x22 ft.) consult nearest Fenestra representative.

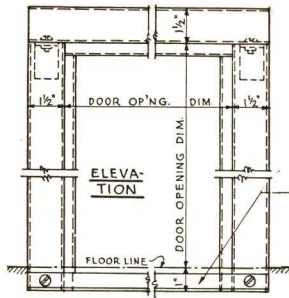
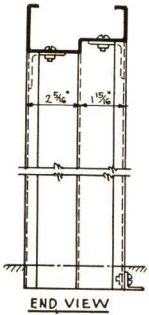
All Series-RT Doors have $1\frac{3}{8}$ in. deep, fixed sash panels in upper portion and 13-gauge sheet steel panels below.

HARDWARE FOR INDUSTRIAL DOORS
(SERIES-FT & RT)

Standard hardware for swing doors: Loose pin butts (number depends on size of leaf) and chain and foot bolts for double doors. Available at extra cost; T-Latch with iron or bronze handles. Cylinder Locks (doors 10 ft. 0 in. or less in height) with iron or bronze Handles, Door Checks, Ball Bearing Butts.

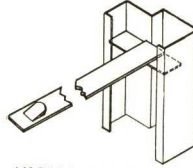
Standard hardware for slide doors: Trolleys, Hangers, Track and Track Brackets, Hasp and Staple, Hand Pulls, Door Guides and Stops, Foot Bolts where required. Cylinder Locks available at extra cost for doors 10 ft. 0 in. high or less.

(Swing doors can be equipped with Antipanic Hardware where required. Master-keyed locks are supplied in Fenestra Master-Keyed system at no extra charge. Extra cost to match other systems. Where desired, purchaser can replace the regular cylinder to match any system.)



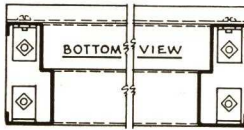
STOCK FRAME SIZES			
DOOR OPENING DIMENSION			
SINGLE		DOUBLE	
WIDTH	HEIGHT	WIDTH	HEIGHT
2'-0"	7'-0"	5'-0"	7'-0"
2'-6"	7'-0"	5'-6"	7'-0"
3'-0"	7'-0"	6'-0"	7'-0"
3'-6"	7'-0"	6'-6"	7'-0"
4'-0"	8'-0"	8'-0"	8'-0"
5'-0"	10'-0"	10'-0"	10'-0"

SPREADER ANGLE TO FACILITATE ACCURATE SETTING OF FRAME, MAY BE LEFT IN PLACE OR REMOVED BEFORE FLOOR IS LAID. FOR ERECTION OF FRAME SEE NOTES ON PLATE Y-502.



ANCHOR CLIP USED IN MASONRY OPENINGS

NOTE
FRAMES ARE FURNISHED FOR SWING DOORS ONLY ~



4" PARTITION



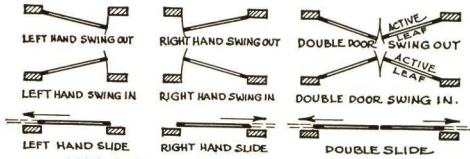
GYPSUM-PLASTERED



6" BRICK WALL



4" TILE-PLASTERED INSTALLATION DETAILS

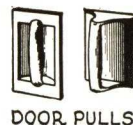


KEY TO HANDING OF DOORS
OUTSIDE OF DOORS IS TOWARD BOTTOM OF PAGE.

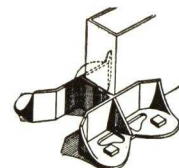
DOOR FRAMES ARE CONSTRUCTED OF # 14 GAUGE SHEET STEEL.
FRAMES SHALL BE ANCHORED TO STRUCTURAL STEEL OR SHALL BE EQUIPPED WITH MASONRY ANCHOR CLIPS SHOWN ABOVE, SPACED APPROXIMATELY 24" APART AT JAMBS ONLY.
FRAMES FOR SLIDING DOORS NOT FURNISHED BY D.S.P.G.



TROLLEY



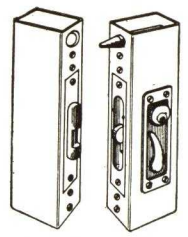
DOOR PULLS



CENTER GUIDE



HASP AND STAPLE



CYLINDER LOCK

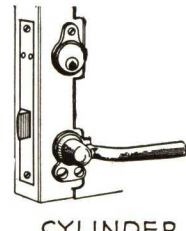
HARDWARE FOR SLIDING DOORS

NOTE: HARDWARE SHOWN IS TYPICAL FOR FENESTRA INDUSTRIAL DOORS. FOR ITEMS USED SPECIFICALLY FOR LIGHT OR FOR HEAVY

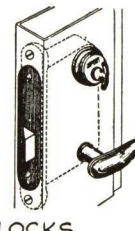
INDUSTRIAL DOORS CONSULT D.S.P.G. REPRESENTATIVE. CYLINDER LOCKS AVAILABLE FOR CERTAIN TYPE DOORS NOT OVER 10'-0" IN HEIGHT.



CHAIN BOLT



CYLINDER LOCKS



HINGES



CABIN HOOK



FOOT BOLT



TEE-LATCHES

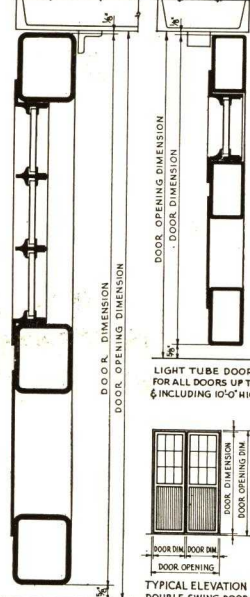
HARDWARE FOR SWINGING DOORS

INDUSTRIAL DOORS ~ SERIES-FT ~ FRAMES Y-504

INDUSTRIAL DOOR HARDWARE

Y-507

VERTICAL SECTIONS



HEAVY TUBE DOOR ~ FOR ALL DOORS OVER 10'-0" IN HEIGHT, ~

DOOR OPENING HEIGHTS
7'-0"
7'-6"
8'-0"
10'-0"

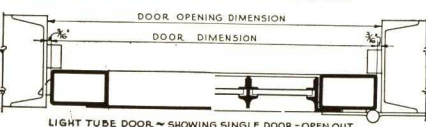
TYPES AND SIZES

7'-0"	7'-6"	8'-0"	10'-0"
11'-0"	12'-0"	13'-0"	
14'-0"	15'-0"		

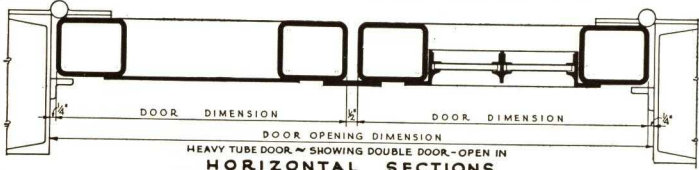
SINGLE DOOR OP'NG	2'-6"	3'-0"	3'-6"	4'-0"	5'-0"	6'-0"
DOUBLE	5'-0"	6'-0"	7'-0"	8'-0"	10'-0"	12'-0"

ALL TYPES SHOWN ARE FURNISHED IN EITHER SINGLE OR DOUBLE SWING. SEE ELEVATION AT LEFT FOR DOUBLE SWING. FRAMES FOR SINGLE OR DOUBLE SWING DOORS 10'-0" OR LESS IN HEIGHT WILL BE FURNISHED WHEN SPECIFIED. THRESHOLDS NOT FURNISHED BY D.S.P.G.

FOR HANDING INFORMATION SEE PLT Y-504. GLASS AND GLAZING NOT BY D.S.P.G. WHEN DESIRED, KICK PLATE MAY BE SUBSTITUTED FOR GLASS PANELS AT NO EXTRA COST. CYLINDER LOCKS NOT FURNISHED FOR DOORS OVER 10'-0" HIGH.



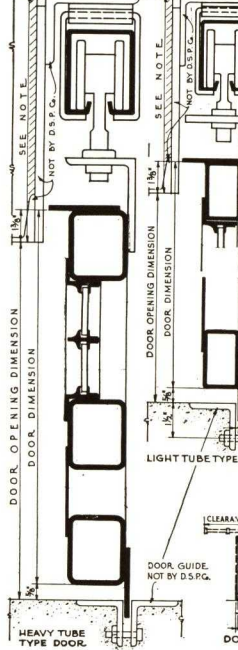
LIGHT TUBE DOOR ~ SHOWING SINGLE DOOR-OPEN OUT



HEAVY TUBE DOOR ~ SHOWING DOUBLE DOOR-OPEN IN HORIZONTAL SECTIONS

INDUSTRIAL DOORS ~ SERIES-RT ~ SWING Y-550

VERTICAL SECTIONS



LIGHT TUBE TYPE DOOR

DOOR OPENING HEIGHTS
6'-10 1/2"
7'-4 1/2"
7'-10 1/2"
9'-10 1/2"

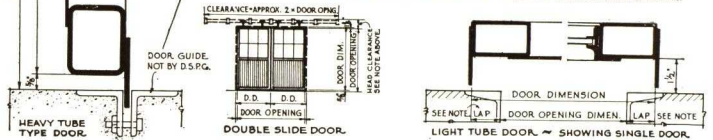
TYPES AND SIZES

6'-10 1/2"	7'-4 1/2"	7'-10 1/2"	9'-10 1/2"
10'-10 1/2"	11'-10 1/2"	12'-10 1/2"	
13'-10 1/2"	14'-10 1/2"		

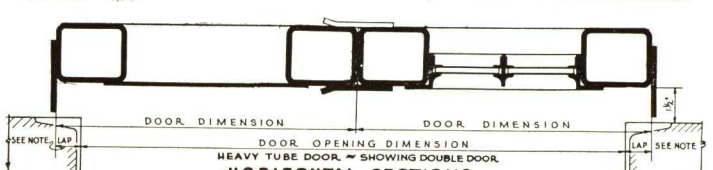
SINGLE DOOR OP'NG	2'-3"	2'-9"	3'-3"	3'-9"	4'-9"	5'-9"
DOUBLE	4'-9"	5'-9"	6'-9"	7'-9"	9'-9"	11'-9"

ALL TYPES SHOWN ARE FURNISHED IN EITHER SINGLE OR DOUBLE SLIDE. FRAMES NOT FURNISHED FOR SLIDE DOORS. FOR HANDING INFORMATION SEE PLT Y-504. REQ'D. CLEARANCE AT HEAD VARIES WITH WEIGHT OF DOOR. LAP OF DOORS AT JAMBS VARIES FOR LIGHT AND HEAVY TUBE AND

FOR SINGLE AND DOUBLE DOORS, SEE D.S.P.G. STANDARDS OR REPRESENTATIVE. CYLINDER LOCKS ARE NOT FURNISHED FOR DOORS OVER 10'-0" HIGH. WHEN DESIRED, KICK PLATE MAY BE SUBSTITUTED FOR GLASS PANELS AT NO EXTRA COST. GLASS AND GLAZING NOT BY D.S.P.G.



LIGHT TUBE DOOR ~ SHOWING SINGLE DOOR



HEAVY TUBE DOOR ~ SHOWING DOUBLE DOOR HORIZONTAL SECTIONS

INDUSTRIAL DOORS ~ SERIES-RT ~ SLIDE Y-551

COUNTERWEIGHTED DOORS

Fenestra Counterweighted Doors, in their various types, comprise a wide range of doors for use in such industrial buildings as factories, powerhouses, warehouses, transportation terminals, etc.

All types of Counterweighted Doors rise from a closed vertical position to an open position at or near the head of the door opening. In some types, the door leaves retain their vertical position as they rise; in others, they tilt as they rise; in still others, the leaves fold as they rise. The opening and closing movements are made easy and uniform by counterbalancing.

These doors are of rugged construction for general industrial use. They occupy no floor space when open; they require no floor tracks. Some provide a protecting canopy over the door opening. They do not blind or restrict windows in the sidewalls. Their operation, even in snow and ice, is positive and assured, due to their substantial, trouble-free, operating equipment.

Unusual care is required, both in the design and in the erection of Counterweighted Doors. Full clearances, both for the doors themselves and for counterweights, jamb guides, sheaves and cables, must be allowed as required. The General Contractor must provide and set anchor bolts and anchor bolt supports for door mechanism, accurately as shown. Steel framing, supports and electrical connections must be supplied by the respective trades involved, in accordance with the door manufacturer's requirements.

Fenestra Engineers will gladly assist with details and recommendations for filling any door opening. The proper choice often depends

so largely on the type of service required and the character and construction of the building that we strongly recommend you consult a Fenestra Engineer before making your selection.

The information on the following pages is designed merely to cover some of the major characteristics of each type of door and the important features of its installation.

(All Fenestra Counterweighted Doors are erected by the Fenestra Construction Co. Door frames are not supplied by D.S.P. Co.)



Above: Canopy "B.A." Doors in the Dewey Ave. Municipal Machine Shop, Rochester, N. Y. The various positions of the doors demonstrate their action in opening and closing.



Above: Electrically operated Fenestra Pier Door, Partly Open. When fully open, the two leaves are nested and tilted back to a horizontal position above the opening.

Right: Six Fenestra Double Vertically Sliding Doors, side by side in Bus Garage of the New York State Railways at Syracuse, N. Y. Note the various positions of the doors from "fully open" on the left to "fully closed" on the right.



"DOUBLE VERTICAL LIFT" DOORS



Fenestra Vertical Lift Door.

This door is particularly adapted to use in foundries, machine shops, railroad shops and industrial plants. It is ideal in locations where a high door is required for the passage of large castings, machinery and bulky loads of all kinds.

The construction is simplicity itself. Two door leaves, each approximately one-half the height of the door opening, are erected in parallel, vertical guideways and are counterweighted in such a manner that, in opening, the lower and inner leaf rises at twice the speed of the upper and outer leaf. Thus, the two leaves clear the

("Light" types have 14 ga., 5 x 1 3/4 in. stiles and rails for doors up to 14 ft. in either dimension. "Heavy" types have 3 in. channel stiles and rails for doors over 14 ft. in either dimension up to 20 x 20 ft.)

It is impossible to place too much emphasis on the advantages of the Fenestra Double Vertical Lift Door. Its vertical sliding principle is simple. It requires a minimum of effort for operation. Its first cost is low. It can be recommended with confidence for almost any type of opening where head clearance above the lintel is adequate.

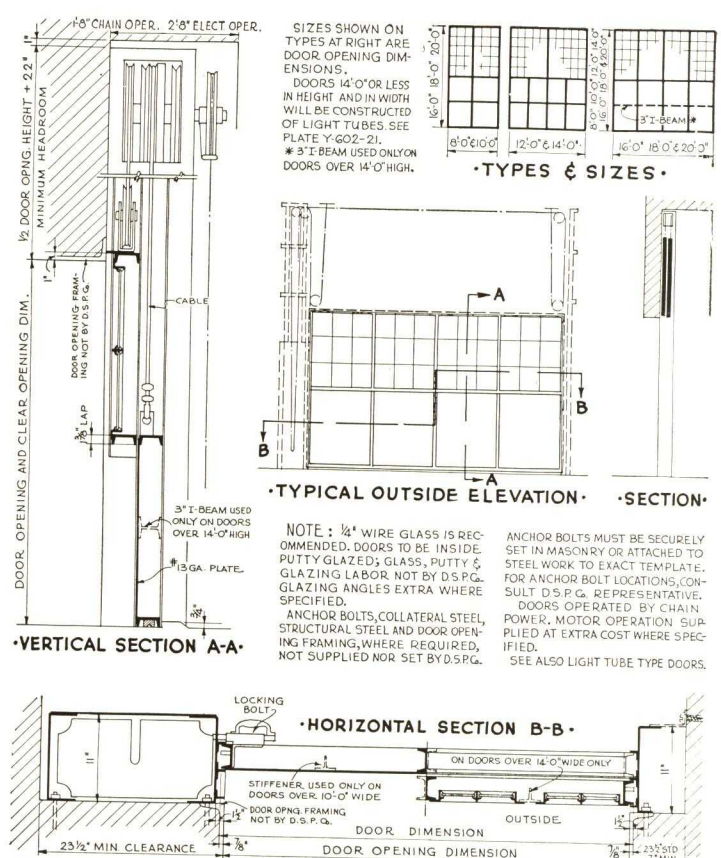
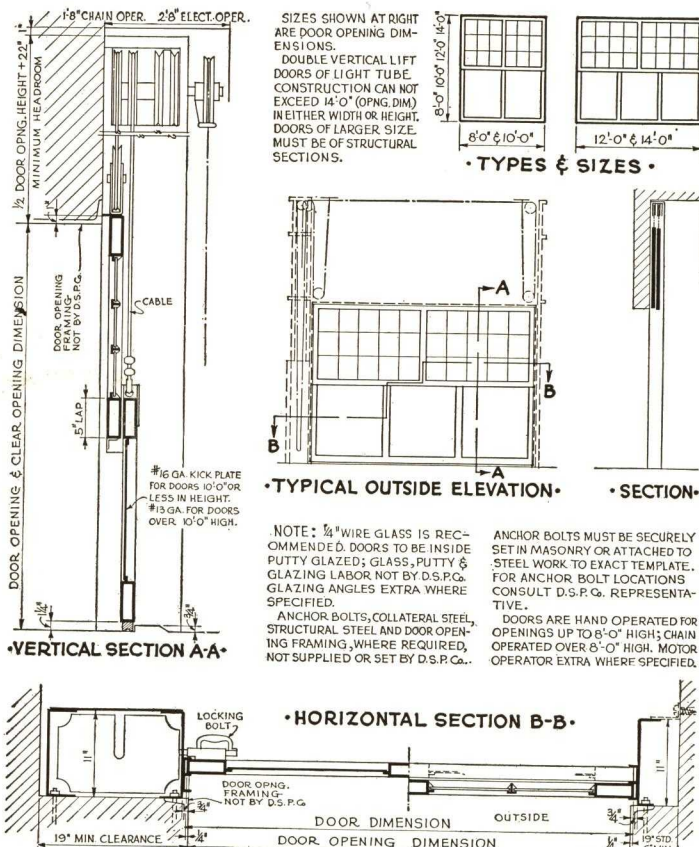
head of the opening at the same time and in fully open position, remain vertically side by side, about the lintel and inside the building.

This form of operation insures speedy, smooth, trouble free movement both in opening and closing but it also requires clearance above the lintel equal to one-half the height of the door opening plus 22 inches.

The door leaves have stiles and rails mitered, welded and ground smooth. The upper portion of "Light" door leaves have muntins membered directly into the stiles and rails but the upper portions or "Heavy" type leaves have inserts of 1 3/8 in. fixed light windows. Both types of construction accommodate inside glazing with 1/4 in. glass, spring clips and putty. (Glazing angles are supplied at extra cost where specified.) The lower portion of all door leaves is covered by 13-gauge steel plate.

The door leaves are supported in the opening by flexible steel cables which are carried up over cast sheaves mounted on pressure lubricated roller bearings in pressed steel shrouds and which terminate in counterweights at the jambs. Hand operation is standard (hand chain power at extra cost) in openings up to 8 ft.-0 in. high. Hand chain power is standard (electric power at extra cost) in openings over 8 ft.-0 in. high

Weathering is accomplished at the head by a rubber baffle; at the jambs by weathering strips and at the sill by a weathering channel and a rubber bumper. A locking bolt is provided at the power jamb but cylinder locks are not supplied.



"PIER" DOORS

("Light" type, 14 ga., 5 x 1 3/4 in. stiles and rails for doors up to 14 x 12 ft. openings. "Heavy" type, 4 in. channel stiles and rails for doors over 14 x 12 ft. and up to 20 x 20 ft.)

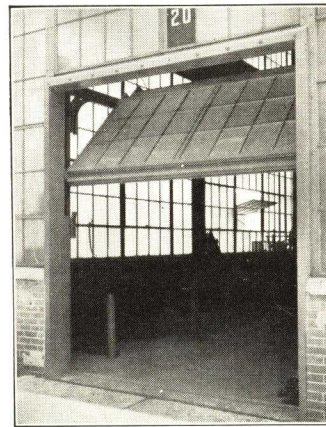
This door is especially desirable in piers, terminals, warehouses and all types of industrial and storage buildings and railway shops as it operates quickly and easily, permits the maximum use of floor space and requires a minimum clearance above the opening. Does not project.

Two door leaves, each approximately half the height of the opening (plus head and meeting rail weatherlaps) are suspended one above the other in vertical guideways and are so motivated that the lower leaf slides vertically upward in guides attached to the upper leaf until it has traveled about half the height of the door opening. The nested leaves then swing inward at the top while the bottom continues to move upward until both leaves, at full open position, are horizontal, clear of the lintel and extending back into the building.

"Light" doors 12 ft. high or less have upper portions with muntins membered into stiles and rails to accommodate outside glazing with 1/4 in. glass, putty and glazing clips. Lower portions are covered with steel plate. "Heavy" types have 1 3/8 in. fixed steel sash in the upper portions and 13-gauge steel plates below.

Top and bottom rollers on roller bearings travel in steel guideways and direct the door movement.

Suspension is by means of flexible wire cables carried up over cast sheaves on pressure lubricated roller bearings mounted in pressed steel shrouds and thence to counterweights at the jambs. Hand operation is standard with hand chain power extra in openings less than 8 ft.-0 in. high. Hand chain power is standard with electric power extra for openings over 8 ft.-0 in. high. An inside locking bolt at the counterweight jamb is included.



Fenestra Pier Door.

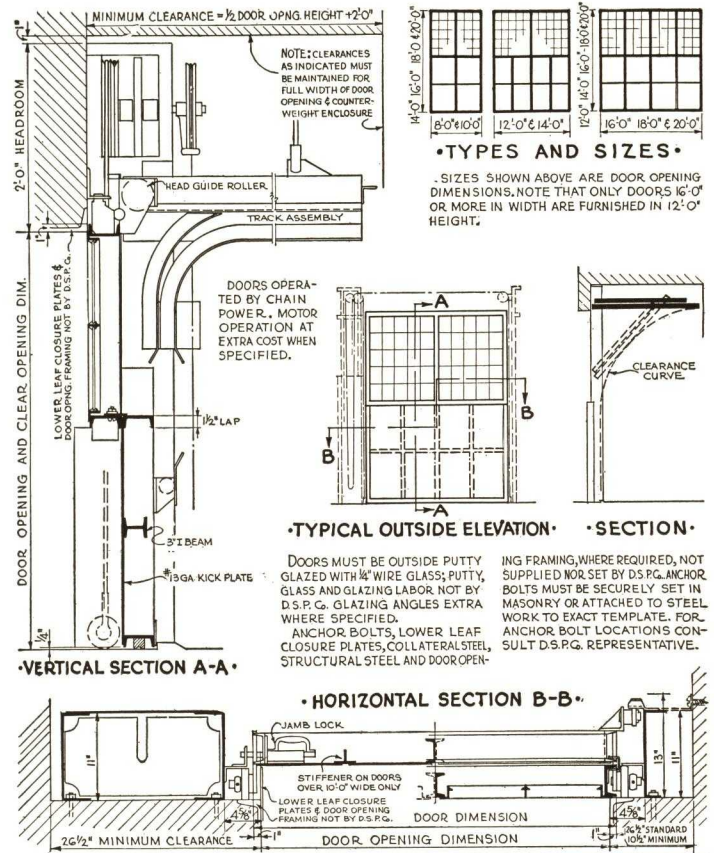
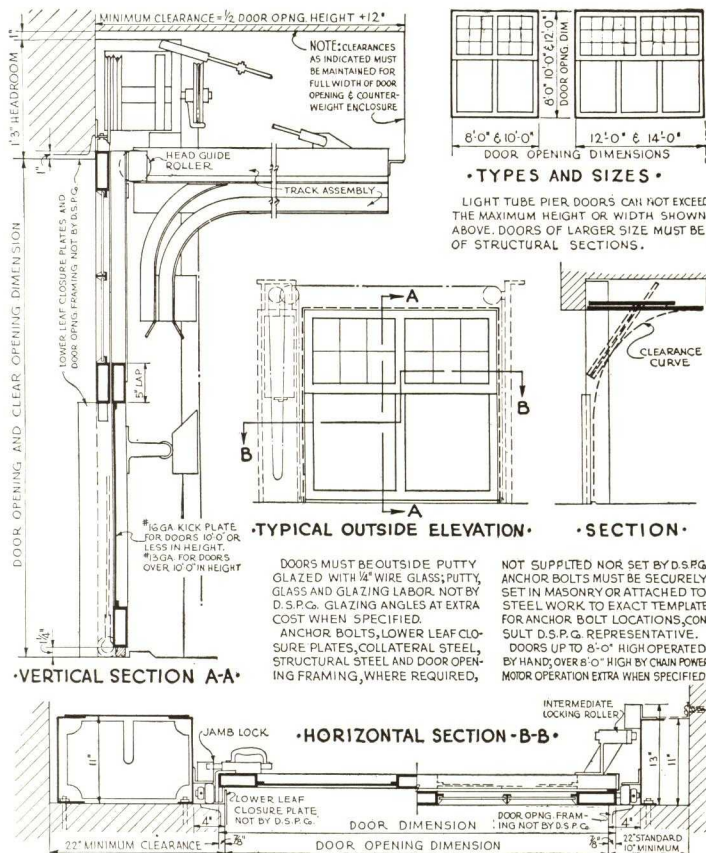
(Anchor bolts, door frames and collateral steel for attaching door guides and operating hardware are not supplied nor set by Detroit Steel Products Company.)

For the railway entrances to industrial plants or similar door openings in railway shops, freight terminals or round houses, the Fenestra Railway Door has many advantages.

It is standardized for one size of door opening only,—17 ft. wide by 22 ft. high. This we understand is about the minimum opening specified by railway code requirements to give ample clearance for locomotives and cars. The door may be of the Double Vertical Lift type, made from 3 in. channel, or it may be of the "Pier" Type, made from 4 in. channel.

In piers or other similar structures Fenestra Pier Doors of special design may be used with counterweights concealed between the jamb channels and the columns. This improves the inside appearance of the door and conserves the space commonly occupied by superimposed counterweights and counterweight guards.

For further information and details of doors for railway entrances and pier sheds, consult DETROIT STEEL PRODUCTS COMPANY representative.



"CANOPY" DOORS

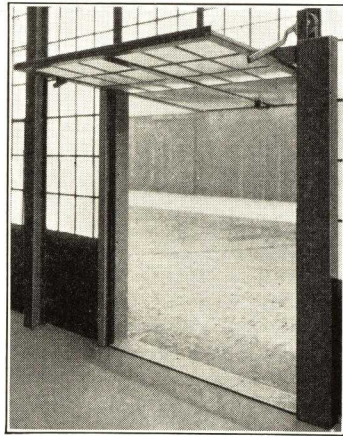
("Light" types not supplied. "Heavy" types have 3 in. channel stiles and rails for doors up to 14 x 10 ft.; 4 in. channel stiles and rails for doors over 10 ft. high up to a maximum of 14 x 14 ft.)

This door is designed primarily for comparatively small openings, such as are normally found in warehouses, storage buildings and the service entrances of industrial plants and commercial structures.

It is simple and substantial in design, operates quickly and, at relatively low cost, provides the essential advantages of overhead door construction; namely, free and unobstructed floor space and a protecting canopy above the doorway when open. Since its mechanism is not complicated, minimum maintenance is required.

A single leaf door with corners of stiles and rails mitered, welded and ground. Upper portion carries $1\frac{3}{8}$ in. fixed sash accommodating outside glazing with $\frac{1}{4}$ in. glass, putty and spring clips. Lower portion covered with 13-gauge steel plate.

Hand operation is standard for openings up to 8 ft. 0 in. high. (Hand chain power at extra cost where specified for these small openings but



Fenestra Canopy Door.

standard for openings larger than 8 ft. 0 in. high.) A locking device which locks the door at both jambs, is included. (Cylinder locks at extra cost.) Electric operation cannot be supplied.

CANOPY "B.A." DOORS

(Manufactured under J. I. Byrne patents)

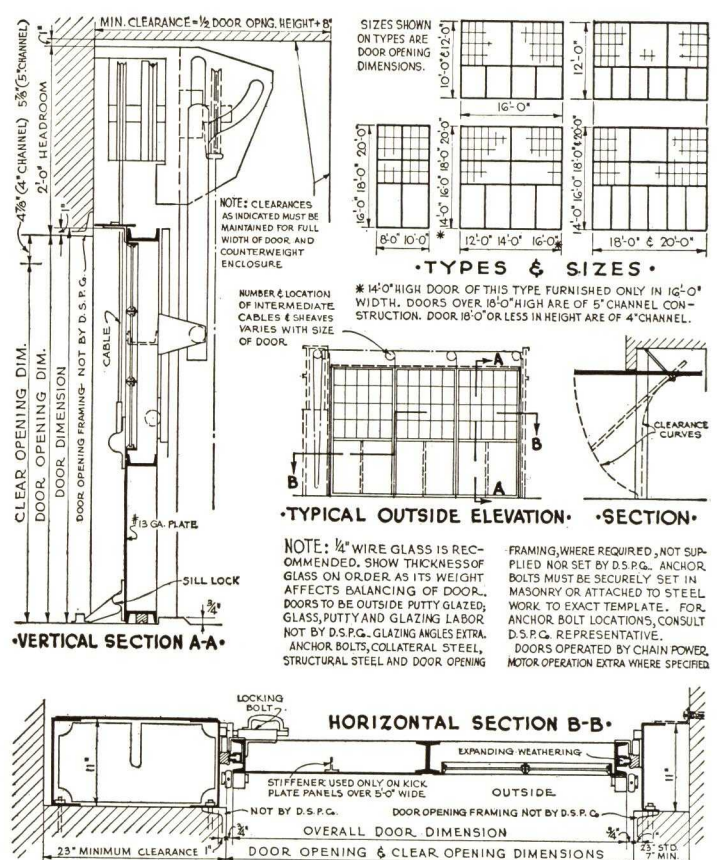
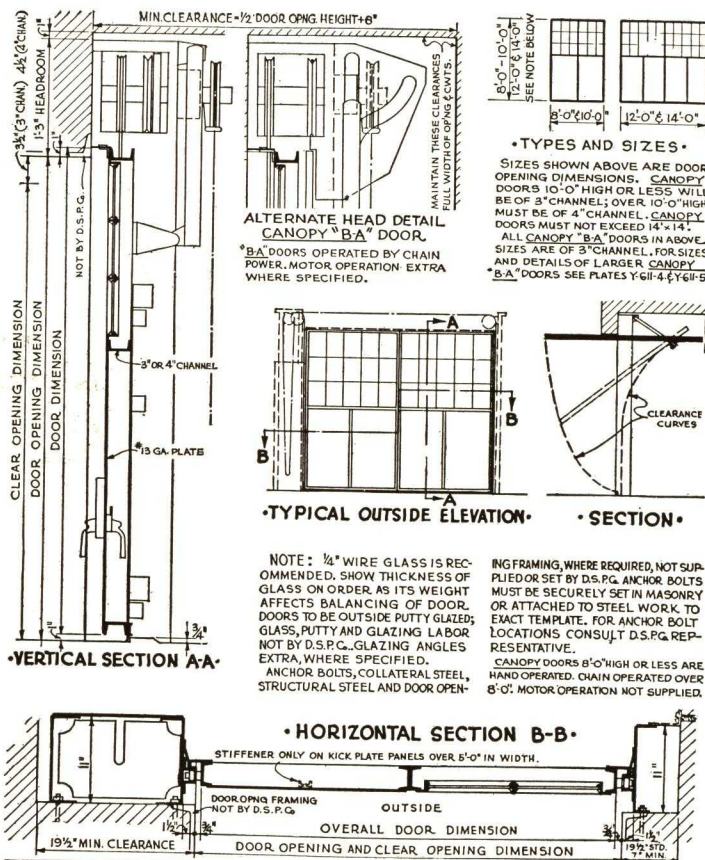
("Light" types not supplied. "Heavy" types have 3 in. channel stiles and rails for doors up to 14 ft. wide x 14 ft. high. 4 in. channel stiles and rails for doors when above 14 ft. in either dimension but under 18 ft. high; not over 20 ft. wide. 5 in. channel stiles and rails for doors when over 18 ft. high and not over 20 ft. wide. 6 in. channel stiles and rails for doors over 20 ft. 0 in. wide.)

Particularly applicable to service garages, warehouses and terminals due to its automatic locking and unlocking device and its vertical rise of 4 in. clearing snow and ice.

By the use of intermediate cables, the door becomes applicable to larger openings such as are frequently found in fire engine houses, railroad round houses, street car barns and highway bus garages.

Designed as a single leaf, shop fabricated in sections and field assembled. Frame corners mitered, welded and ground smooth. Secondary members, coped and welded. Lower section covered with 13-gauge steel approximately 5 ft. high. Upper section fitted with $1\frac{3}{8}$ in. steel window frames outside glazed with spring glazing clips and putty. Power is hand controlled, chain and chain wheel being standard (electric equipment at extra cost).

Hardware includes lateral locking bolts at the operator jamb and automatic toggle bolts at the sill. These bolts lock automatically as the door closes and unlock as it opens. Cylinder locks not supplied.



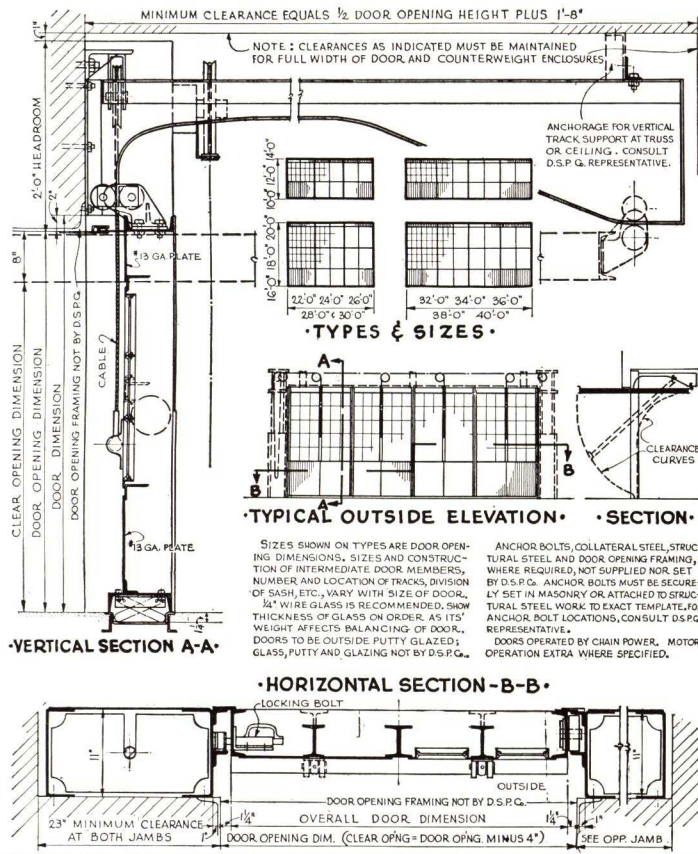
CANOPY DOORS ~ 3" & 4" CHANNEL TYPE

Y-600-6

CANOPY "B.A." DOORS 4" & 5" CHANNEL

Y-611-4

ACCORDION DOORS



CANOPY "B.A." DOORS 6" CHANNEL Y-611-5

ROLLING DOORS FOR HANGARS

Rolling Doors for Airplane Hangars are made in the following types: $2\frac{1}{2} \times 2\frac{1}{2}$ in. tube or 3 in. channel for openings from 12 to 18 ft. high. $3 \times 2\frac{1}{2}$ in. tube or 4 in. channel for openings from 18 to 22 ft. high. $4 \times 2\frac{1}{2}$ in. tube or 5 in. channel for openings from 22 to 28 ft. high.

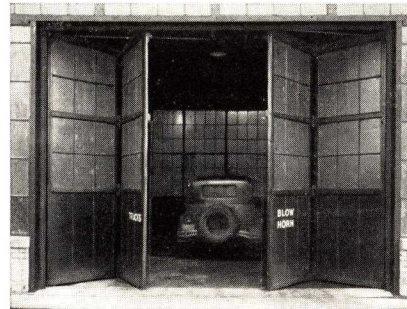
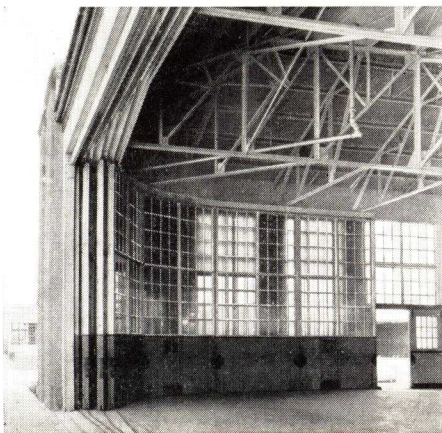
All Rolling Door Leaves are made 10 ft. 1 in. wide to provide 1 in. lap of leaves. Each door leaf is equipped with two vertically adjustable bottom rollers machined to a 16 lb. rail, and at top with two guide rollers.

Rolling Doors may be opened in either of two ways.

(1) They may roll on straight tracks and nest into pockets or "A" frames at the sides of the door opening. This is called the "Straight Slide" Type.

(2) They may roll on curved tracks around the corner of the hangar and rest when fully open, along the side walls of the structure. This is called the "Round-the-Corner" Type.

Illustration at right shows Round-the-Corner Doors in fully opened position.



Fenestra "Accordion" Doors.

("Light" types are of 14 ga., $5 \times 1\frac{3}{4}$ in. pressed tubes, for openings up to 16 ft. wide by 15 ft. high. "Heavy" types are of $3 \times 2\frac{1}{2}$ in. rectangular tubing, for openings over 12 x 10 ft. up to openings 22 x 22 ft.)

Built for heavy and constant usage in railway structures, mills,

warehouses, bus terminals, garages, shops, round houses and stations whenever openings require doors of more than ordinary width or height. Doors usually are made four leaves per opening, hinged at jambs and foldings against each other with free or active leaves suspended on trolleys from overhead track.

(Special arrangements of 3, 4, 5 or 6 leaf construction can be furnished. Also special pilot doors not over 3 x 7 ft.)

Construction is similar to Fenestra Industrial Doors. Hardware includes heavy, flat steel hinges with full knuckles and steel hinge pins; overhead channel track, extension track brackets, four-wheel roller bearing trolleys, Japanned steel safety hasp and keeper, hand pulls, chain bolts and foot bolts as required. Cylinder locks at extra cost but only on a free side-hinged leaf in an opening containing 3, 5 or 6 leaves.

Cylinder locks not furnished for doors over 10 ft. 0 in. high. Glass, padlocks, flashing or hoods are not supplied. Doors may be operated manually or may be electrically operated and connected to remote control stations, if so specified.

ADDITIONAL INFORMATION AVAILABLE

Due to the variety of products covered in this catalog, their descriptions and details are of necessity condensed. Available on request are catalogs with complete information, full size sections and large scale details of construction and installation for each type of Fenestra window or door. Additional literature, supplied on request, covers in detail: Operating Devices; Design and Function of Door Locks; Machining for Hardware in Door Frames not by Detroit Steel Products Co.; Location Diagrams for Attachment Holes and Anchor Bolts for Counterweighted Doors; Technical data on Bonderizing, Lighting and Ventilation.

Fenestra maintains a staff of experienced engineers and designers whose services are at the disposal of Architects. A consultation with a Fenestra representative at an early stage in the design of a project will often effect economies in installations of Windows or Doors or solve problems of Light, Ventilation or Operation.

DETROIT STEEL PRODUCTS COMPANY

America's Oldest and Largest Steel Window Manufacturer

Local Representatives in 200 Principal Cities. See "FENESTRA
STEEL WINDOW CO." in the local Telephone Directory.

FACTORY BRANCH OFFICES

BOSTON	38 Chauncy St.
CHICAGO	840 N. Michigan Ave.
CINCINNATI	1507-11 Central Parkway
CLEVELAND	1808 St. Clair Ave., N. E.
DALLAS	2310 Griffin St.
DETROIT	2250 E. Grand Boulevard
LOS ANGELES	2530 E. 14th St.
NEW YORK	420 Lexington Ave.
NEWARK	1027 Broad St.
OAKLAND	63rd & Doyle Sts.
PHILADELPHIA	1200 S. 35th St.
PITTSBURGH	434 Melwood St.
SAN FRANCISCO	111 Sutter St.
WASHINGTON	4th & Channing Sts., N. E.

Fenestra

STEEL WINDOWS AND DOORS

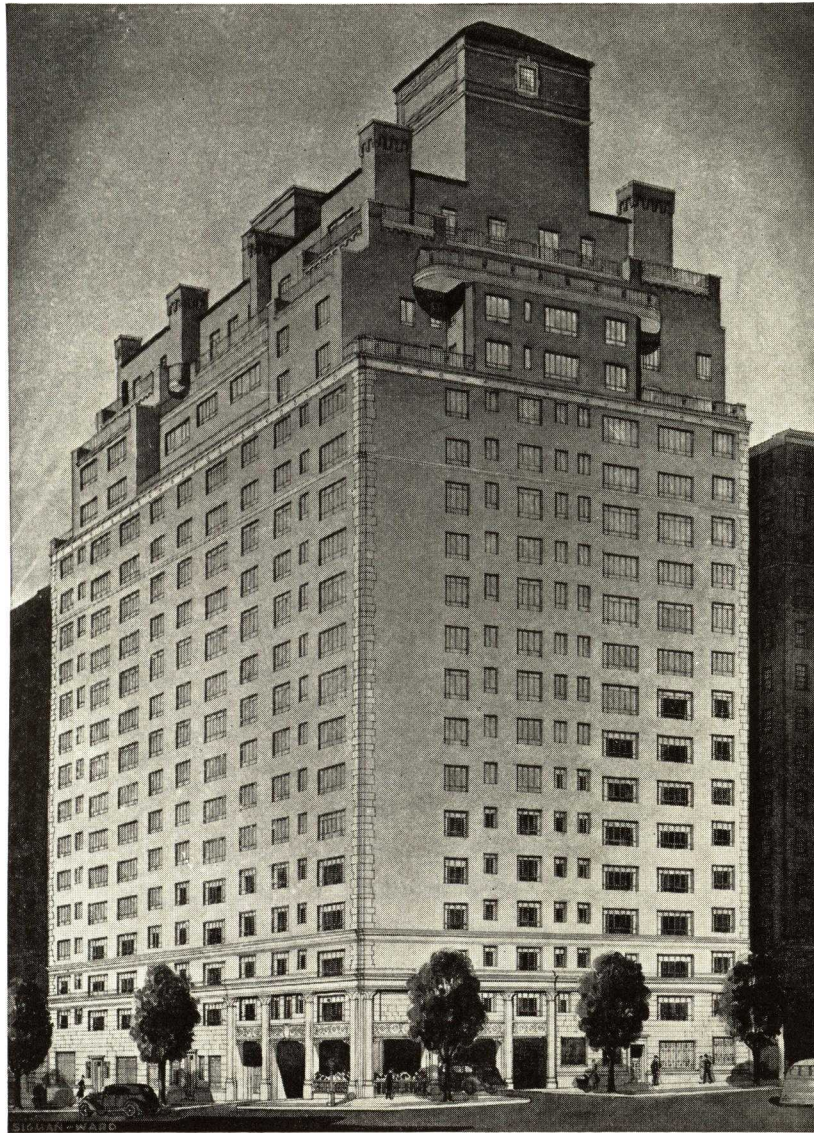
MICHAEL FLYNN MANUFACTURING CO.

SUCCESSORS TO DAVID LUPTON'S SONS COMPANY

Manufacturers of Lupton Steel Windows and Doors
Allegheny Avenue at Tulip Street, PHILADELPHIA, PA.

BRANCH OFFICES: 51 East 42nd Street, New York, N. Y., and 427 Linz Building, Dallas, Tex.

Sales Representatives in Other Principal Cities



New

A rust-resisting, aluminum priming paint is now standard for all Lupton Casements. This new process was adopted after rigorous tests proved its ability to withstand, successfully, rough usage and extreme exposure. Its surface and light color make an ideal base for finish painting.

Two Sutton Place, South,
located at 57th Street
and Sutton Place, New
York, N. Y.

A modern apartment
house equipped with LUP-
TON Casements

EMERY ROTH & SONS,
Architects

C. B. ROSS COMPANY,
Inc., Contractors

PRODUCTS

MASTER CASEMENTS
MASTER OFFICE WINDOWS
MASTER PROJECTED WINDOWS
CASEMENT DOORS
RESIDENCE CASEMENTS
BASEMENT and UTILITY WINDOWS
ARCHITECTURAL PROJECTED WINDOWS
DETENTION WINDOWS



COMMERCIAL PROJECTED WINDOWS
PIVOTED WINDOWS
UNDERWRITERS' LABELED WINDOWS
CONTINUOUS WINDOWS
WINDOW OPERATING DEVICES
ROLLED STEEL SKYLIGHTS
INDUSTRIAL DOORS
AIRPLANE HANGAR DOORS

Catalogs containing full details of our products will be sent on request to any LUPTON sales office or sales representative.

THE FLOUR CITY ORNAMENTAL IRON CO.

Artisans in All Metals

2637 27th Avenue South, MINNEAPOLIS, MINN.

ESTABLISHED 1893

REPRESENTATIVES IN PRINCIPAL CITIES

ALUMINUM AND BRONZE—DOUBLE HUNG AND CASEMENT WINDOWS

Architecturally Distinctive— Mechanically Complete

Only within the last five years has it been possible to manufacture non-ferrous windows on a "value received" basis—that is, high quality and efficiency at a reasonable first and ultimate cost. This fact is due to the recent mill developments in drawing and extruding of sections. The new "FLOUR CITY" windows are designed to take full advantage of these developments and therefore offer the greatest window value obtainable. This is true today, and because of the constant watch of competent engineers for new materials and methods, will be equally true in the future.

Note These Distinctive "FLOUR CITY" Features

All exposed parts are of either aluminum or bronze.—Flush type jambs and head, eliminating deep sash runways and pockets, making it possible to conceal sash balance faces, tapes, weatherstrips and all other operating hardware within the jamb construction,—yet these parts are all easily accessible for adjustment or removal should occasion arise.—Jamb weatherstrips interposed between sash and parting strip provide a bearing member between sash and frame (positively necessary on aluminum windows).—Patented sash positioning devices function with a minimum of friction and make possible the ease of operation outstanding in "FLOUR CITY" windows.

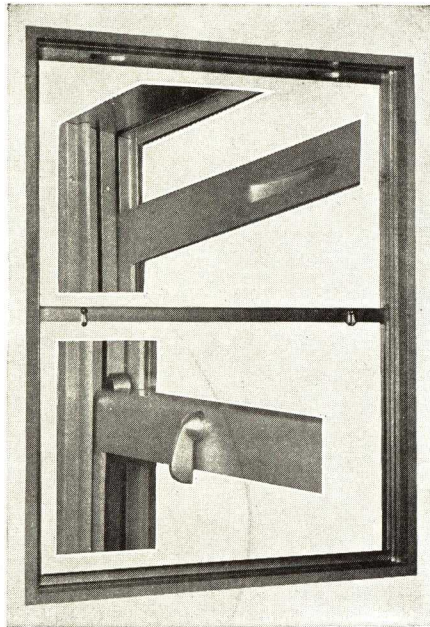
Patented non-jamming retracting cam locks (two on each window) built into face of check rails replace the old fashioned type mounted on top of rail.—Metal weatherstrips located to avoid damage from freezing of condensation moisture.—Heavy steel sub-frames with integral plaster grounds (also available with integral interior casings).—Overhead spring balances of improved design.—Sash pulls of upper sash make it possible to lower this sash without first opening the lower sash.—All weatherstripping so arranged to function fully even though windows are not entirely closed and locked.

"FLOUR CITY" double hung and casement windows far exceed today's most rigid specification requirements relative to air infiltration (copies of independent laboratory reports are available).

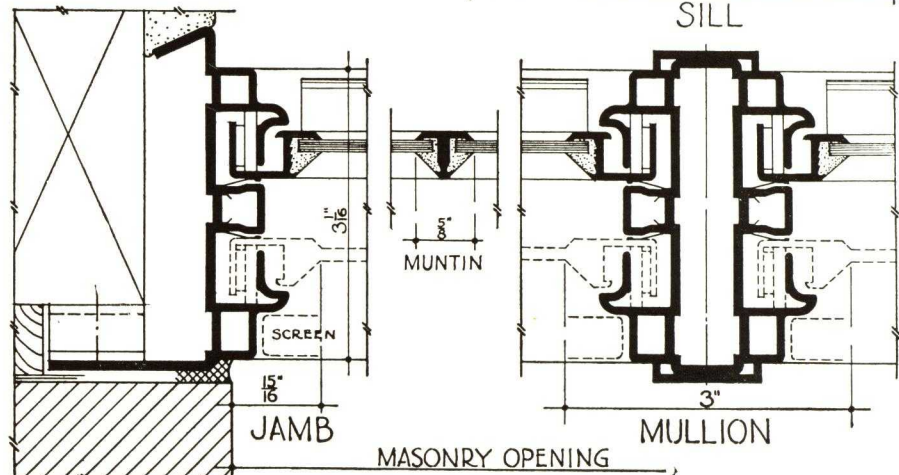
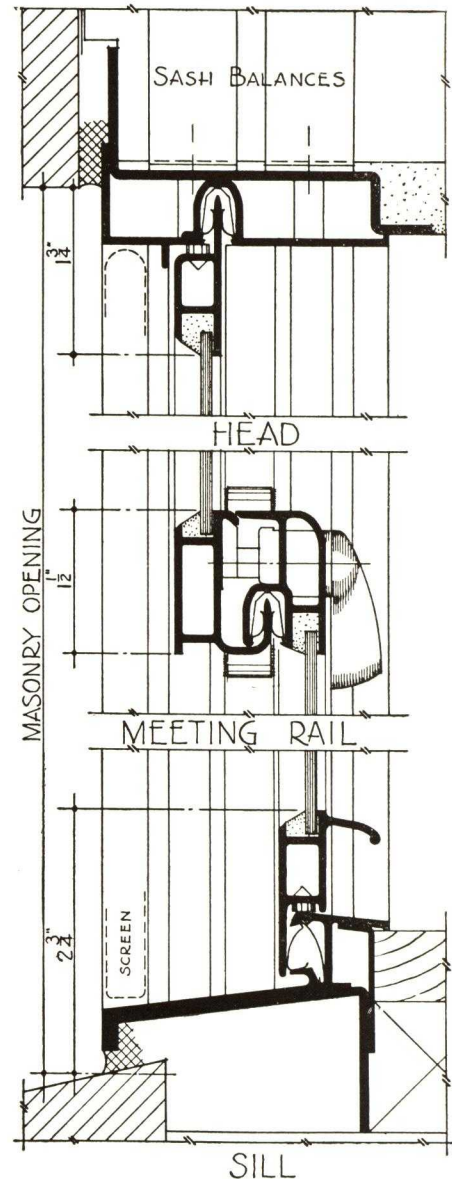
"FLOUR CITY" windows are available in all standard finishes.

!FLOUR·CITY!

PATENTED AND PATS. APPLIED FOR



Photos and scale details are of the "FLOUR CITY" Type A10 Light Aluminum Double Hung Window. Full size details and specifications for this and other "FLOUR CITY" double hung and casement windows in both bronze and aluminum are available to architects and builders.



"FLOUR CITY" ORNAMENTAL METAL WORK

The greatest value to your client of his building appropriation requires correct choice of materials with details and specifications appropriate to their several advantages and limitations.

In the field of ornamental metal work many materials are available. There are cast iron, wrought iron and steel; bronze, nickel silver and aluminum in cast, wrought and extruded forms; monel and stainless steel; copper, lead and brass—each with its own technique which must be followed if the available appropriation is to be wisely expended.

To aid architects and owners in selection of metals, preparation of details and specifications, this company has long maintained a *Consultation Service* which many have found helpful. This service is available without obligation.

With an experienced personnel and a complete plant for production in all metals, this company has specialized in fine metal work for more than forty-five years. Plant facilities include patterns and modeling; iron, bronze and aluminum foundries; ample fitting shops with modern machines, and complete welding and forming apparatus; enameling ovens and spraying equipment for finishing iron and steel; bronze coloring and finishing; and a most complete plant for applying aluminite finish to aluminum. The aluminite plant will accommodate pieces as large as can be handled and shipped.

Every step from preparation of shop drawings and designs through final finishing and erection in the field is handled by the one competent organization. Only by such unified control can quality, prompt deliveries and ultimate satisfaction be assured. An initial step toward the realization of this result is the insertion of a clause such as the following in the ornamental section of the specification.

"Ornamental metal (bronze, iron, aluminum) shall be executed by a contractor having complete plant facilities for fabricating and finishing and whose product is exclusively fine metal work. No contract for ornamental metal shall be negotiated without the approval of the architect."



Bronze Doors at South Entrance Annex to Library of Congress, Washington, D. C.

Three east and three west entrances have similar doors with variant details. DAVID LYNN—PIERSON & WILSON, Architects

A FEW RECENT "FLOUR CITY" INSTALLATIONS

The following brief list of a few recent contracts will serve to indicate the scope of the company's activities.

<i>Building</i>	<i>Location</i>	<i>Architect</i>
Finance Building-Capitol Group	Harrisburg, Pa.	Gehron & Ross
Annex to Library of Congress	Washington, D. C.	David Lynn—Pierson & Wilson
City Hall	Kansas City, Mo.	Wight & Wight
Federal Courthouse	Kansas City, Mo.	Wight & Wight
Exhibit Building	Shreveport, La.	Edward F. Neild
Ford Tool & Die Shop	Dearborn, Mich.	Giffels & Vallet—L. Rossetti
Third Wing Memorial Union	Madison, Wis.	Corbett & MacMurray
Western State Psychiatric Hospital	Pittsburgh, Pa.	Raymond M. Marlier
U. S. Post Office	Evanston, Ill.	John C. Bollenbacher
U. S. Post Office	Miami Beach, Fla.	Howard L. Cheney
Municipal Auditorium	Kansas City, Mo.	Gentry, Voskamp & Neville
Municipal Auditorium	Little Rock, Ark.	Eugene John Stern } Associated
		Wittenberg & Delony }
		G. E. Wiley
Pulaski High School	Milwaukee, Wis.	Walker & Weeks—Cleveland
Ford Building Alterations	Detroit, Mich.	

HERRMANN & GRACE CO.

Manufacturers of "Alumex" Extruded Aluminum Double Hung Windows

FACTORY AND MAIN OFFICE

671-689 Bergen Street, BROOKLYN, N. Y.

"ALUMEX" EXTRUDED ALUMINUM DOUBLE HUNG WINDOWS

Material

ALUMEX windows are made of extruded 53 ST-5 aluminum having a tensile strength of 22,000 pounds per square inch.

Construction

ALUMEX windows are entirely constructed with mitred and welded corners, thus giving additional strength to the members. The aluminum frame is attached to a steel sub-frame which is an integral part of the window and sash are installed in the guide strip.

The sash are operated by *spring balances* in dust-proof housings.

The head of the window is constructed so that the spring balances are easily removable, which is an added feature of the window.

All parts of the window are made of extruded sections and mitres are cut by special machines, thus insuring perfect alignment.

Weatherstripping

The bottom rail of the sash is so constructed that it fits snugly over the sill member, making an absolutely tight sill. The sash are weatherstripped with zinc in all sliding parts, which makes the sash weather-tight and insures ease of operation.

Glazing

Glass is secured in place by an improved glass stop which fits into a groove, insuring rigidity.

Glass may be divided with muntins as desired.

Hardware

Sash locks and lifts are made of solid white metal to match the aluminum, and are of our own standard design.

Screens and Shades

ALUMEX windows are designed to receive screens and shade brackets.

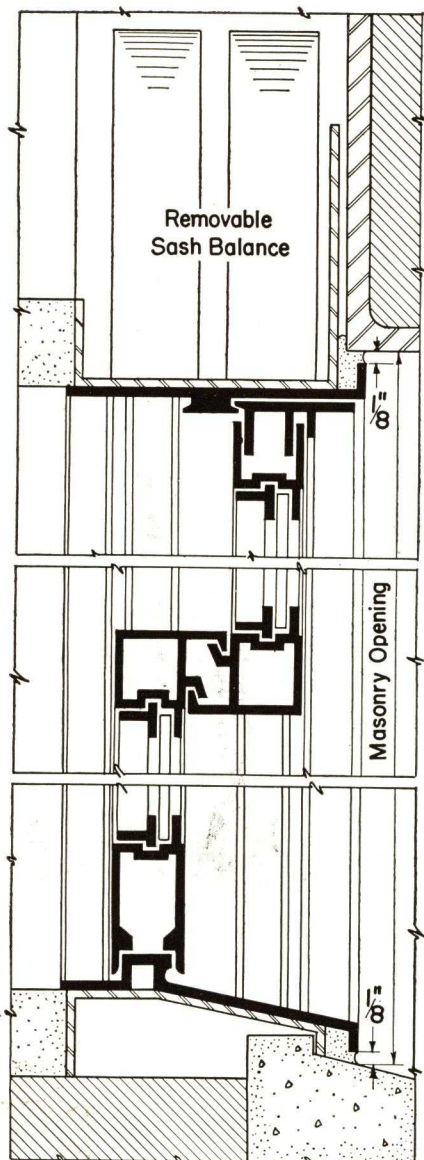
Salient Features

Sash are easily glazed.

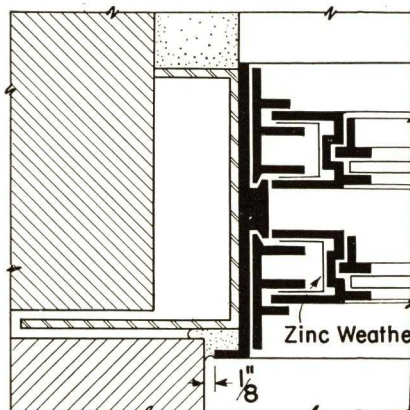
The outstanding feature of aluminum is its resistance to atmospheric corrosion.

Narrow members of window insure admittance of more light. Designed for use in either brick or wood construction.

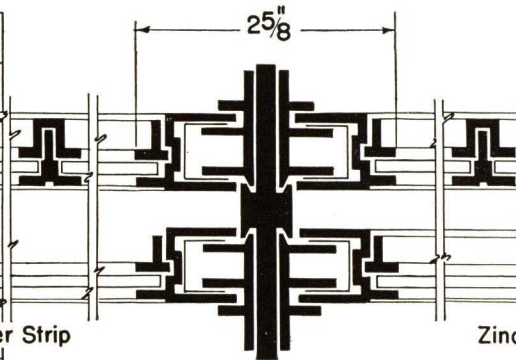
Windows can be grouped with mullions between, and the width of the mullion is only $2\frac{5}{8}$ inches from glass to glass.



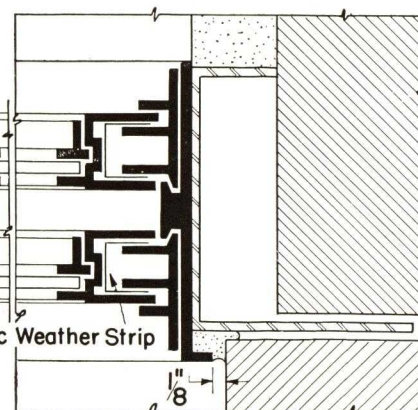
SECTION THROUGH HEAD MEETING
RAIL AND SILL



PLAN A OF JAMB



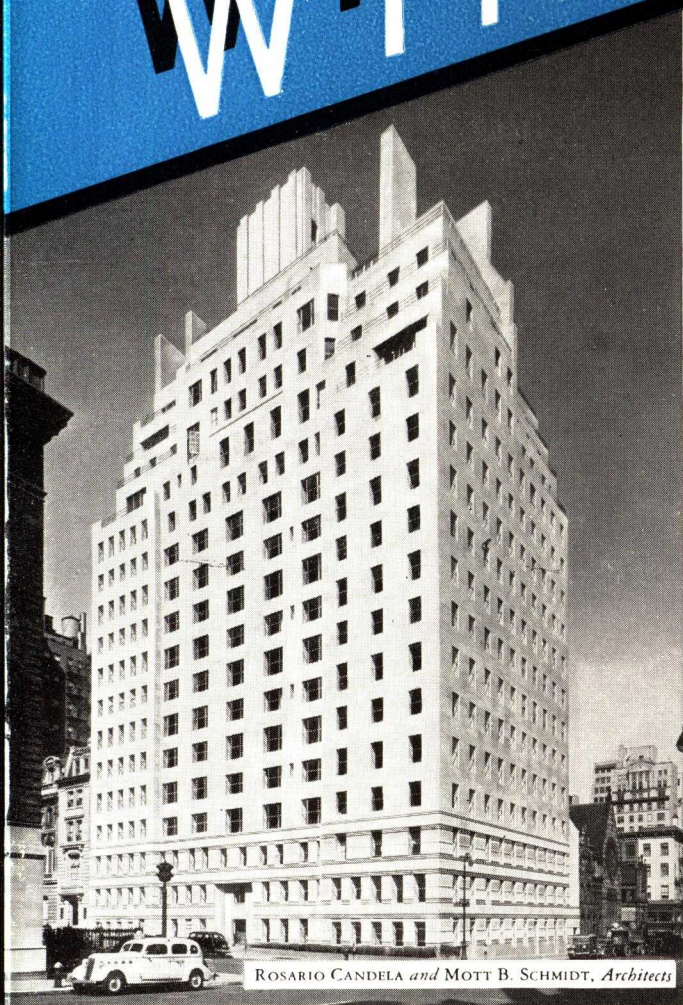
PLAN OF MULLION AND MUNTINS
ONE-HALF SIZE DETAIL



PLAN B OF JAMB



WINDOWS



ROSARIO CANDELA and MOTT B. SCHMIDT, Architects



CASS GILBERT, Architect Photo © Wurts Bros., N.Y.

BRONZE OR
ALUMINUM

•
CASEMENT OR
DOUBLE HUNG



GENERAL BRONZE CORPORATION

34-19 TENTH STREET LONG ISLAND CITY, N.Y.

WINDOWS BY GENERAL BRONZE

(PEREMI PATENTS)

(POLACHEK PATENTS)

BRONZE, ALUMINUM, STAINLESS STEEL

Permatite Double Hung	—Pages 3, 6, 8, 9, 10	Permatite Hardware	—Page 5
Permatite Pivoted	—Page 3	Polachek—For heavy duty required in extra large and monumental buildings—	Pages 12-15
Permatite Casement	—Pages 4, 5, 7, 8, 10, 11	Polachek Double Hung	—Pages 12, 15
Permatite Projected	—Page 4	Polachek Casement	—Pages 12-14
Permatite Reversible	—Page 4	Polachek Casement Doors	—Page 14
Permatite Doors, Transoms, Sidelights, Basement and Utility Windows	—Page 5		

For residences, apartment houses and public buildings—where economical maintenance, high efficiency and low first cost are of equal importance

OUTSTANDING FEATURES

Sturdy, all-metal construction

—no felt or rubber to harden or deteriorate.

Continuous resilient weatherstripping

—of special metal alloy; insuring a completely air- and water-tight seal throughout the entire perimeter of sash.

Seamless tubular construction

—with solidly reinforced corners; sash will never sag or get out of alignment with frames.

All parts extruded

—no sheet metal used on any window shown in this catalog.

Continuous glazing key

—around glass opening; receives and keys glazing compound to its bed; protects from weather deterioration.

Specially designed hardware

—sturdy, smooth-operating, of solid bronze, finished to match windows; built to last a lifetime.

No rusting, no painting, no upkeep

—will not wear out; require no replacements; do not leak air; reduce fuel and air-conditioning bills; eliminate drafts and cold spots.

Narrow sash and frame members

—increase glass area; admit more light without increasing window size.

No dirt pockets

—in sash or frame; weatherstrip seals frame rebates when windows are open.

Heavy sub-frame

—of steel (or non-ferrous metal, if desired)—with integrally formed weatherfin; completely encircling window; insulated from bronze or aluminum frame.

LABORATORY TESTS FOR AIR INFILTRATION

Permatite Windows—both casement and double hung—were tested for air infiltration in the Laboratory of the Daniel Guggenheim School of Aeronautics, at New York University. The casement windows failed to register any measurable amount of air infiltration, even at a wind velocity of 40 miles

per hour. The double hung windows—at 40 miles per hour wind velocity—registered an air infiltration of 0.4 of a cubic foot per minute—less than one-third of the air leakage allowed by Government specifications for a wind velocity of only 25 miles per hour.

GENERAL BRONZE CORPORATION

34 · 19 TENTH STREET

LONG ISLAND CITY, N.Y.

Architectural Metal Work · Windows · Revolving Doors · Tablets





DOUBLE HUNG WINDOWS

Of all types of windows, the Double Hung is unquestionably the most universally usable. Tubular construction—in Permatite Windows—provides the maximum of strength with the maximum of glass area. Resilient metal weatherstrips form a continuous, positive air seal around the entire sash perimeter. For details, Pages 6 and 8. For specifications, Pages 9 and 10. Permatite Double Hung Windows are made in many standard sizes (Page 9) and in other sizes to order. Muntins may be omitted or arranged as preferred.

PIVOTED WINDOWS

This type of window combines the advantages of 100% ventilation with obvious ease of cleaning. Hardware, with the exception of the lock, is concealed within the frame members. All the outstanding features of Permatite Windows listed at the left, are embodied in these Pivoted Windows. Muntins may be omitted or arranged as preferred. Write for full size details and specifications for any type of building and building construction.



OF SPECIAL IMPORTANCE . . . This catalog presents but a few of the various types of General Bronze Windows. We invite you to take up with us your window problems, when we may also inform you as to further additions to our line.

Permatite Windows are made in standard, heavy and extra heavy weights—for a wide range of installations in residences, apartment houses, schools and institutional buildings.

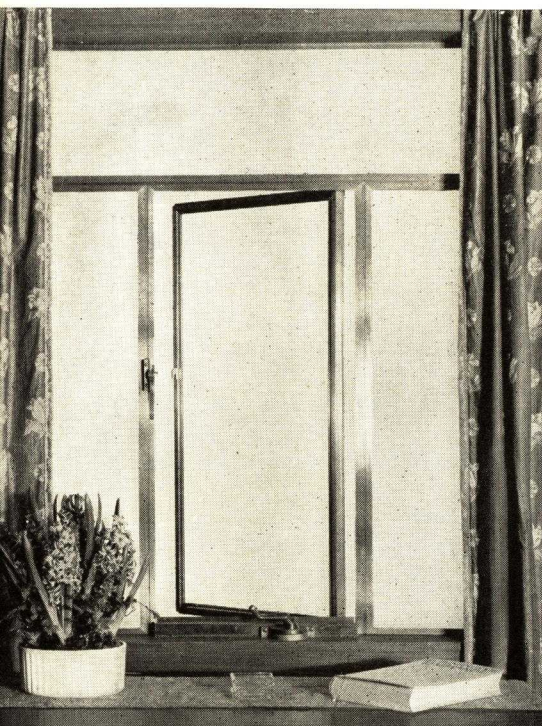
Polachek Windows meet the need for extra heavy duty in very large and monumental buildings. Complete details for any installation of windows, doors, transoms and sidelights will be supplied on request.

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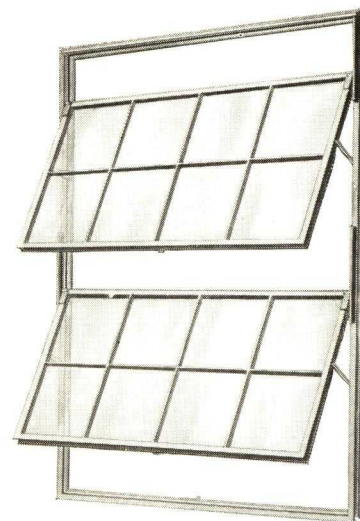


CASEMENT WINDOWS

Permatite Casement Windows offer the greatest variety in treatment. In appearance these windows contribute to architectural design, whether viewed from within or without. Combining easy operation and sure, tight closing, they provide lasting satisfaction. All sash rails are of seamless tubing; extruded members are further processed by drawing through forming dies to insure absolute accuracy. Specifications for Casement Windows are given on Pages 10 and 11; details on Pages 7 and 8; standard sizes on Page 11. In addition to the standard sizes shown, Permatite Casement Windows are made in other sizes to order. Muntins may be omitted or arranged as preferred.

PROJECTED WINDOWS

School Boards have shown a strong preference for the projected type window. With a shade fastened to the sash, this window serves as its own awning. Easy adjustment permits maximum openings, or any degree of ventilation. Narrow members, due to sturdy tubular construction, insure maximum light. Muntins may be omitted or arranged as preferred. Write for full size details and specifications for any type of building and building construction.

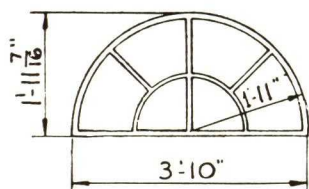


REVERSIBLE WINDOWS

The illustration shows the upper sash open for ventilation and the lower sash in reversed position for cleaning. Both sashes may be in the same position at the same time. This type of window is likewise popular with School Boards, largely on the theory that the reversible feature reduces the risk of persons falling out. Ease in cleaning is obvious. Hardware is extremely rigid and easy to operate in all kinds of weather. Muntins may be omitted or arranged as preferred. Write for full size details and specifications for any type of building and building construction.



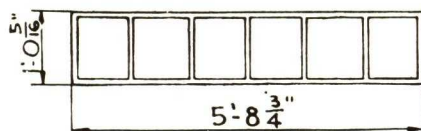
DOORS, TRANSOMS & SIDELIGHTS



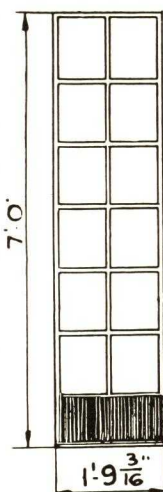
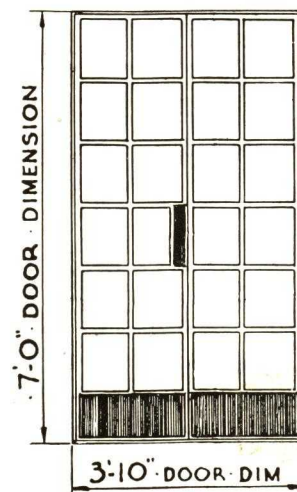
CH 4 D TRANSOM

All the features of Permatite design and construction are embodied in Permatite Casement Doors, Transoms and Sidelights. These are available in aluminum or bronze. On doors,

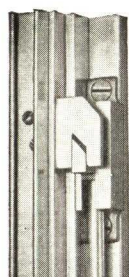
the weatherstripping is so arranged that the air seal contacts between door and frame are continued across the sill; completely eliminating water blowing through beneath the door . . . Completing a full range of architectural requirements, General Bronze similarly offers Basement and Utility Windows and Bottom Ventilators of Permatite construction.



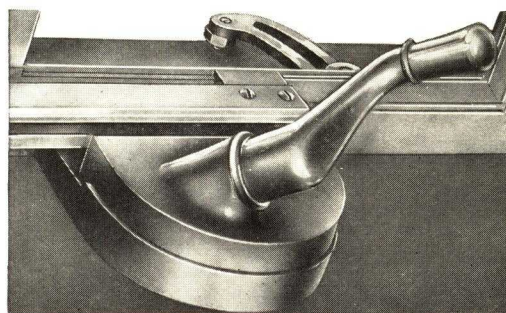
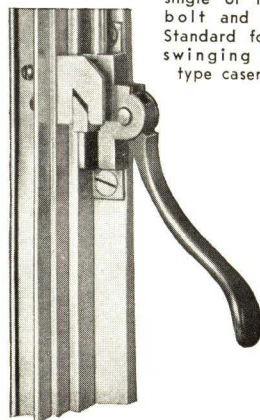
61 D TRANSOM

27 D
SIDELIGHTSTANDARD DOOR
STOCK SIZE

WINDOW HARDWARE



Lever handled locking device with single or multiple bolt and keeper. Standard for out-swinging screen type casements.



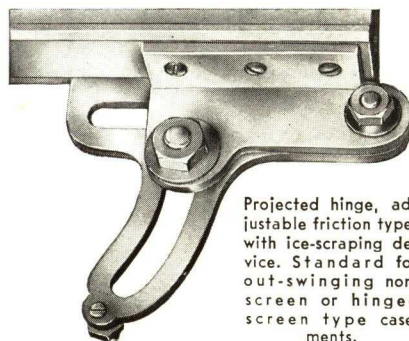
Worm and gear sash operator. Standard for out-swinging screen type casements.



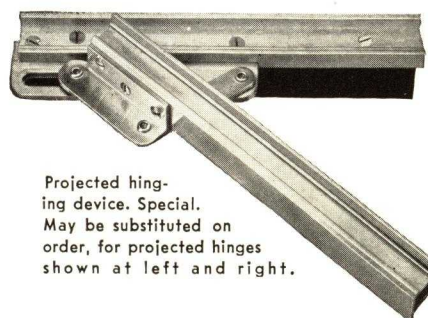
Telescoping bar sash adjuster with positive locking device. Standard for out-swinging screen type casements over bottom ventilator sash.



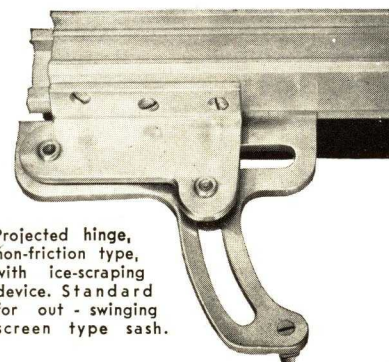
Lever handled multiple cam lock. Standard for out-swinging non-screen or hinged screen type casements.



Projected hinge, adjustable friction type, with ice-scraping device. Standard for out-swinging non-screen or hinged screen type casements.



Projected hinging device. Special. May be substituted on order, for projected hinges shown at left and right.



Projected hinge, non-friction type, with ice-scraping device. Standard for out-swinging screen type sash.

GENERAL BRONZE CORPORATION

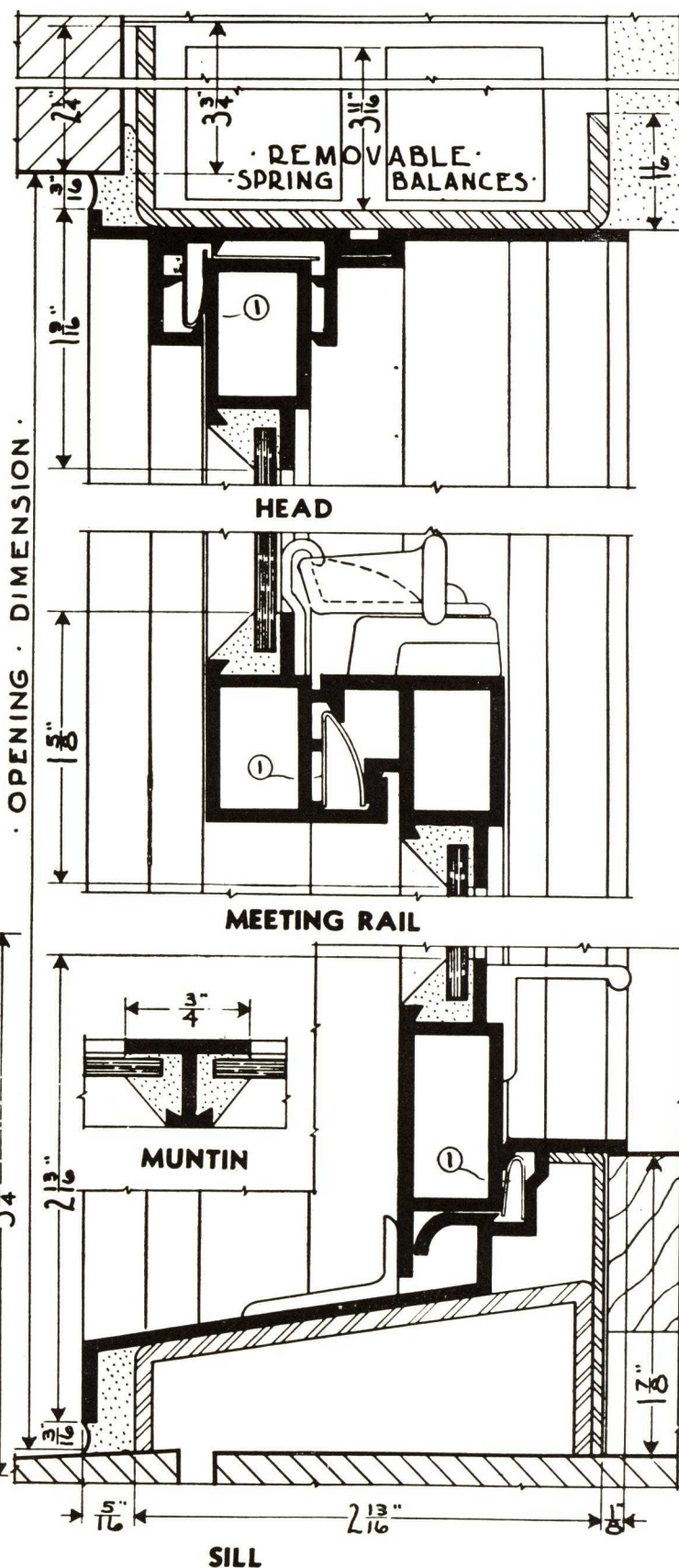
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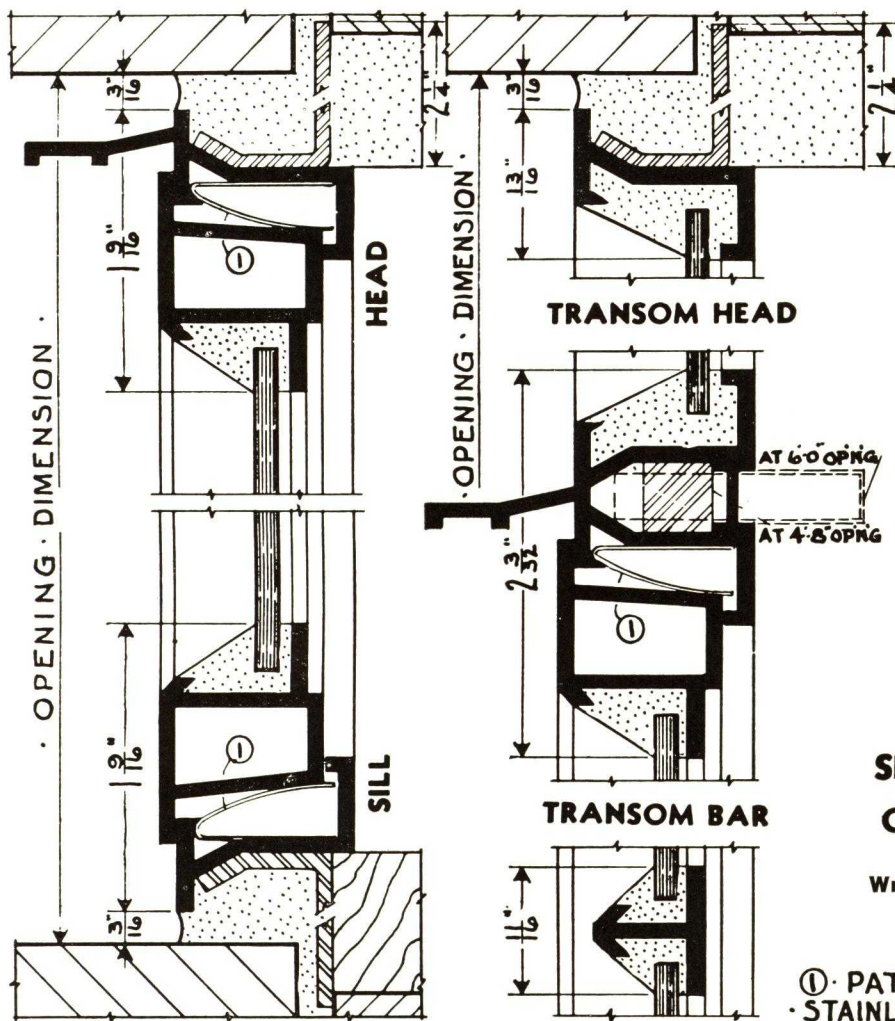




Write for details of heavier types.

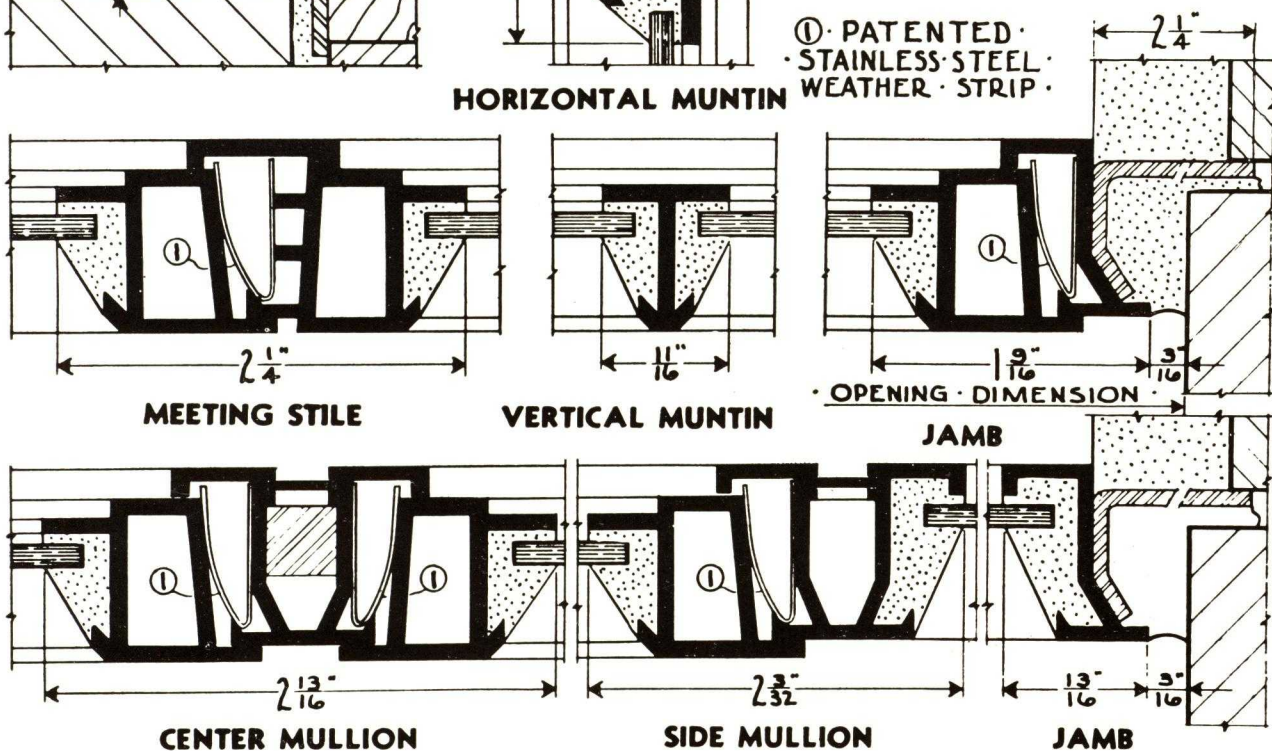


PERMATITE WINDOWS



SERIES K1 ALUMINUM CASEMENT WINDOW

Write for details of heavier types.



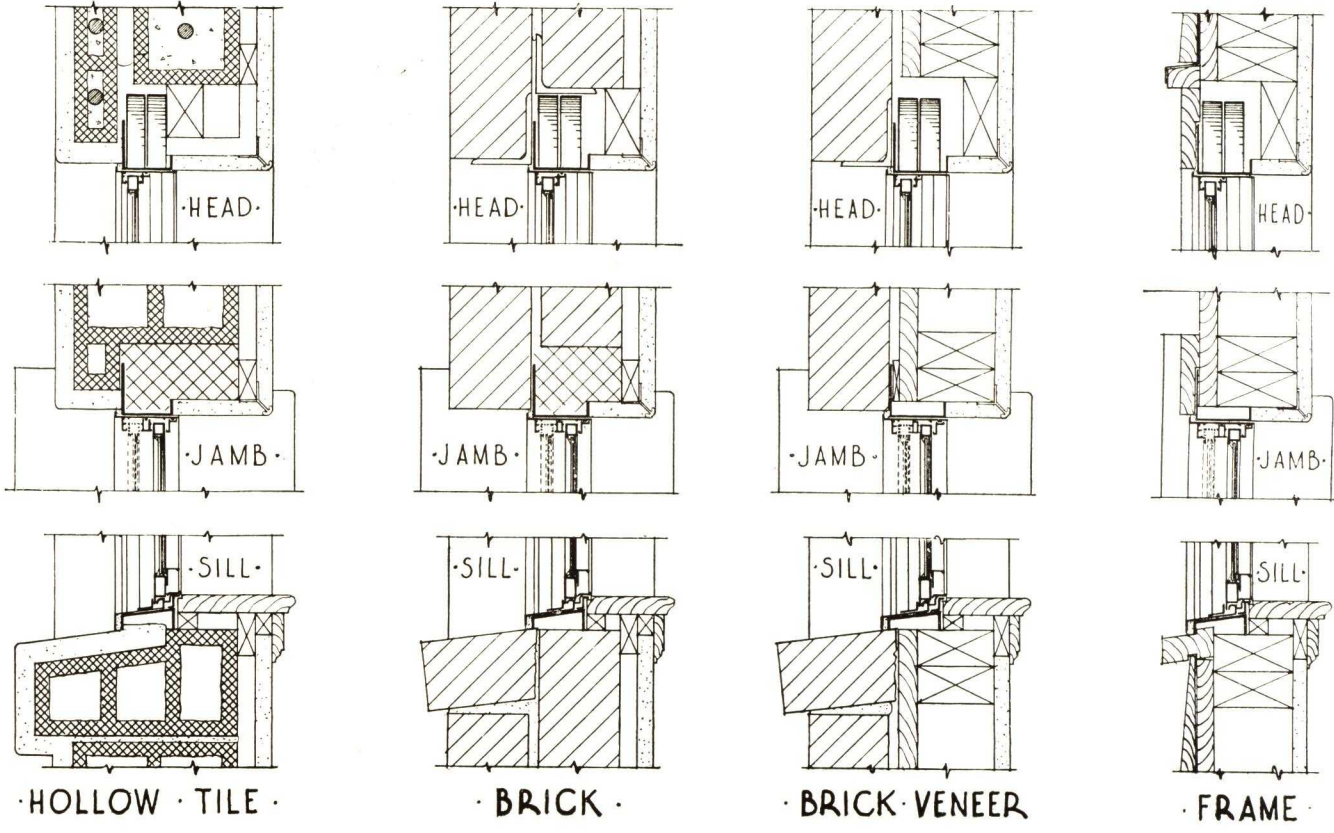
GENERAL BRONZE CORPORATION

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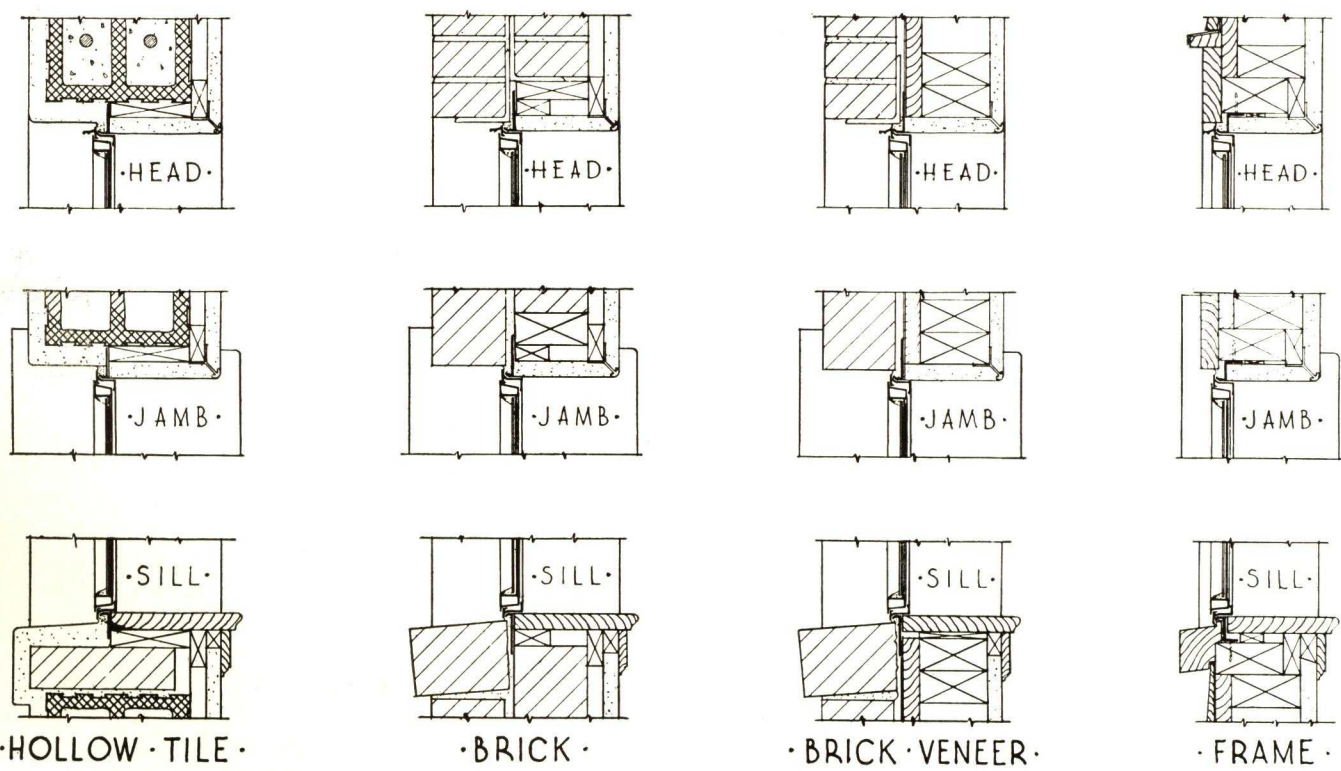
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INSTALLATION DETAILS FOR DOUBLE HUNG WINDOWS



INSTALLATION DETAILS FOR CASEMENT WINDOWS



GENERAL BRONZE CORPORATION

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STANDARD SPECIFICATIONS..DOUBLE HUNG WINDOWS

1. Scope of Work: This contractor shall furnish PERMATITE Series "H" bronze (or aluminum) Double Hung Windows, including all hardware and steel sub-frames, as manufactured by General Bronze Corporation, Long Island City, New York, for all window openings shown on Architect's drawings for (Here insert extent of windows which are to be bronze or aluminum.)

2. Materials: Except as is hereinafter specified, all parts of window frames and sash shall be of solid bronze (or aluminum). All frame members shall be extruded bronze (or aluminum) not less than #12 B & S gauge. Stiles and rails of all sash shall be of seamless bronze tubing of #17 B & S gauge (or if aluminum of #12 B & S gauge).

Finished members of sash and frames shall be true to dies and all moulded sections shall have clean sharp arrises, free from twists, bends or other imperfections. After extrusion, each piece shall be drawn through forming dies to insure absolute straightness and uniform thickness throughout its length.

Weatherstripping shall be of hard resilient special metal alloy of the required thickness to resist movement from the pressure exerted by wind at a velocity of 60 miles per hour.

Each window shall be provided with steel sub-frame, formed into special channel shape from #12 U. S. gauge blue annealed sheet; welded at corners into a continuous frame.

3. Design, Construction and Workmanship: Jamb, head and sill members of frames shall be designed to provide integrally formed pockets to receive and retain the metal weatherstripping in such manner that no raw edge of same will be exposed. Weatherstripping at jambs and head shall be so formed and positioned as to provide two continuous lines of flexible but positively sealing contact between frame and closed sash without in any way binding the sash when operated. Similar weatherstrips shall be housed in the sill of the frame and in the meeting rail of the upper sash to form continuous sealed contact with top and bottom rails of lower sash. Weatherstripping and its housings shall be so formed that strips may be readily removed or replaced without dismantling the window.

Tubular stiles and rails of sash shall be seamless, designed with overlapping flanges to effect face contacts with the frame members and so formed as to provide a continuous wedge shaped groove all around the sash opening to effectively key the glazing putty in its bed and permanently retain it in place. The design of the sash and their engagement with the frames shall be such as to prevent the sash from rattling when in any position.

The outer flange of the steel channel sub-frames shall be extended to form a continuous fin or weather stop for the entire extent of the window jambs and head. Provide holes at proper spacings in these extended flanges to receive built-in anchors or

bolts, for anchoring windows to the walls. Removable access plates shall be provided in the heads of all window frames and sub-frames to afford access to sash balances.

All joints, copes and miters shall be precision machined and carefully fitted to create tight, hairline joints. All holes, slots, etc., shall be accurately drilled to template and holes for machine screws carefully tapped. Removable members such as parting strips, guide stops, access plates, etc., shall be accurately machined and shop fitted. All screws, bolts and rivets shall be made from special alloys to provide maximum strength at fastenings and, where exposed, shall match window material in color.

All material shall be carefully inspected before assembly to insure same has been accurately and thoroughly prepared. All surfaces of sub-frames shall be given a heavy coat of bitumastic paint before attaching non-ferrous frame members to same. Finish jambs, heads, and sills are to be riveted to corresponding members of sub-frames under pressure; then assembled into complete frame units by solidly welding each corner. After welding, all corners shall be filled with leak proof compound under 100 lb. air pressure. Stiles and rails of sash shall be assembled by welding or sweating together at corners which shall first be heavily reinforced. Ample reinforcements shall be built into the sash to receive the hardware.

Removable members shall be secured by special head machine screws of proper size and approved spacings. All other fastenings of exposed members shall be fully concealed.

(NOTE: If required, the following should also be included.)

Provide muntins, arranged as shown, neatly and accurately fitted and assembled at the shop. Intersections of muntins and between muntins and sash members shall be fully lapped to insure firm engagement.

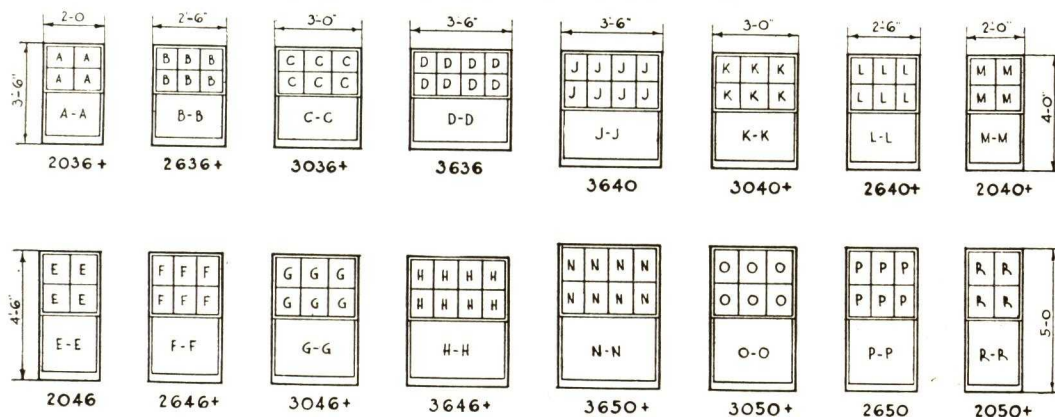
Provide, where shown, mullions between double-hung units amply and continuously reinforced with steel to insure rigidity. All contacts between mullions and steel reinforcements shall be fully insulated by an extra heavy coat of bitumastic paint, applied before mullion is assembled. Mullion jambs shall fully correspond with jambs hereinbefore specified.

4. Hardware: Each double hung window shall be equipped with four (4) completely housed adjustable sash balances, mounted within the head of the frame in such manner that the weight of the sash is not sustained by the fastening screws. Pulley tapes shall be of special alloy bronze to safely meet all strains to which they may be subjected. (If windows are aluminum, pulley tapes shall be of white metal.) All other parts of sash balances shall be of steel. Balances shall be removable. Sash tapes shall be firmly attached to sash rails by specially designed fasteners.

Each pair of double hung sash shall be fitted with solid bronze hardware consisting of the following: two sash lifts, one sash lock, one sash pull, two sash bumpers for upper sash, and two

PERMATITE DOUBLE HUNG WINDOWS

STANDARD SIZES OF SERIES H & H2



NOTE: Dimensions given are sizes of openings. Muntins may be omitted or arranged as preferred on special order. Types marked thus + stocked in Long Island City, N. Y., warehouse.

GLASS SIZES

A	10 $\frac{9}{16}$ x 9 $\frac{1}{16}$	A-A	21 $\frac{3}{8}$ x 18 $\frac{5}{16}$
B	8 $\frac{15}{16}$ x 9 $\frac{1}{16}$	B-B	27 $\frac{3}{8}$ x 18 $\frac{5}{16}$
C	10 $\frac{15}{16}$ x 9 $\frac{1}{16}$	C-C	33 $\frac{3}{8}$ x 18 $\frac{5}{16}$
D	9 $\frac{5}{8}$ x 9 $\frac{1}{16}$	D-D	39 $\frac{3}{8}$ x 18 $\frac{5}{16}$
E	10 $\frac{9}{16}$ x 12 $\frac{1}{16}$	E-E	21 $\frac{3}{8}$ x 24 $\frac{5}{16}$
F	8 $\frac{15}{16}$ x 12 $\frac{1}{16}$	F-F	27 $\frac{3}{8}$ x 24 $\frac{5}{16}$
G	10 $\frac{15}{16}$ x 12 $\frac{1}{16}$	G-G	33 $\frac{3}{8}$ x 24 $\frac{5}{16}$
H	9 $\frac{5}{8}$ x 12 $\frac{1}{16}$	H-H	39 $\frac{3}{8}$ x 24 $\frac{5}{16}$
J	9 $\frac{5}{8}$ x 10 $\frac{3}{16}$	J-J	39 $\frac{3}{8}$ x 21 $\frac{5}{16}$
K	10 $\frac{15}{16}$ x 10 $\frac{3}{16}$	K-K	33 $\frac{3}{8}$ x 21 $\frac{5}{16}$
L	8 $\frac{15}{16}$ x 10 $\frac{3}{16}$	L-L	27 $\frac{3}{8}$ x 21 $\frac{5}{16}$
M	10 $\frac{9}{16}$ x 10 $\frac{3}{16}$	M-M	21 $\frac{3}{8}$ x 21 $\frac{5}{16}$
N	9 $\frac{5}{8}$ x 13 $\frac{3}{16}$	N-N	39 $\frac{3}{8}$ x 27 $\frac{5}{16}$
O	10 $\frac{15}{16}$ x 13 $\frac{3}{16}$	O-O	33 $\frac{3}{8}$ x 27 $\frac{5}{16}$
P	8 $\frac{15}{16}$ x 13 $\frac{3}{16}$	P-P	27 $\frac{3}{8}$ x 27 $\frac{5}{16}$
R	10 $\frac{9}{16}$ x 13 $\frac{3}{16}$	R-R	21 $\frac{3}{8}$ x 27 $\frac{5}{16}$

GENERAL BRONZE CORPORATION

34-19 TENTH STREET

LONG ISLAND CITY, N. Y.

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combination bumpers and tape hooks for lower sash. For aluminum windows, finish hardware shall be dull chrome plated to match aluminum.

5. Shop Drawings: Before proceeding with the work, this contractor shall prepare and submit, for Architect's approval, complete shop drawings showing all parts of the frames and sash and fully dimensioned. Shop drawings shall be submitted in triplicate and no work shall be proceeded with until Architect's approval has been received.

6. Infiltration Tests: All double hung windows shall be so designed and constructed that, when subjected to an air pressure equivalent to that exerted by wind at a velocity of twenty-five (25) miles per hour, the infiltration of air through the window shall not exceed one-third ($\frac{1}{3}$) of one cubic foot per minute per linear foot of sash perimeter. One window will be selected at random by the Architect and subjected to this infiltration test. If the first sample shall fail to meet the test, a second will be similarly selected and tested. If it also fails, the Architect may, in his discretion, reject all the windows made, and require new windows to be furnished which will fulfill all the above requirements. All infiltration tests shall be at the expense of this contractor.

The Architect may, but shall not be required to, waive infiltration tests on windows, provided the manufacturer thereof can furnish certified reports of tests, made by a testing laboratory approved by the Federal Government, showing that windows made by the manufacturer of the same type and design as are being furnished on this project have met or exceeded the requirements hereinabove specified.

7. Protection: Before shipment, this contractor shall apply an approved protective solution to all exposed surfaces of the frame and sash in order to protect the metal from plaster, etc. The General Contractor shall be required to provide proper protection to the windows to prevent damage during the course of operations and shall remove the same before final inspection and cleaning down of the windows is started.

FINAL: Complete instructions will be mailed at the time of shipment of windows for the proper setting, caulking, grouting, glazing, cleaning and adjustment of the windows. *Note that $\frac{1}{8}$ " thick glass should be used and same should be set with a good grade of metal glazing putty.* A sufficient quantity of special glazing clips will be furnished with the windows, without charge.

STANDARD SPECIFICATIONS . . CASEMENT WINDOWS

1. Scope of Work: This contractor shall furnish PERMATITE Series "K" bronze (or aluminum) Casement Windows, including all hardware and steel sub-frames, as manufactured by General Bronze Corporation, Long Island City, New York, for all window openings shown on Architect's drawings for.....

(Here insert extent of windows which are to be bronze or aluminum.)

2. Materials: Except as is hereinafter specified, all parts of window frames and sash shall be of solid bronze (or aluminum). All frame members shall be extruded bronze (or aluminum) not less than #12 B & S gauge. Stiles and rails of all sash shall be of seamless bronze tubing of #17 B & S gauge (or if aluminum of #12 B & S gauge).

Finished members of sash and frames shall be true to dies and all moulded sections shall have clean sharp arrises, free from twists, bends or other imperfections. After extrusion, each piece shall be drawn through forming dies to insure absolute straightness and uniform thickness throughout its length.

Weatherstripping shall be of hard resilient special metal alloy of the required thickness to resist movement from the pressure exerted by wind at a velocity of 60 miles per hour.

Each window shall be provided with steel sub-frame, formed into special angle shape from #12 U. S. gauge blue annealed sheet; welded at corners into a continuous frame.

3. Design, Construction and Workmanship: Jamb, head and sill members of frames shall be designed to provide integrally formed pockets to receive and retain the metal weatherstripping in such manner that no raw edge of same will be exposed. Weatherstripping at jambs, sill and head shall be so formed and positioned as to provide continuous lines of flexible but positively sealing contact between frame and closed sash without in any way binding the sash when operated. A similar weatherstrip shall be housed in the meeting stile of the sash to also form continuous contact. Weatherstrips and their housings shall be so formed that strips may be readily removed or replaced without dismantling the window.

Stiles and rails of sash shall be seamless tubing, designed with overlapping flanges to effect face contacts with the frame members

and so formed as to provide a continuous wedge shaped groove all around the glass opening, to effectively key the glazing compound in its bed and permanently retain it in place. The design of the sash and their engagement with the frames shall be such as to prevent any rattling.

The free leg of the steel angle sub-frames shall be extended to form a continuous fin or weather stop for the entire extent of the window jambs and head. Provide holes at proper spacing in this leg to receive built-in anchors or bolts to attach the windows to the building structure.

All joints, copes and miters shall be precision machined and carefully fitted to create tight, hairline joints. All holes, slots, etc., shall be accurately drilled to template and holes for machine screws carefully tapped. All screws, bolts and rivets shall be made from special alloys to provide maximum strength at fastenings and where exposed shall match window material in color.

All material shall be carefully inspected before assembly to insure same has been accurately and thoroughly prepared. All surfaces of sub-frames shall be given a heavy coat of bitumastic paint before attaching non-ferrous frame members to same. Jambs, heads and sills are to be riveted to corresponding steel sub-frames under pressure, then assembled into complete frame units by solidly welding each corner. After welding, all corners shall be filled with leak proof compound under 100 lb. air pressure.

Stiles and rails of sash shall be assembled by welding or sweating together at corners which shall first be heavily reinforced. Ample reinforcements shall be built into the sash to receive the hardware.

Removable members and hardware shall be secured by special head machine screws of proper size and approved spacings. All other fastenings of exposed members shall be fully concealed.

(NOTE: If required, the following should also be included).

Provide muntins, arranged as shown, neatly and accurately fitted and assembled at the shop. Intersections of muntins and between muntins and sash members shall be fully lapped to insure firm engagement.

Provide, where shown, mullions between window units amply and continuously reinforced with steel to insure rigidity. All contacts between mullions and steel reinforcements shall be fully insulated by an extra heavy coat of bitumastic paint, applied before mullion is assembled. Mullion jambs shall correspond in



GENERAL BRONZE CORPORATION

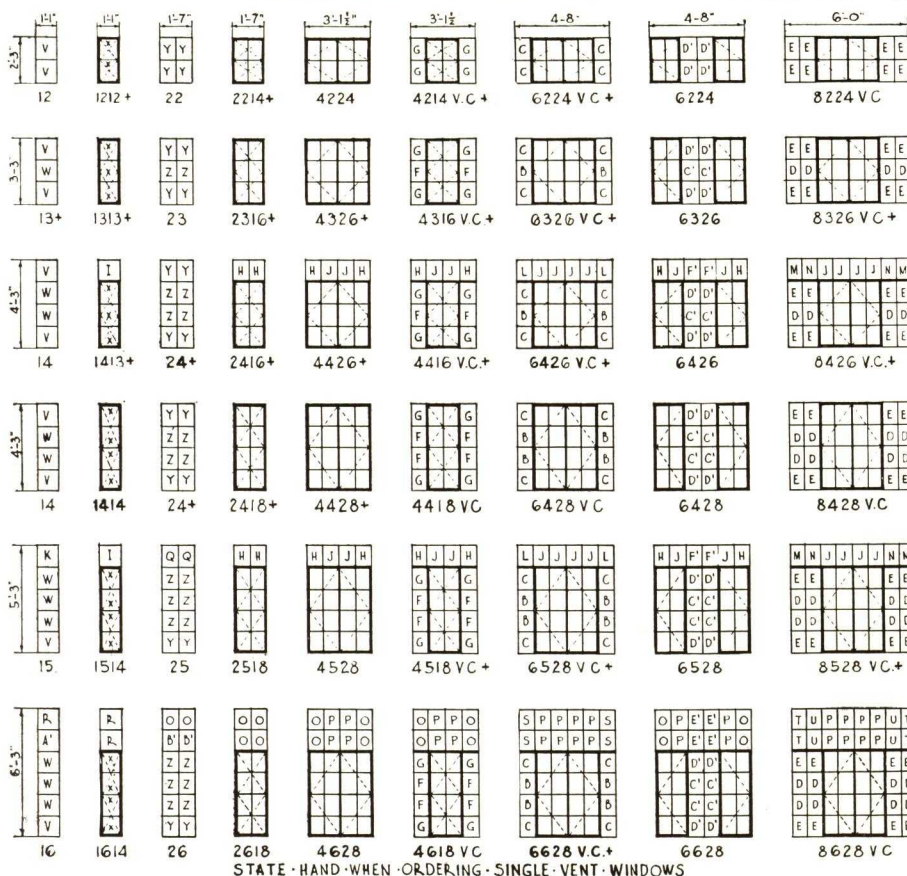
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PERMATITE CASEMENT WINDOWS

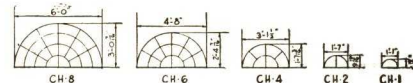
STANDARD SIZES OF SERIES K AND K1



NOTE: Dimensions given are sizes of openings. Windows with single vents are made either right or left hand, viewed from outside. V.C. vent in center. Types marked thus + stocked in Long Island City, N. Y., warehouse.



ILLUSTRATION OF VENTILATOR, 6154 V.C. APPLIED TO SASH-6528 V.C.



GLASS SIZES

A	7 1/8 x 11 13/16	L	8 1/4 x 11 5/8	W	11 1/2 x 11 13/16
B	8 7/16 x 11 13/16	M	8 1/8 x 11 5/8	X	10 1/8 x 11 13/16
C	8 7/16 x 12 3/16	N	8 5/8 x 11 5/8	Y	8 5/8 x 12 5/8
D	8 7/16 x 11 13/16	O	8 5/8 x 11 13/16	Z	8 5/8 x 11 13/16
E	8 1/8 x 12 3/16	P	8 5/8 x 11 7/16	A'	11 1/2 x 12 3/4
F	8 5/8 x 11 13/16	Q	8 5/8 x 12 1/2	B'	8 5/8 x 12 3/4
G	8 5/8 x 12 3/16	R	11 1/2 x 11 13/16	C'	8 5/8 x 11 13/16
H	8 5/8 x 11 1/8	S	8 3/4 x 11 7/16	D'	8 5/8 x 12 3/4
I	11 1/2 x 11 1/8	T	8 5/8 x 11 7/16	E'	9 x 11 7/16
J	8 5/8 x 11 1/8	U	8 5/8 x 11 1/8	F'	9 x 11 5/8
K	11 1/2 x 12 1/2	V	11 1/2 x 12 5/8		

LIGHTS - NOT - LETTERED ARE - SIZE "A"

Muntins may be omitted or arranged as preferred on special order.

every particular with design of window jambs as hereinbefore specified.

- 4. Hardware:** Each casement window sash shall be equipped with the following hardware all of which shall be of solid bronze except where otherwise noted herein:

For non-screen type; each sash shall have one pair of projected adjustable friction type hinges and one lever handled multiple cam lock.

For screen type; each sash shall have one pair projected non-friction type hinges, one lever handled locking device with single or multiple bolt and keeper and one worm and gear type sash operator.

NOTE: For aluminum windows all bronze hardware shall be dull chrome plated to match aluminum, except worm and gear sash operators for aluminum windows shall be of special white metal alloy, die cast, with solid bronze sleeve on handle.

- 5. Shop Drawings:** Before proceeding with the work, this contractor shall prepare and submit, for Architect's approval, complete shop drawings showing all parts of the frames and sash and fully dimensioned. Shop drawings shall be submitted in triplicate and no work shall be proceeded with until Architect's approval has been received.

- 6. Infiltration Tests:** All casement windows shall be so designed and constructed that, when subjected to an air pressure equivalent to that exerted by wind at a velocity of twenty-five (25) miles per hour, the infiltration of air through the window shall not exceed one-fourth (1/4) of one cubic foot per minute per linear foot of sash perimeter. One window will be selected at

random by the Architect and subjected to this infiltration test. If the first sample shall fail to meet the test, a second will be similarly selected and tested. If it also fails, such failure shall be sufficient grounds for the Architect, in his discretion, to reject all the windows made, and require new windows to be furnished which will fulfill all the above requirements. All infiltration tests shall be at the expense of this contractor.

The Architect may, but shall not be required to, waive infiltration tests on windows, provided the manufacturer thereof can furnish certified reports of tests, made by a testing laboratory approved by the Federal Government, showing that windows made by the manufacturer of the same type and design as are being furnished on this project have met or exceeded the requirements hereinabove specified.

- 7. Protection:** Before shipment, this contractor shall apply approved protective solution to all exposed surfaces of the frame and sash in order to protect the metal from plaster, etc. The General Contractor shall be required to provide proper protection to the windows to prevent damage during the course of operations and shall remove the same before final inspection and cleaning down of the windows is started.

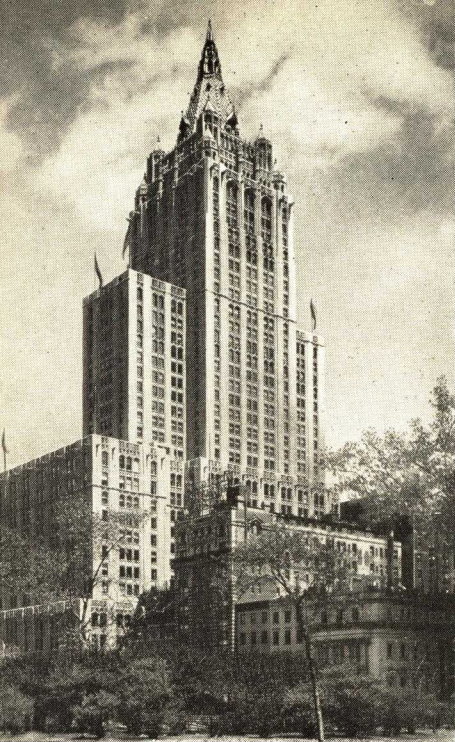
FINAL: Complete instructions will be mailed at the time of shipment of windows for the proper setting, caulking, grouting, glazing, cleaning and adjustment of the windows. Note that 1/8" thick glass should be used and same should be set with a good grade of metal glazing putty. A sufficient quantity of special glazing clips will be furnished with the windows, without charge.

GENERAL BRONZE CORPORATION

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NEW YORK LIFE INSURANCE CO., NEW YORK, N. Y.
Cass Gilbert, Architect. 2600 Windows by General Bronze

POLACHEK WINDOWS

DOUBLE HUNG AND CASEMENT

(PATENTED)

B R O N Z E O R A L U M I N U M

F O R H E A V Y D U T Y R E Q U I R E D I N M O N U M E N T A L B U I L D I N G S

Special Features

... Rigid construction and exact alignment which prevent binding on the vertical movement, and lever type lifts to break contact at the sill. A concealed device, built into the side stiles and instantly adjustable, prevents all lateral movement of sash when in any position.

Weatherstripping is formed through steel dies as an integral part of main sash and frame members and to the same thickness. The University of Wisconsin tests prove the effectiveness of this sealing. Immovable from its initial

position, too heavy to bend, too thick to wear out, this weatherstripping can never lose its effectiveness.

Careful designing of self-reinforced members has reduced face widths to the minimum compatible with rigid construction requirements.

Pulleys and chain are readily replaceable. Sash and frame, being of extra heavy non-ferrous metal, and so fitted and assembled that no joint can ever open or leak, will outlast the useful life of the building without repairs, replacements or painting.

BRIEF DESCRIPTION OF THE POLACHEK PATENTED DOUBLE HUNG AND CASEMENT WINDOWS

The POLACHEK Patented Double Hung Window, owned and manufactured exclusively by General Bronze Corporation, is air-tight, weatherproof, rattle-proof, non-rusting, permanent and quiet in operation. Salient patent features are a series of accurately-matched integral wedge-shaped tongues and grooves, effecting positive multiple contacts throughout the perimeter of both sashes when closed, and adjustable devices concealed within the sash construction which effectively prevent sash rattling while in any position.

The design of the window is simple, dignified and architecturally correct. Frame and Sash are so designed as to combine sufficient strength with the maximum obtainable of daylight opening. Sash provided for glazing from inside. Construction is rigid and permanent. Mitres, copes, tenons,

and all other inter-sections are precision machined; members are carefully fitted and assembled, and each unit thoroughly inspected before assembly. Workmanship is assured through employment of artisans trained in handling fine ornamental bronze work.

STANDARD EQUIPMENT: General Bronze Hardware is standard for all casements. Attractive, sturdy and efficient, it harmonizes perfectly with this most attractive type of window. Note particularly the absence of extreme projections and the general compactness of operating and engaging parts, not obtainable in other makes.

Complete architectural specifications and details will be supplied on request.



GENERAL BRONZE CORPORATION

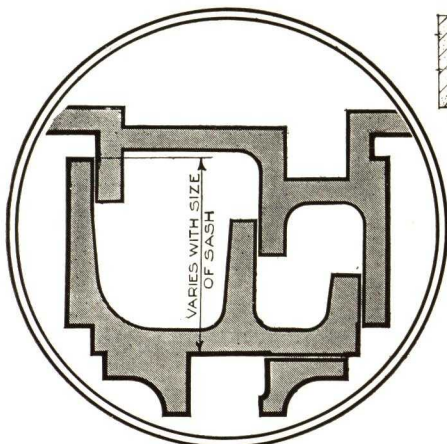
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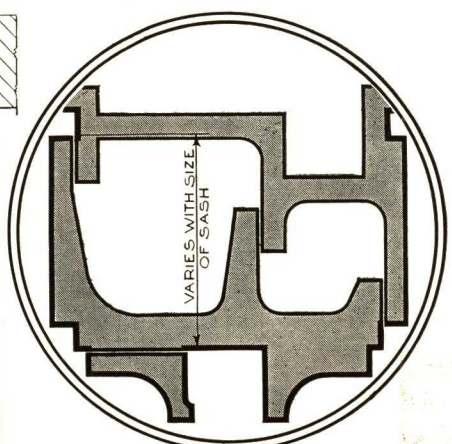
DETAILS . . . TYPE "A" POLACHEK CASEMENT WINDOWS

F.S. DETAIL

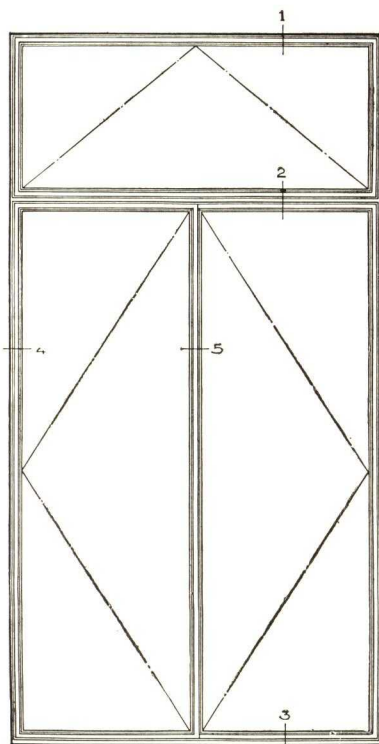
F.S. DETAIL



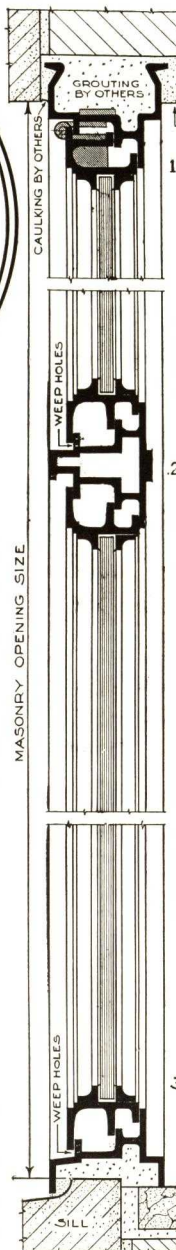
TYPE "A1"



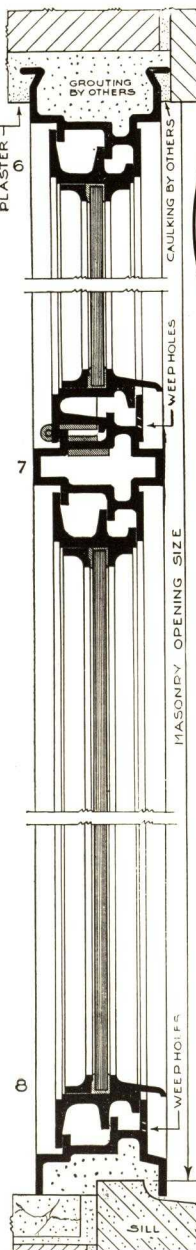
TYPE "A2"



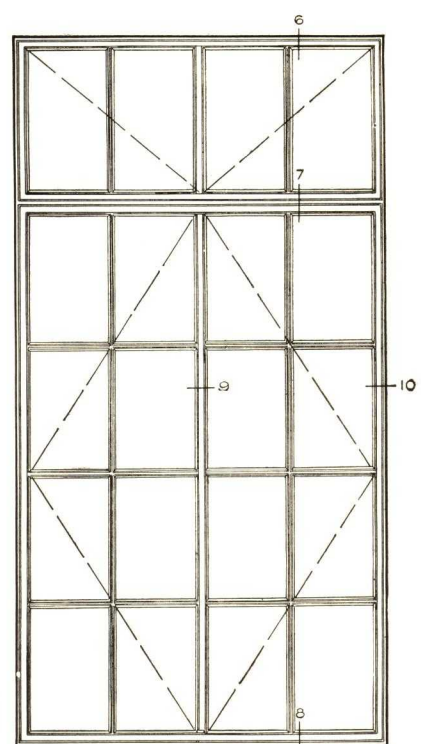
TYPE A1
3 POINT CONTACT OPEN SECTION
CASEMENT WINDOW



SECTION

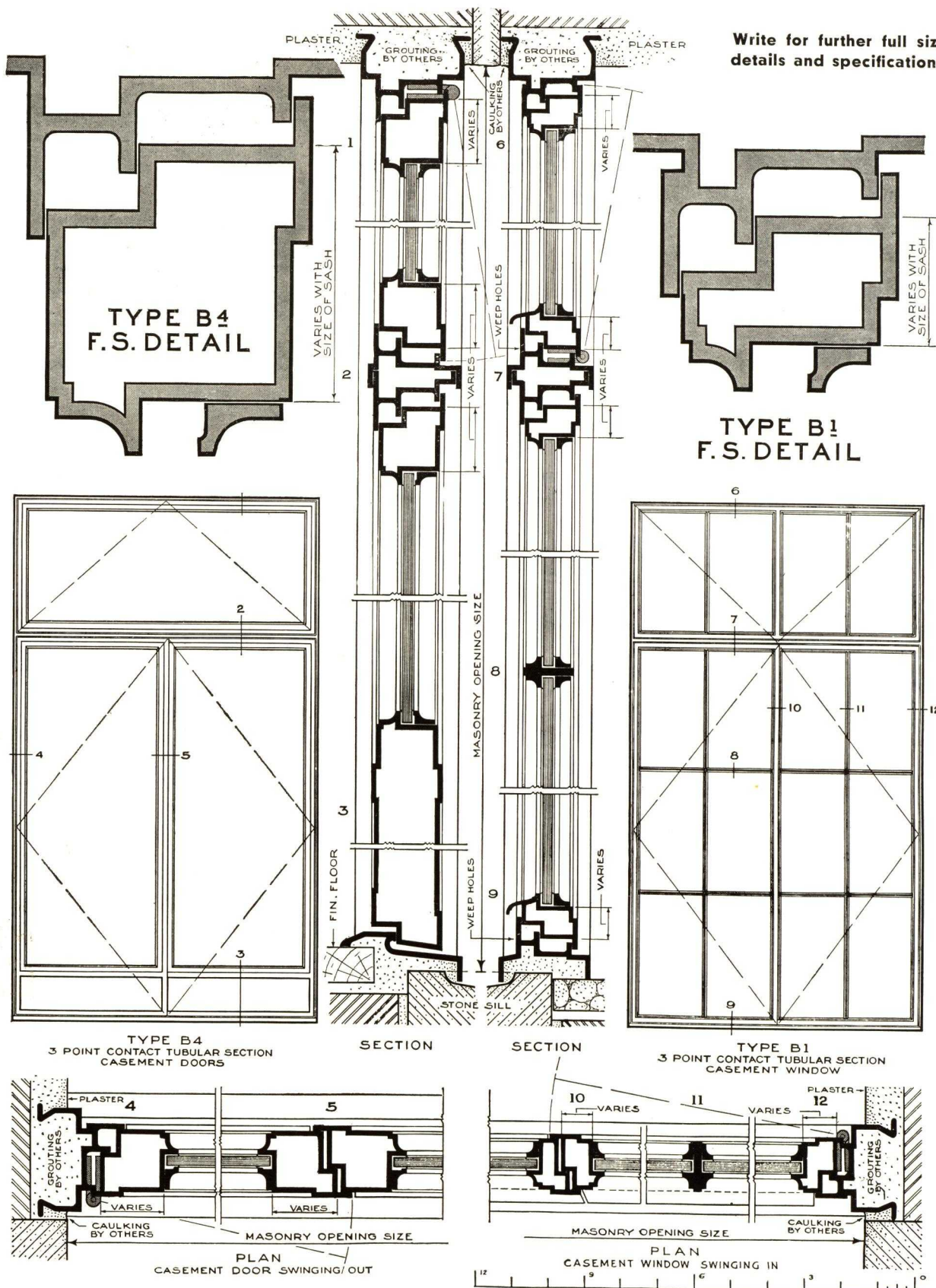


SECTION



DETAILS . . . TYPE "B" POLACHEK CASEMENT DOOR & WINDOWS

Write for further full size details and specifications.



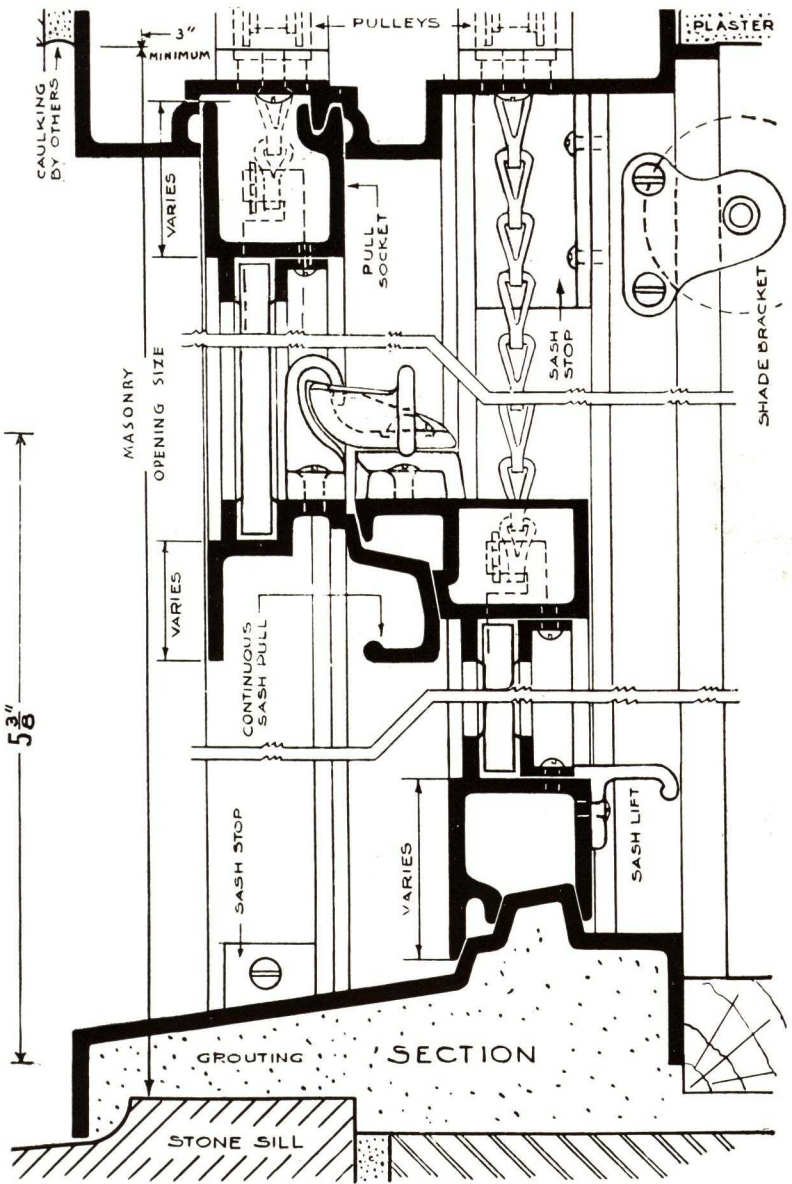
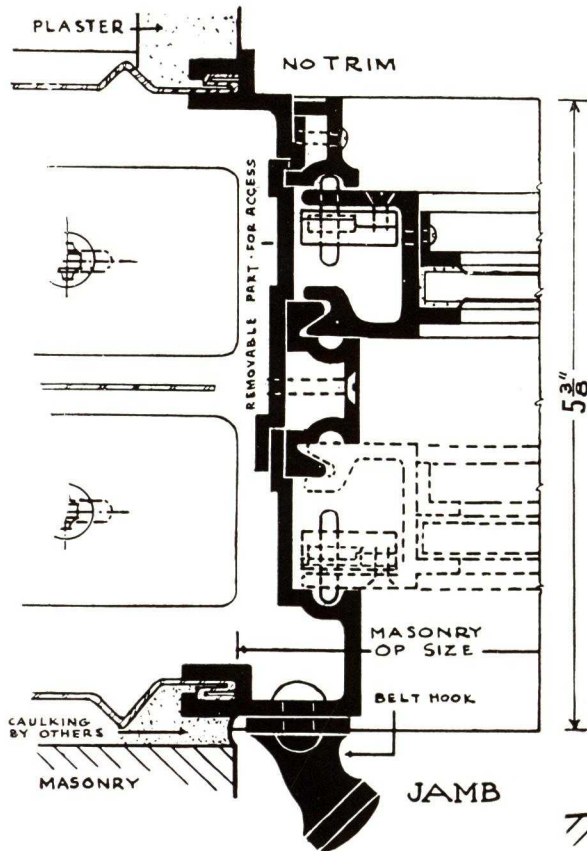
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POLACHEK DOUBLE HUNG WINDOWS

Write for dimensioned details.



PARTIAL LIST OF WINDOW INSTALLATIONS

BUILDING

U. S. Supreme Court Building
U. S. Post Office Dept. Building
Mitsui Main Building
Northwestern Mutual Life Ins. Co.
Mutual Benefit Life Ins. Co.
U. S. Post Office, Court House & Customs, Etc.
Nebraska State Capitol Building
New York County Court House
Federal Reserve Board
State Capitol Building
Apt. House, 72nd St. & Madison Ave.*
St. Luke's Hospital—Nurses Home
Wm. K. Vanderbilt, Residence
Arthur C. Nielsen, Residence
Franklin B. Kirkbride, Residence
Hospital for Chronic Diseases
Julian Street, Jr., Residence
Oregon State Library
Doris Duke Cromwell, Residence

*Picture on outside cover.

LOCATION

Washington, D. C.
Washington, D. C.
Tokyo, Japan
Milwaukee, Wis.
Newark, N. J.
Detroit, Mich.
Lincoln, Neb.
New York, N. Y.
Washington, D. C.
Salem, Ore.
New York, N. Y.
New York, N. Y.
Palm Beach, Fla.
Winnetka, Ill.
New Canaan, Conn.
Welfare Island, N. Y.
Scarborough, N. Y.
Salem, Ore.
Honolulu, Hawaii

ARCHITECTS

Cass Gilbert, Cass Gilbert, Jr. & J. R. Rockart & David Lynn,
Archts. of the Capitol
Delano & Aldrich
Trowbridge & Livingston
Holabird & Root
John H. & Wilson C. Ely
Robert O. Derrick, Inc. & U. S. Supervising Archt.
Bertram Goodhue Associates
Guy Lowell
Paul P. Cret
Trowbridge & Livingston, Francis Keally, Assoc. Architects
Mott B. Schmidt & Rosario Candela
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Treanor & Fatio
Benjamin H. Marshall Co.
Robertson Ward
Butler & Kohn, York & Sawyer
Harrison & Foulhoux
Whitehouse & Church
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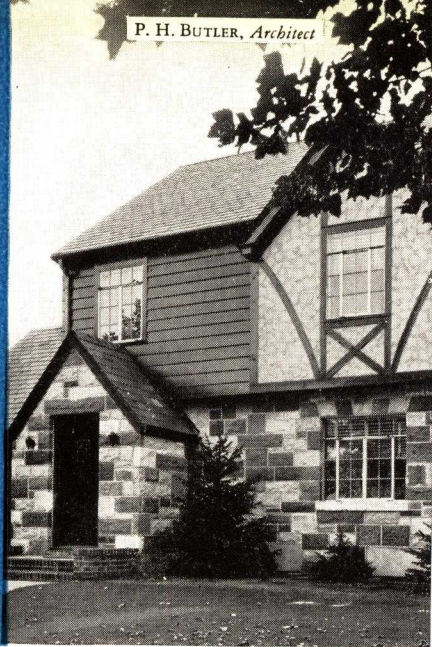


BRONZE OR
ALUMINUM

CASEMENT OR
DOUBLE HUNG

WINDOWS
by

P. H. BUTLER, *Architect*



ROBERTSON WARD, *Architect*



LAWRENCE C. LIGHT, *Architect*

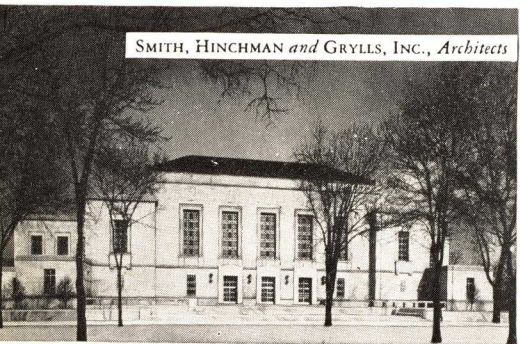


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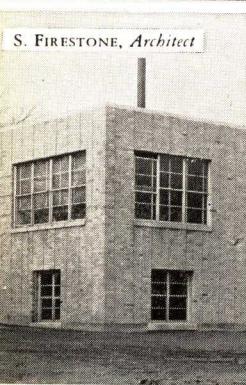
34-19 TENTH STREET

LONG ISLAND CITY, N.Y.

SMITH, HINCHMAN and GRYLLS, INC., *Architects*



S. FIRESTONE, *Architect*

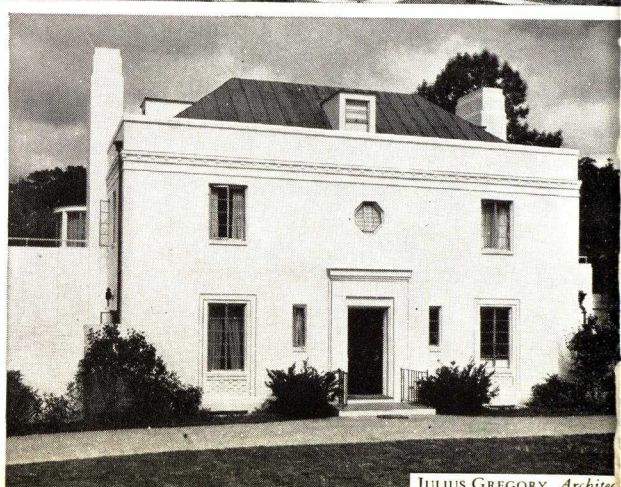


YORK and SAWYER, BUTLER and KOHN, *Associated Architects*

WELFARE ISLAND HOSPITAL GROUP, New York City



SLEE and BRYSON, *Architects*



JULIUS GREGORY, *Architect*

"The Name

HOPE'S

Guarantees"



SOLID WELDED • NO LOOSE LININGS

1818

WINDOWS

1939

• HOPE'S • WINDOWS • INC • JAMESTOWN • NEW • YORK •

· HOPE'S · WINDOWS · INC ·

· JAMESTOWN · :: NEW YORK ·



GRADUATE COLLEGE, PRINCETON, N. J.

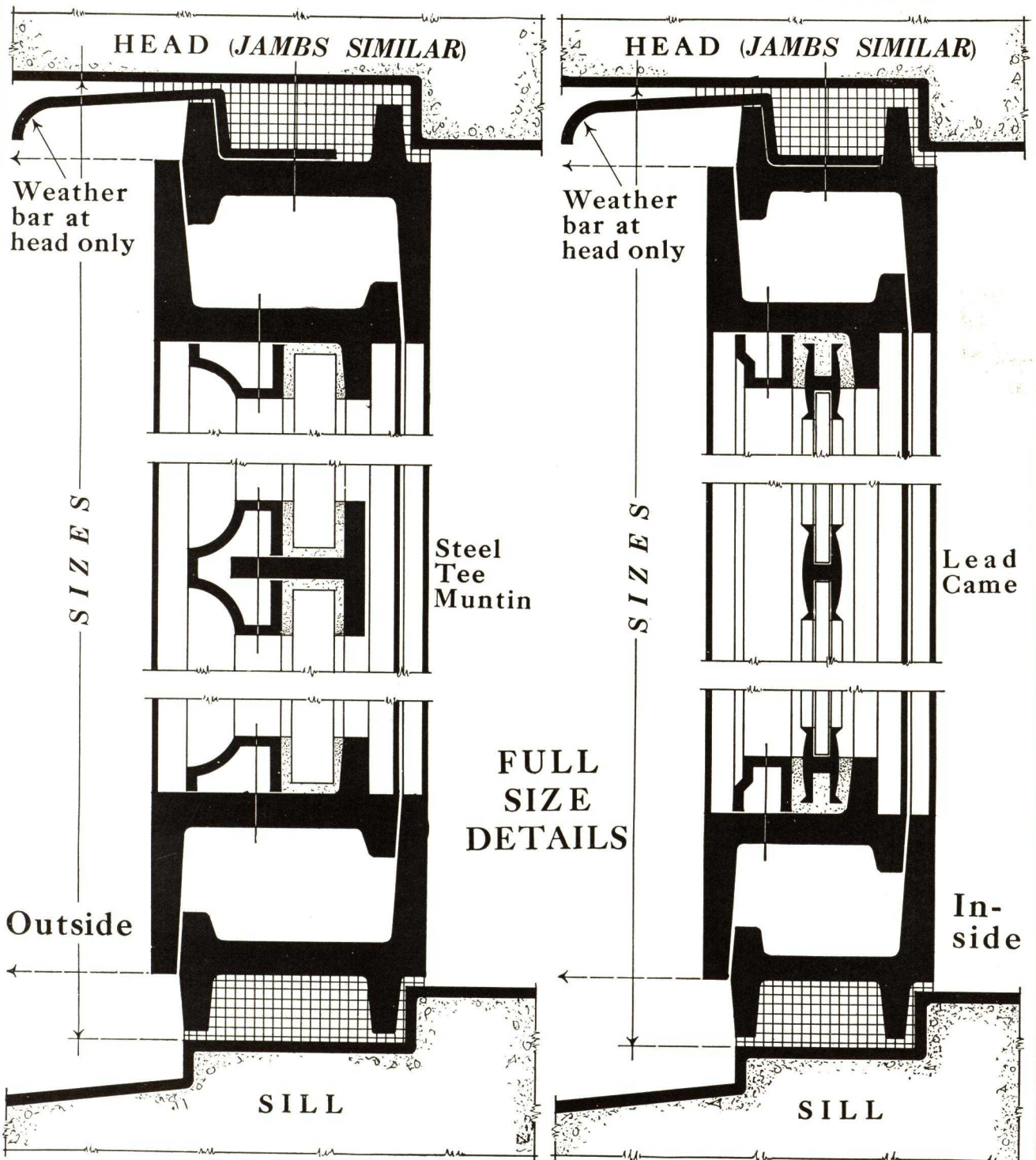
CRAM, GOODHUE & FERGUSON, Archts.

HOPE'S have been making windows for over a hundred years and have built up what is now known throughout the world as "The HOPE Standard of Quality." This standard is without extravagance, but embodies all those features which our experience has taught us are necessary for permanent service in permanent buildings. We make windows of all kinds and whether it is an elaborate bronze window for a monumental building or a simple steel casement for a small house, the same care is taken that it is of an appropriate design and that it shall serve its purpose properly. HOPE's windows are a buyer's guide to a good building.

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• CASEMENTS • OPENING • OUTWARDS •



HEAVY SECTION NO. 3000

Maximum size 3' 0" x 8' 0".

Weight of combined sections 4.61 lbs. per lineal foot.

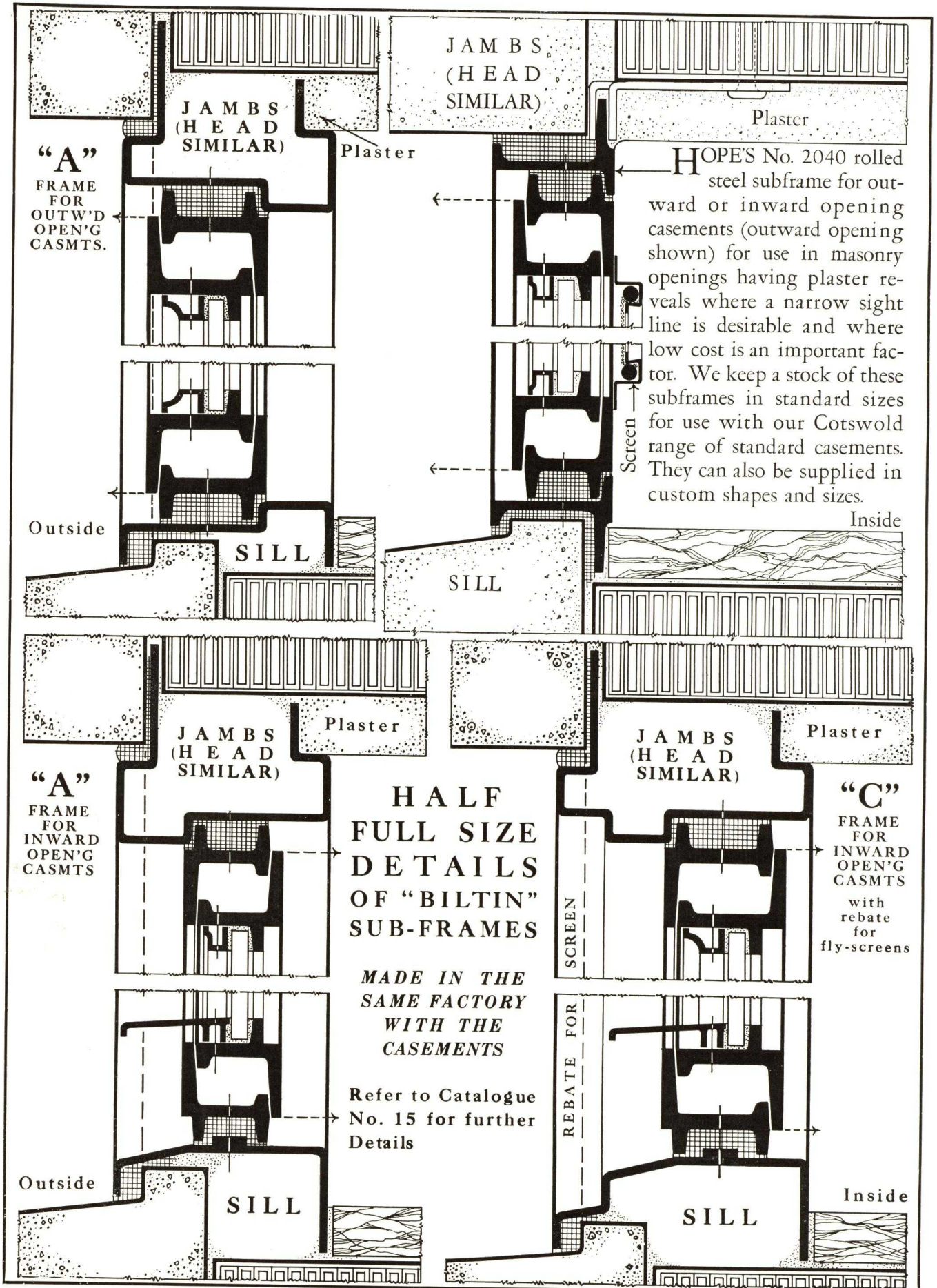
MEDIUM SECTION NO. 1000

Maximum size 2' 6" x 6' 0".

Weight of combined sections 3.55 lbs. per lineal foot.

SIDE HUNG CASEMENTS, TOP HUNG CASEMENTS SIMILAR

Our sections No. 3000 and No. 1000 may be glazed either from outside or from inside. Appearance usually governs choice, but we recommend outside glazing. Casements are made to open outwards as shown above, or by reversing the sections they can be made to open inwards, hinged at side or bottom. Or they may be pivoted vertically or horizontally. For more complete information, refer to our Casement Catalogue or to any of our sales offices.



• SPECIFICATIONS •

Custom Made Casements

All windows shall be HOPE'S WINDOWS, manufactured in Jamestown, New York, by HOPE'S WINDOWS INC. from solid rolled steel sections of suitable design and weight for the size of the openings. This contractor shall not commence fabrication until shop drawings bear the approval stamp of the architects. All bars shall be hydraulically straightened and free from hammer marks or distortions of any kind. All corners shall be accurately machined, electrically welded and cleaned free from flux. Frames and casements shall be solid welded units and shall provide continuous double weathering contact without the aid of loose or applied linings. Horizontally and vertically pivoted casements shall be hung on patent bronze cup pivots. The former shall be fitted with solid bronze spring catch, cord eye and pulley and the latter with solid bronze fasteners and double bar adjusters; when more than 5 ft. high, double grip bolts shall be supplied. Top hung, bottom hung and side hung casements shall be hung on drop forged steel pivots bronze bushed. Top hung casements shall be fitted with solid bronze cam opener capable of convenient pole operation. Bottom hung casements shall be fitted with solid bronze spring catches and concealed friction side arms. Side hung casements both outward and inward opening over 5 ft. high shall be fitted with solid bronze fasteners having double grip bolts, double bar adjusters, and intermediate hinges: under 5 ft. the double grip bolts and intermediate hinges shall be omitted. All hardware shall be individually fitted by skilled mechanics at the factory. Fixed sash shall be made from channel sections which provide the same sight line and glass plane as the casements. Moulded steel glazing beads attached with brass screws and having mitered corners shall be neatly fitted to casements and fixed sash. All steel work shall be cleaned free from rust and scale and painted two coats DuPont special rust-resisting paint, each coat baked on separately. The installation of the windows shall form part of this contractor's work. Windows to be properly bedded and pointed inside and out with HOPE'S Mastic Cement, the whole guaranteed weathertight. Glass and glazing by glazing contractor; field painting by painting contractor.

For full size details, refer to page 3.

For more complete information, refer to our Case-ment Catalogs.

For specifications covering bronze or aluminum, refer to our sales offices.

"Biltin" Sub-frames

This contractor shall furnish and deliver to the building HOPE'S "Biltin" sub-frames of type and profile shown on drawings, in time to suit the requirements of the building. Sub-frames shall be of No. 12 gauge steel, with corners welded solid to form one complete frame, except where of too great a size for shipment in ordinary box cars, in which event they shall be assembled at the factory with screwed and plated joints, disassembled, packed and shipped "K. D." for assembly by general contractor. All corners shall be properly cleaned off and

the sub-frames shall be painted two heavy coats of special rust-resisting paint, each coat separately baked on. They shall be set up plumb and true and built in and pointed by the mason contractor as the walls go up. The wood spreaders or braces which are included to insure the sub-frames hold square and true to shape shall be left in until the casements are installed.

After plastering is completed, this contractor shall remove braces and shall install casements, taking care that the joints between the casements and the sub-frames are properly filled with HOPE'S Mastic Cement neatly pointed inside and out. All casements shall be properly adjusted and shall operate freely and smoothly before acceptance by the architect.

For half full size details, refer to page 4.

For more complete information, refer to our Catalog No. 15.

For specifications covering bronze or aluminum, refer to our sales offices.

No. 2040 Rolled Steel Sub-frames

This contractor shall furnish and deliver to the building HOPE'S "No. 2040" sub-frames to the shapes and sizes shown on the drawings. When specifying 2040 frames for Standard Cotswold Casements, specify that they are to be in standard types and sizes as shown by reference numbers on elevations in accordance with the standards established by HOPE. They shall be painted two heavy coats of special rust-resisting paint, each coat separately baked on, and they shall be delivered to the site in time to meet the requirements of the building. They shall be set up plumb and true and built in and pointed by the mason contractor as the walls go up. The wood spreaders or braces which are included to insure the sub-frames hold square and true to shape shall be left in until the casements are installed. After plastering is completed, this contractor shall remove braces and shall install casements, taking care that the joints between casements and sub-frames are properly filled with HOPE'S Mastic Cement neatly pointed. All casements shall be properly adjusted and shall operate freely and smoothly before acceptance by the architect.

For half full size details, refer to page 4.

For more complete information, refer to our Catalog No. 15.

For specifications covering bronze or aluminum, refer to our sales offices.

For Holford and Econwin window specifications, screened or non-screened, refer to page 7.

For standard Cotswold casement specifications, refer to page 9.

For Austral window specifications, refer to page 11.

For Projected window specifications, refer to page 12.

For Hopkins window specifications, refer to page 13.














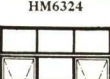






UNDERWRITERS' LABEL

The Underwriters' Label can be attached to our "Austral," "Cotswold," "Hopkins" and Light Standard Windows, if desired.



HOPE'S ECONWIN CASEMENTS • See Cat. No. 64

NON-SCREEN H. M. TYPES ONLY

					27 $\frac{1}{2}$ "
HM2214	HM4214	HM4224	HM6224	HM6214VC	
					39 $\frac{1}{2}$ "
HM2314	HM4314	HM4324	HM6324	HM6314VC	
					51 $\frac{1}{2}$ "
HM2416	HM4416	HM4426	HM6426	HM6416VC	
					64"
HM2518	HM4518	HM4528	HM6528	HM6518VC	

SPECIFICATION FOR HOLFORD & ECONWIN CASEMENTS

All metal windows as shown on the drawings shall be of standard Holford types and sizes as manufactured by HOPE'S WINDOWS, INC., Jamestown, N. Y. Casements shall be manufactured of low carbon new billet steel, having a combined weight of ventilator and frame of not less than 2.16 lbs. per lineal foot. All corners shall be solidly welded and exposed surfaces neatly cleaned off. Sections shall provide continuous two point weathering contact around the perimeter of the ventilators. All side hinged casements shall be hung on cadmium plated mild steel hinges solidly welded to the ventilator and frame and united with bronze pintles and washers. Muntins shall be carefully coped and solidly riveted to ventilators and/or frames.

Screen type Holford casements shall be fitted with bronze fastener No. 38-3 in tumbled finish and rotary adjuster No. 20-70, the operator case and crank of which shall be die cast non-corrosive alloy in gray enamel finish and the thumb turn in polished bronze. Sill vents shall be fitted with tumbled bronze fastener No. 20-72 and steel limit side arms. Top hinged ventilators shall be fitted with bronze underscreen peg adjuster No. 20-44.

Screens shall be in "U" type steel framing, strongly reinforced and welded at corners and galvanized after cutting and abrasive operations. Screen cloth shall be of standard weight, 16 mesh Anaconda bronze wire held in place with $\frac{3}{8}$ in. round solid steel splines easily re-wireable.

Econwin casements shall be hung on adjustable friction cleaning hinges and shall be fitted with die cast, bronze plated, fastener No. 69-A. Construction otherwise as outlined in preceding paragraphs.

Econwin screens shall be hinged at the side to swing in, complete with necessary fittings (specification otherwise as outlined in third paragraph).

All steel work shall be cleaned free from rust and scale and painted one coat of special rust-resisting gray primer baked on.

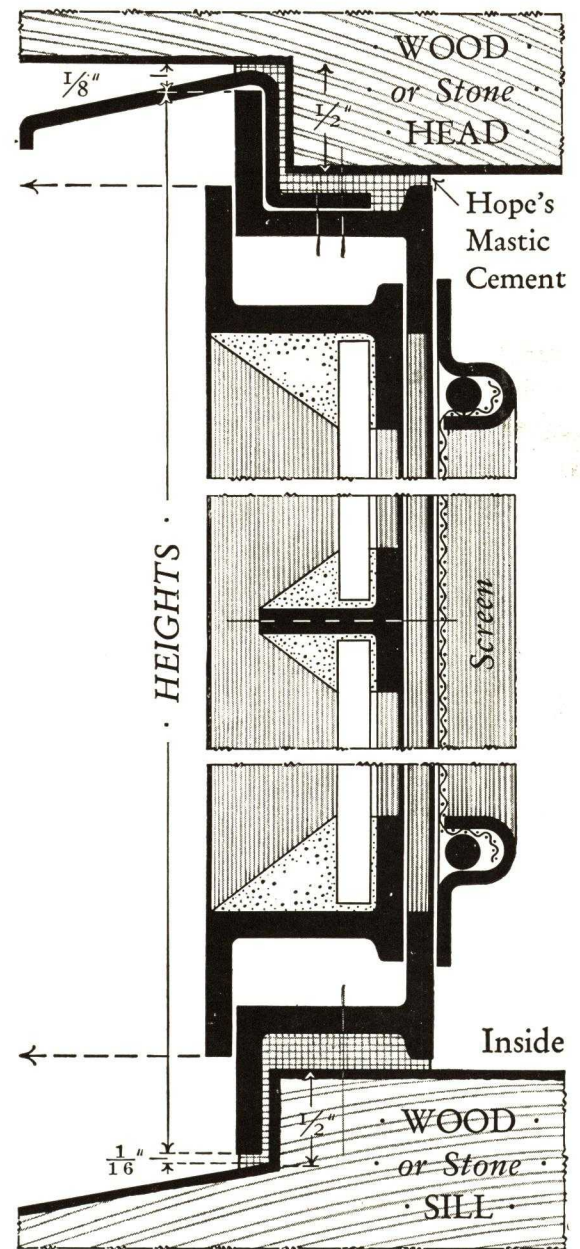
Sufficient mastic cement (one pound per 7 ft. of perimeter) shall be furnished for proper bedding and pointing.

All casements shall be drilled to receive shade bracket clips.

Note—Holford casements are available in standard muntin divisions or with vertical muntins omitted or the casements left open to receive leaded glass or for single lights of glass.

Hardware in statuary bronze finish is available at a slight increase in cost.

For setting details, refer to catalog No. 64. State if angle fins or redwood surrounds or steel casings are required.



F. S. SECTION (HOLFORD TYPES)

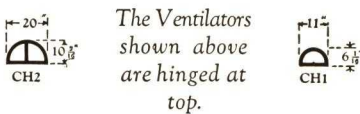
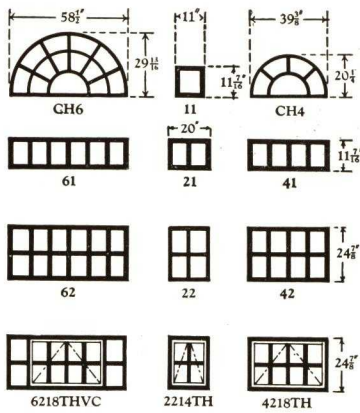
All windows are hinged to open outwards, divided into panes with steel tee muntins, but they can be supplied without muntins either for leaded lights which we stock in standard sizes or for plain sheets of glass.

Cleaning hinges are of cadmium-plated mild steel, welded solid into the frame. The great depth and strength of the bronze pintles prevent any possibility of the casement sagging.

For further details, refer to Catalog No. 64, or to any of our sales offices.

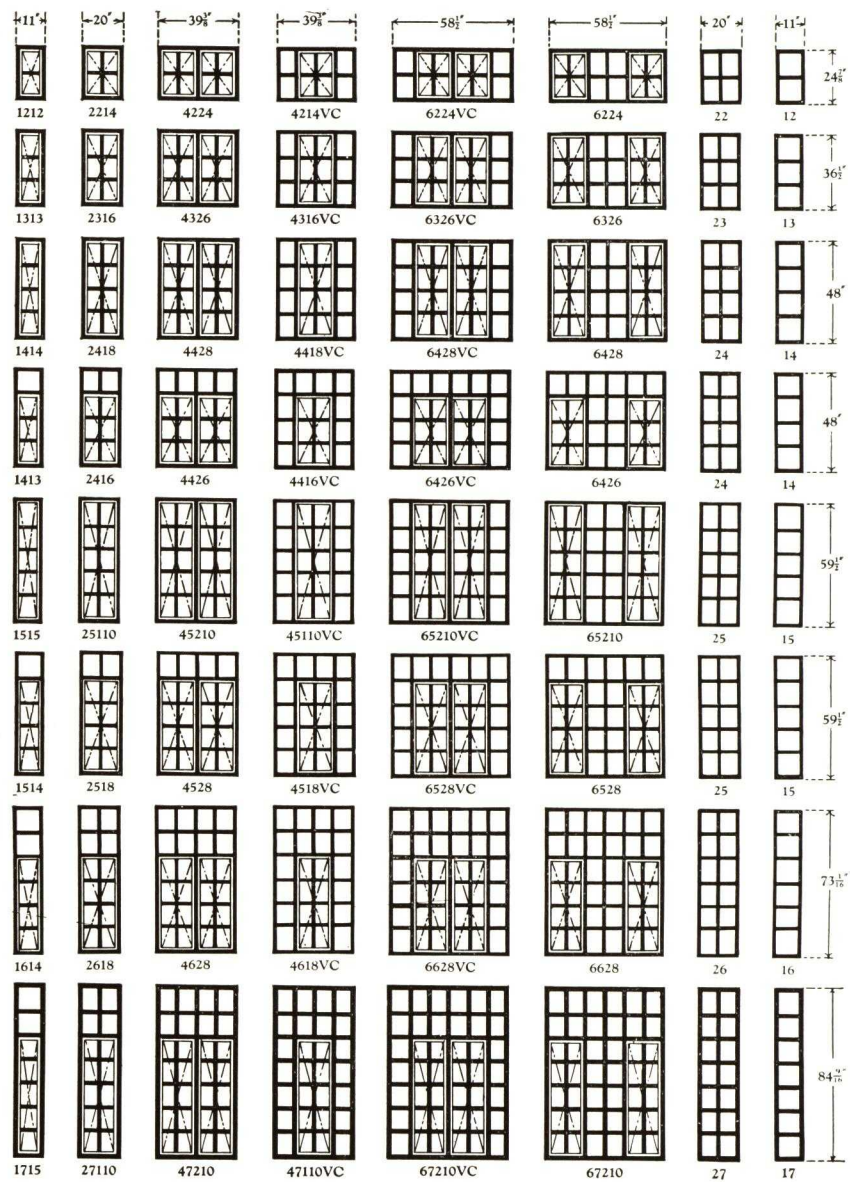
HOPE'S COTSWOLDS ·

(Intermediate Sections) See Cat. No. 56

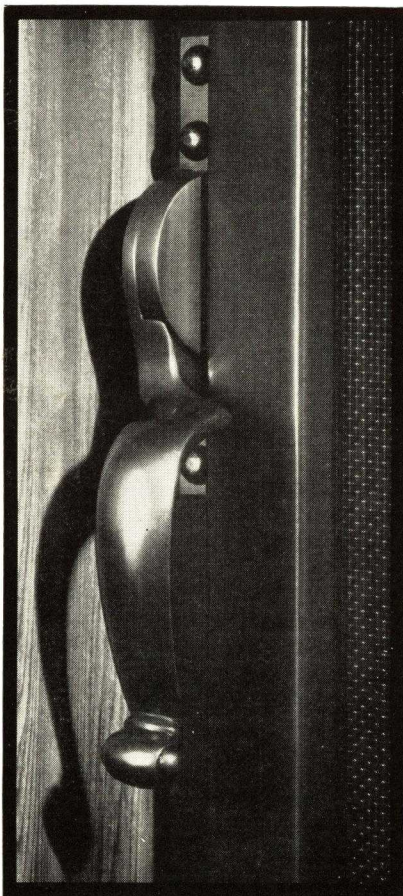


TYPES & SIZES

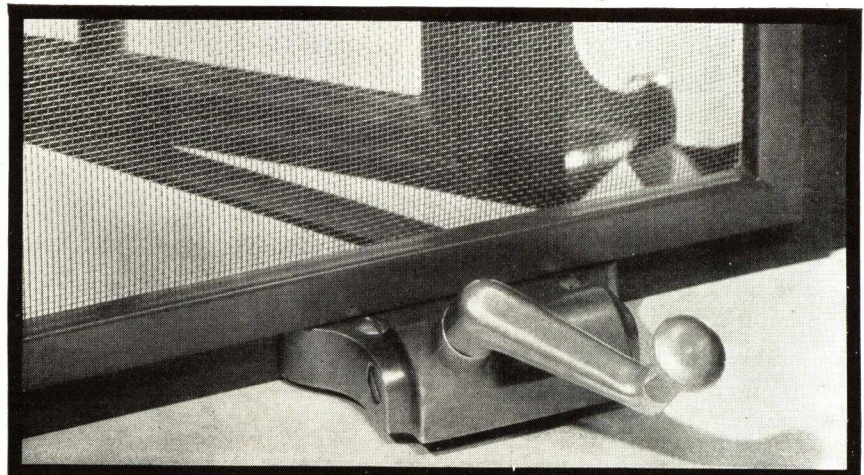
· ALL · HARDWARE · IS
· IN · SOLID · BRONZE
STATUARY · FINISH



For position of dimensions, see page 9



· FASTENER · (NO. 20-67) ·



· GEAR · WORM · ADJUSTER · (NO. 20-70) ·

HOPE'S COTSWOLDS · (Intermediate Sections) See Cat. No. 56

SPECIFICATIONS

All metal windows as shown on the drawings shall be standard Cotswold types and sizes as manufactured by HOPE'S WINDOWS, INC., Jamestown, N. Y. Casements shall be manufactured of hot rolled low carbon new billet steel having a combined weight of not less than 3 lbs. per lineal foot of frame and ventilator sections. All corners shall be solidly welded and exposed surfaces neatly cleaned off. Sections shall provide continuous two-point weathering contacts around the perimeters of all ventilators without the aid of loose or applied linings. All side hung casements shall be hung on extension cleaning hinges, solidly welded to the ventilators and frames. Muntins shall be carefully coped and solidly riveted to the ventilators and/or frames.

Screened type Cotswold casements shall be fitted with bronze fastener No. 20-67 and bronze rotary adjuster No. 20-70. Top hung transom vents shall be fitted with bronze underscreen peg adjuster No. 20-44 all in statuary finish. Non-screened type casements shall be hung on extension friction hinges and fitted with solid bronze fasteners No. 20-67 and pull No. 20-17E. (If bronze double bar sliding adjuster No. 20-16 shown on page 12, catalog No. 56, is required, specify it here.)

All steel work shall be cleaned free from rust and scale and primed two coats of DuPont's special rust-resisting primer, each coat separately stoved on.

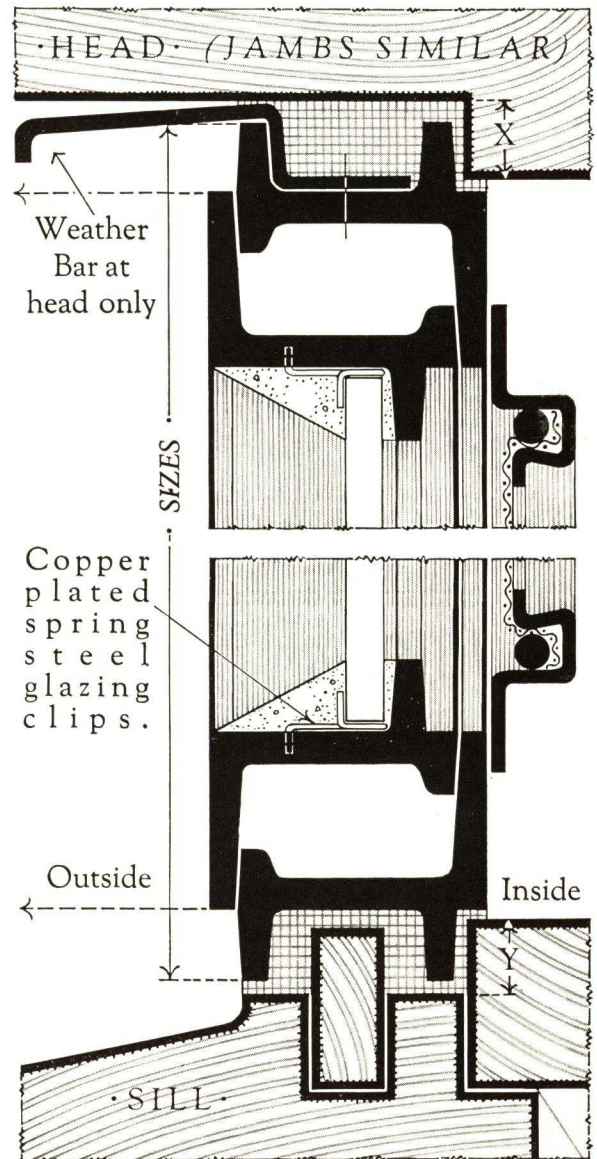
Screen frames shall be made from copper-bearing open hearth steel, "U" shaped, strongly welded and reinforced at each corner, galvanized after all cutting and abrasive operations have been completed and with prime coat of gray paint baked on. Screen frames shall be easily re-wireable and shall be filled with standard weight 16 mesh Anaconda bronze wire cloth, held in place by $\frac{1}{8}$ " round solid steel splines galvanized, bent at the corners and continuous to insure further reinforcement of frame.

All casements shall be drilled to receive shade bracket clips.

Note—Cotswold casements are also available with vertical muntins omitted or the casements left open to receive leaded glass. Winter windows can also be supplied for all types.

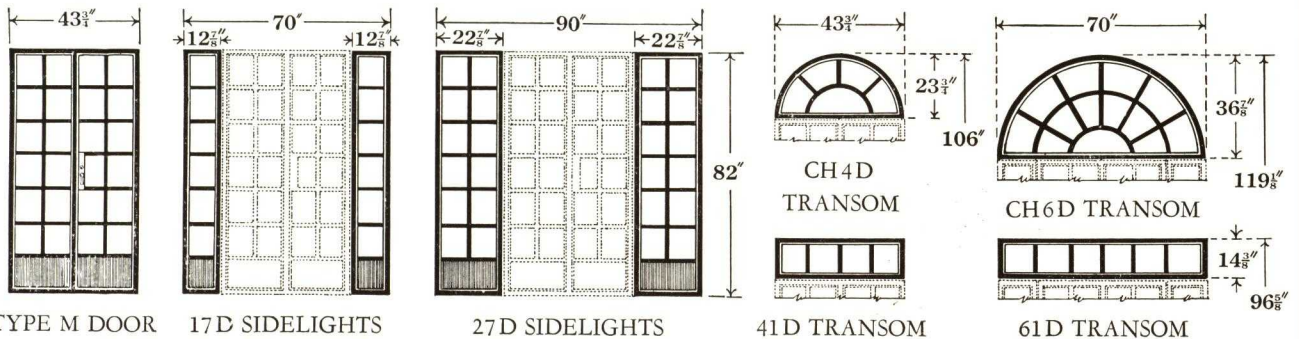
For setting details, refer to catalog No. 56. State if angle fins or redwood surrounds or steel casings are required.

Maximum rebate including trim at head and jambs (dimension "X") $\frac{5}{8}$ in.; at sill (dimension "Y") $\frac{1}{2}$ in.



FULL SIZE SECTION

DOORS · SIDELIGHTS & TRANSOMS in Standard Sizes

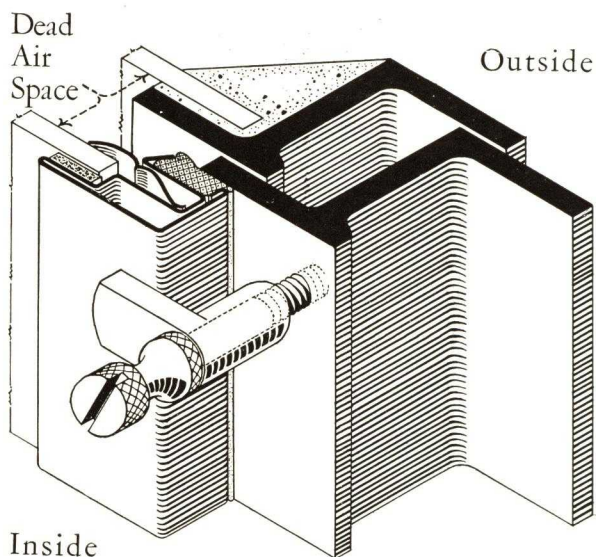


The above are our type "M" outward opening standard muntin type doors. We stock a similar range of doors prepared to receive leaded glass, our type "L." We also

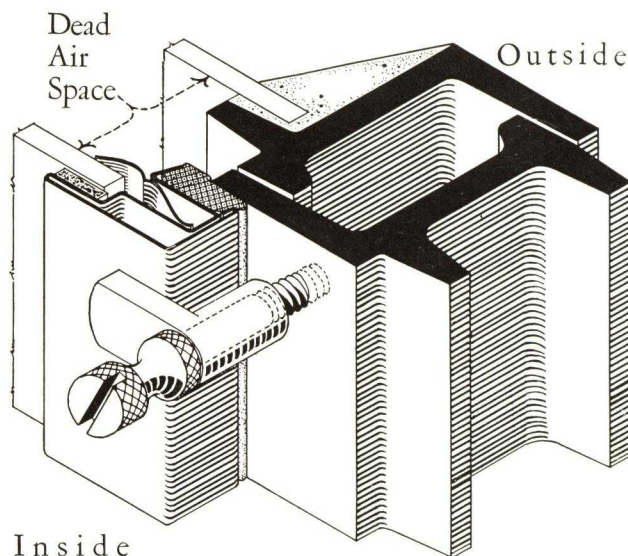
stock an inward opening muntin and leaded glass range, our types "A" and "B." For full particulars, refer to our catalog No. 56.

· HOPE'S · WINTER · WINDOWS ·

FOR ALL WINDOWS IN STANDARD OR SPECIAL SIZES



· HOPE'S STANDARD HOLFORD ·
SECTION SHOWING WINTER WINDOW ATTACHED
· NOTE DEAD AIR SPACE ·

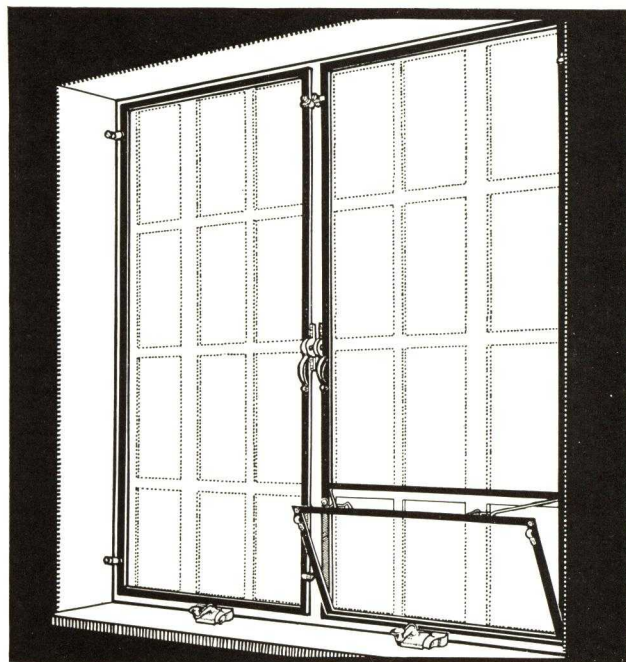


· HOPE'S STANDARD COTSWOLD ·
SECTION SHOWING WINTER WINDOW ATTACHED
· NOTE DEAD AIR SPACE ·

HOPE'S Winter Windows are made of copper bearing electro galvanized steel frames with corners mitered, heavily reinforced, electrically welded and ground smooth. They are an excellent investment. They virtually form a double window and the dead air space between the two glasses greatly reduces fuel bills through the reduction of heat losses, thereby liquidating the original cost of the winter windows in a comparatively short space of time. They are of especial advantage in air-conditioned homes for they reduce condensation, fogging and frosting.

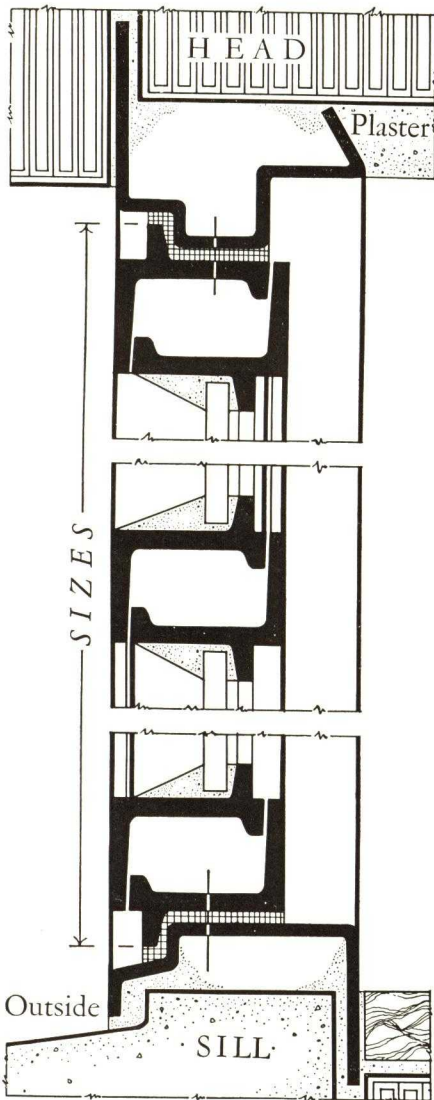
HOPE'S Winter Windows are for use only with screened type casements, that is to say, with casements, fitted with the hardware shown on pages 6 and 8.

If HOPE'S Winter Windows are ordered at the same time as the casement windows, the latter will be drilled and tapped complete, free of charge, in the factory to receive the winter windows. When winter windows are ordered as an after-thought however, certain holes must be drilled and tapped in the field at the customer's expense.

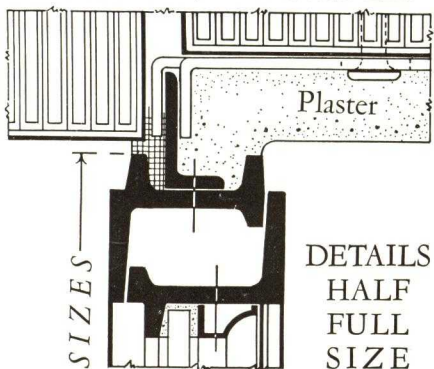


THE above is a typical HOPE winter window installation for a type 6428VC. Each unit is of convenient size for easy handling. Note particularly the sill vent of "Tiltin" type which is optional equipment and which provides slight ventilation for bedrooms or other special locations. They can be provided at slight extra cost. The number required should be specified. One per room is generally considered adequate.

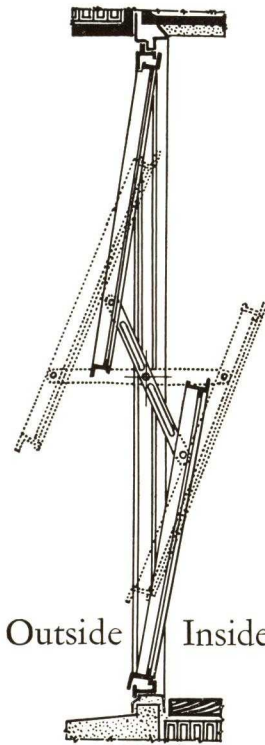
HOPE'S AUSTRALS for SCHOOLS, etc. . See Cat. No. 32



· SECTION WITH ·
· BILTIN · FRAME ·



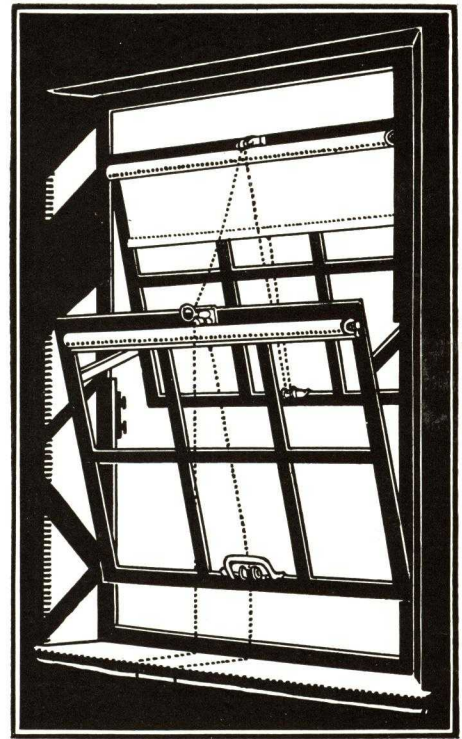
· SECTION WITH ·
· ANGLE FINES AT ·
· HEAD & JAMBS ·



· SECTION · · INSIDE · VIEW ·

Full lines show Austral
open for slight ventilation.
Dotted lines show Austral
fully open.

Note arcing effect of shades which
do not limit ventilation when drawn.
Note ventilation deflected upwards.



SPECIFICATIONS

CONSTRUCTION. All windows shall be HOPE'S Austral Windows as manufactured by HOPE'S WINDOWS, INC., Jamestown, New York. They shall be made from solid rolled steel sections having flanges rolled integral at the mills and the combined weight of frame and sash sections shall be not less than 4.65 lbs. per lineal foot. All corners of frames and sashes shall be solid welded and neatly cleaned off and double weathering contacts shall be provided throughout without the aid of loose or applied linings.

HARDWARE shall be shop applied and shall consist of drop forged steel balance arms securely riveted to upper and lower sashes and operating in hard brass pivot plates, bronze automatic cam spring catch (Patent No. 1,553,712) at the meeting rail and bronze lift handle at the sill. Shade brackets, special cord holders and cleaner's bolts shall also be provided.

PAINTING. All steel work primed two coats DuPont's anti-corrosive paint baked on separately.

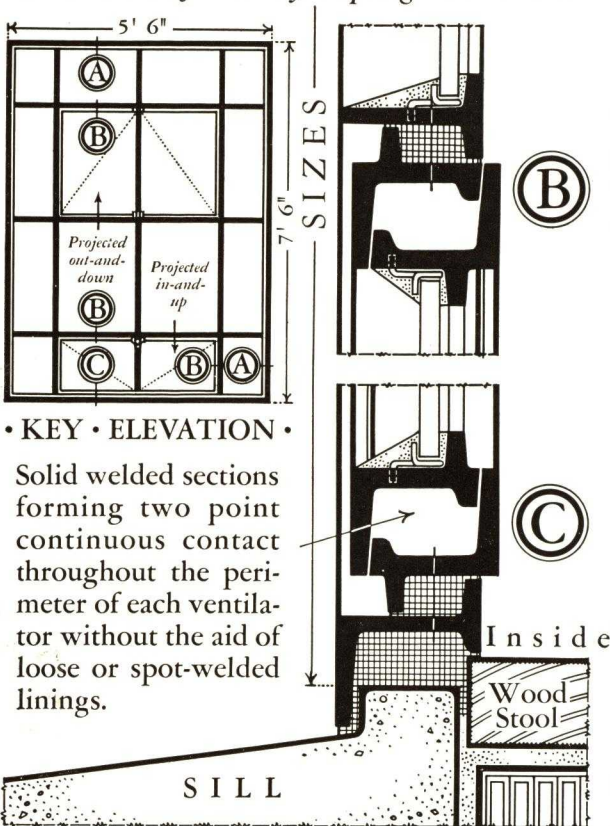
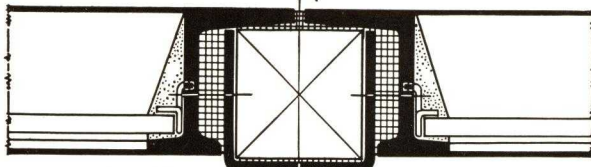
INSTALLATION. This contractor shall also install these windows in the openings. They shall be carefully bedded in HOPE'S Mastic Cement, adjusted and guaranteed weathertight.

HOPE'S · PROJECTED · WINDOW ·

See Cat. No. 32



(A)



· HALF · FULL · SIZE · DETAILS ·

SPECIFICATIONS

All windows shall be Hope's Casements Projected as manufactured by HOPE'S WINDOWS, INC., Jamestown, N. Y. to the sizes and details shown on the drawings. They shall be made from solid rolled steel sections, having flanges rolled integral at the mills and free from distortions or defects of any kind. All joints shall be accurately machined, electrically welded and exposed surfaces ground smooth. All ventilators shall be solid welded units and shall provide continuous double weathering contacts with-

WIDTHS	HEIGHTS				
	6'-6"	7'-0"	4'-6"	5'-0"	
	7'-6"	8'-0"	8'-6"	5'-6"	6'-0"
1'-0"					
1'-6"					
2'-0"					
2'-6"					
3'-0"					
3'-6"					
4'-0"					
4'-6"					
5'-0"					
5'-6"					
6'-0"					
6'-6"					
7'-0"					

SPECIAL SIZES ALSO SUPPLIED

out the aid of loose or applied linings. All projected ventilators shall be supported by two heavy steel side arms pivoted to the frame at the jambs. Friction shall be provided by means of two brass shoes sliding in channel of the frame section. The upper ventilators shall be fitted with automatic bronze spring catch No. 20-64 and with ring pull No. 20-21 at head; sill or "Tiltin" ventilators shall be fitted with bronze cam locking handle No. 20-63.

Specifications for painting and installation are exactly the same as in Hopkins Window Specifications on Page 13.

· SOLID · WELDED · WINDOWS · : · NO · LOOSE · LININGS ·

HOPE'S "HOPKINS" WINDOW · See Cat. No. 32

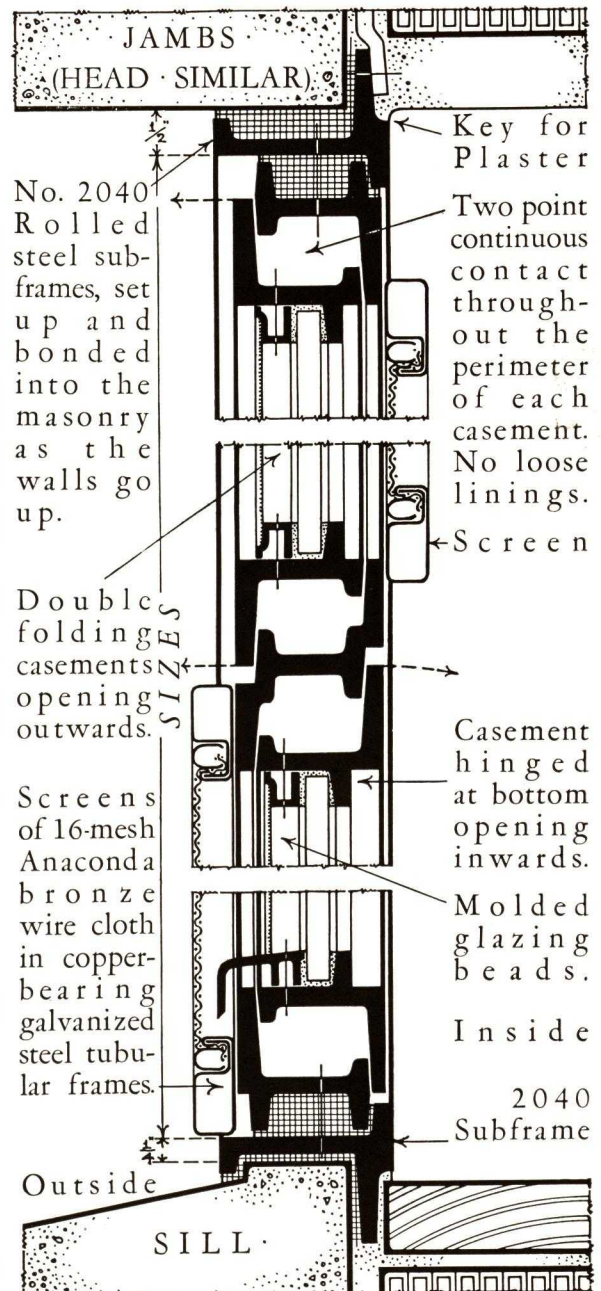
WIDTHS	HEIGHTS					
	6'-6"	7'-0"	4'-6"	5'-0"	7'-6"	8'-0"
2'-6"						
3'-0"						
3'-6"						
4'-0"						
4'-6"						
2'-6"						
3'-0"						
3'-6"						
4'-0"						
4'-6"						
5'-0"						
1'-6"						
2'-0"						
1'-0"						
1'-6"						
2'-0"						
5'-0"						
5'-6"						
6'-0"						
6'-6"						
7'-0"						

SPECIAL SIZES ALSO SUPPLIED

SPECIFICATIONS

All windows shall be HOPE'S Hopkins Windows as manufactured by HOPE'S WINDOWS, INC., Jamestown, N. Y., to the sizes and details shown on the drawings. They shall be made from solid rolled steel sections having flanges welded integral at the mills and the combined weight of the ventilator sections shall be not less than 3.55 lbs. per lineal foot. All bars shall be free from distortions or defects of any kind. Mullion and transom bars shall be welded solidly into their outer frames and frames and casements shall be solid welded units which shall provide continuous double weathering contacts without the aid of loose or applied linings.

· SOLID · WELDED · WINDOWS · NO · LOOSE · LININGS ·



HALF · FULL · SIZE · DETAILS

Side hung casements shall be hung on drop forged friction hinges, three knuckle type, and shall be fitted with solid bronze two-point fastener No. 20-52. Sill or "Tiltin" ventilators shall be fitted with bronze cam locking handle No. 20-63.

All steel work shall be cleaned free from rust and scale and shall be primed two coats of DuPont's anti-corrosive paint, each coat separately stoved on.

All windows shall be installed by this contractor and shall be carefully bedded and pointed in HOPE'S Mastic Cement, adjusted and guaranteed weathertight.

"The Name

HOPE'S

Guarantees"



PHARMACY · BUILDING · STATE · HOSPITAL · No. 2 · ST. JOSEPH · MO.

ECKEL · & · ALDRICH · Architects

Hope's supplied and installed 676 Psychiatric Projected and 105 Side Projected Windows in this building

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ALUMINUM OR BRONZE

SEALAIR WINDOWS

DOORS AND ENTRANCES

ARCHITECTURAL METAL WORK

1939

NEW ALL-ALUMINUM SEALAIR WINDOWS OFFER MANY ADVANTAGES!



Chicago, Ill. Elmer Carlson, Architect.



Houston, Texas. Wirtz & Calhoun, Arch.



Benton Harbor, Michigan. R. F. Huxman, Arch.



Miles Lab., Inc., Elkhart, Ind. F. A. Randall, Arch.

★ **SERIES 120 and SERIES 220 Sealair Windows** are complete factory-fitted and factory-assembled, double-hung windows, furnished in stock, standard, and special sizes up to 4'0" x 8'0" (Series 120, putty-glazed, aluminum or bronze) and up to 5'0" x 9'0" (Series 220, metal-glazed, aluminum).

Great strength and durability are obtained in sash, frames, and reinforcements built entirely of aluminum or bronze, without the use of steel reinforcements or sub-frames. Incorporates all important features of traditional window appearance, plus effective weathering, easy operation, and appealing beauty.

SUITABLE FOR all types of residences, apartments, schools, hotels, commercial, public and monumental buildings.

MODERATELY PRICED for general use. An outstanding value when compared with total installed cost of any window on the market.

DRASTIC REDUCTION IN MAINTENANCE EXPENSE. Sealair Windows never require painting—will not rust, rot, swell, or shrink. Savings on painting alone run from \$1.00 to \$1.50 per window per year.

ADMIT MORE DAYLIGHT. Strong slender members and narrow mullions provide greater glass area per opening.

EXTREMELY WEATHERTIGHT. Weathering in sash at side jambs, and efficient felt interlocks between sash and frame produce exceptional protection against wind and weather. (See details below.)

EASY, QUIET OPERATION. Sash are guided entirely by concealed, resilient weatherstrips which eliminate rattling. There is no paint, rusting or swelling to cause sash to stick or bind.

RICH, LASTING BEAUTY of natural aluminum or bronze, with special wheel-cleaned satin finish. The cheerful, modern effect of more daylight, of attractive finish, and of strong, slender members is a most important feature. Suitable for use with any type of architecture. Write for further data.

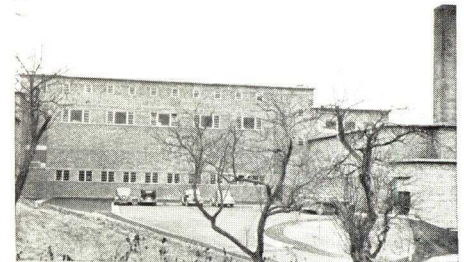
FOR CASEMENT WINDOWS, DOORS AND ARCHITECTURAL METAL WORK SEE P. 7-11.

THE
Kawneer
COMPANY
NILES, MICHIGAN

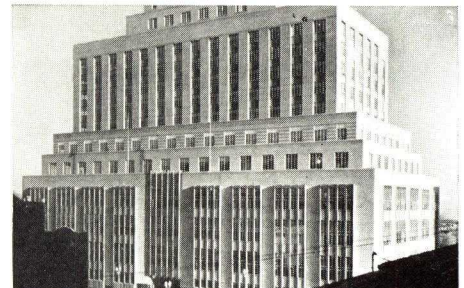
BRANCHES: NEW YORK, CHICAGO, BERKELEY,
CALIF. DEALERS IN PRINCIPAL CITIES.



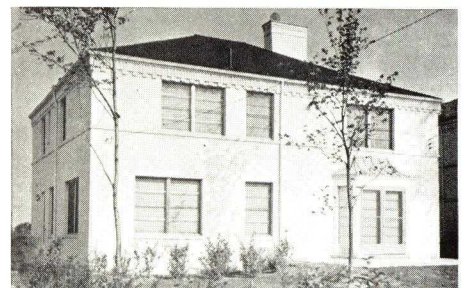
Aluminum Co., Los Angeles, Calif.



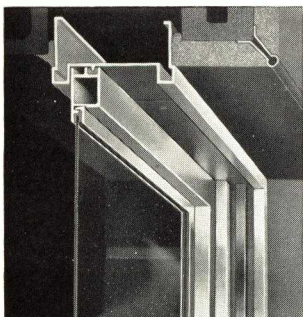
Cranbrook, Birmingham, Mich. E. Saarinen, Arch.



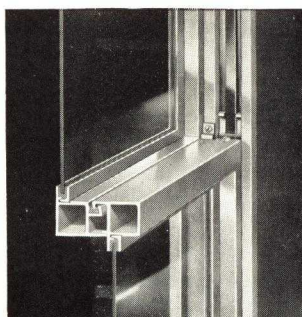
U. S. Post Office, St. Paul, Minn. Lambert Bassindale,
Arch. Holabird & Root, Assoc. Archs.



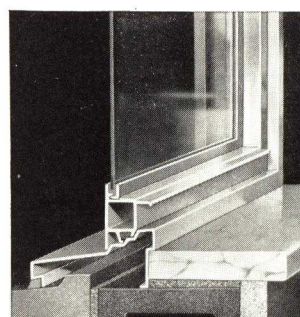
Detroit, Michigan. R. W. Tempest, Architect.



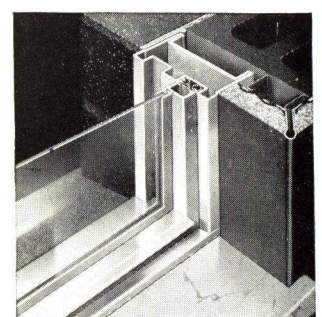
HEAD (Series 220). All-aluminum sash and frame interlock with felt cushion, sealing out air, dust and weather.



MEETING RAIL. Double contacts, felt-to-metal and metal-to-metal, between strong, tubular rails.

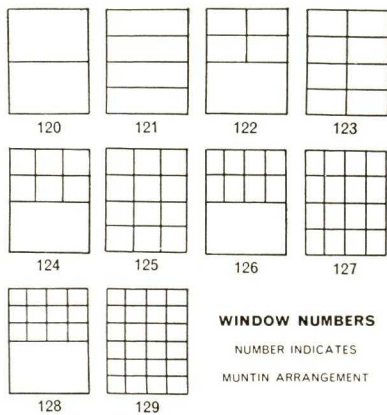


SILL. Aluminum sill with double baffle and felt seal, sloped to drain moisture to outside. Welded frame assures watertight unit.



SIDE JAMB. Resilient weathering guides are built into, slide with and are concealed in the sash—jambs are free from crevices.

SERIES 120—SEALAIR DOUBLE-HUNG WINDOWS

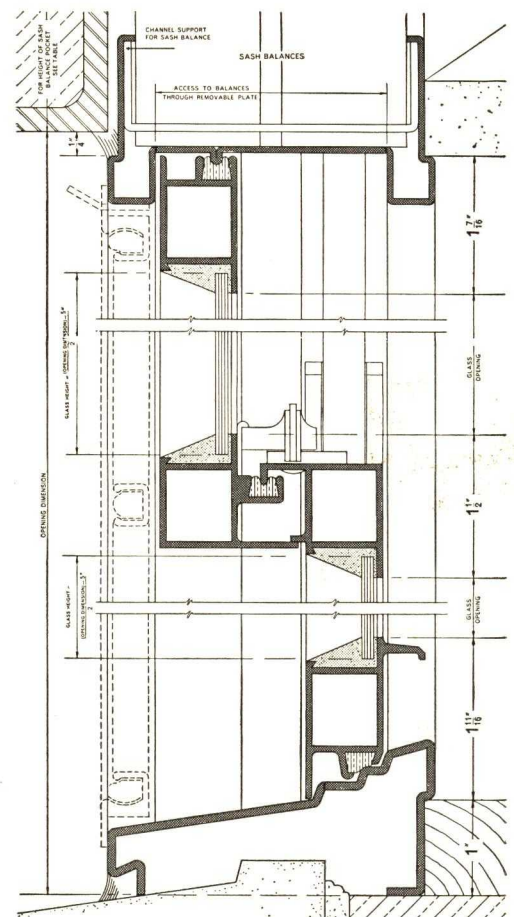
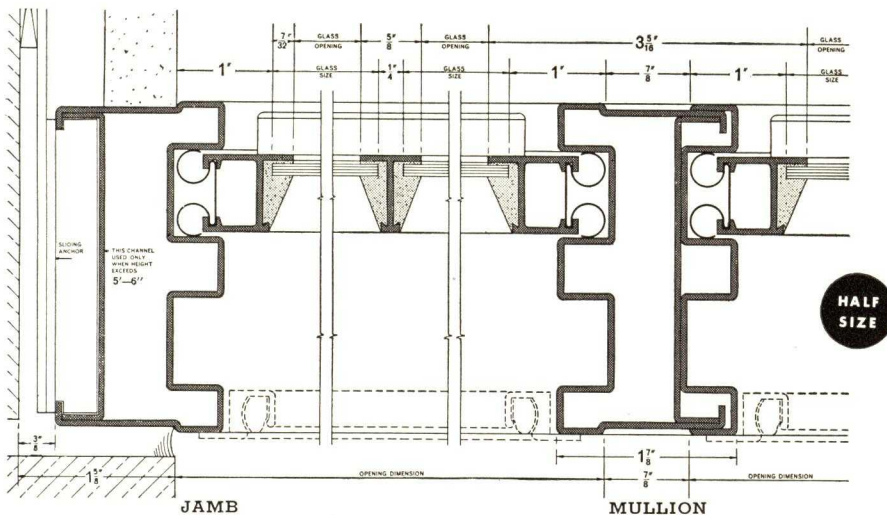


WINDOW NUMBERS
NUMBER INDICATES
MUNTIN ARRANGEMENT

In stock and standard sizes for masonry openings up to 4'0" x 8'0". Putty glazed sash. Suitable for general residential use and for many types of buildings.

★ **SERIES 120 Sealair Double-Hung Windows** are furnished in all-aluminum (or bronze) construction in the stock and standard sizes listed below. Note conventional putty glazing and simplicity of design which make these up-to-date windows suitable for use in Colonial homes as well as all other types. Standard muntin arrangements are shown at left, but special types may be had on special order. For structural features refer to specifications on page 4. Installation data—page 6.

F. S. DETAILS AND COMPLETE DATA AVAILABLE ON SERIES 120 SEALAIR WINDOWS.

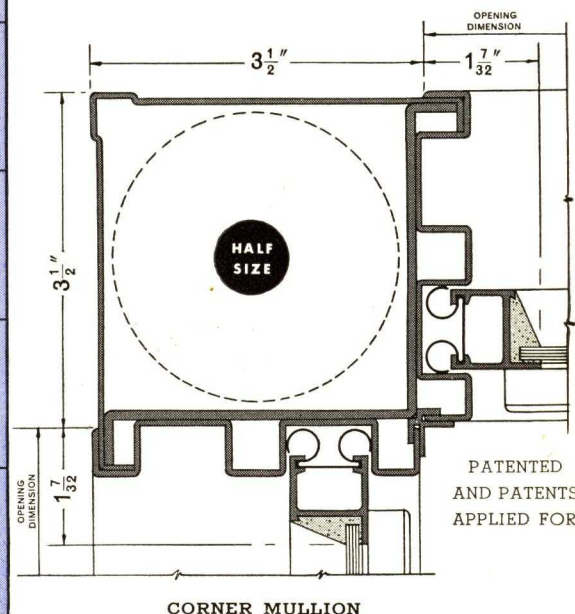


VERTICAL SECTION

STOCK AND STANDARD SIZE NUMBERS WHITE AREA STOCK SIZES—SHADED AREA STANDARD SIZES OTHER STANDARD SIZES UP TO 4'-0" x 8'-0"					
 2036	 2040	 2046	 2050	 2056	 2060
 2636	 2640	 2646	 2650	 2656	 2660
 3036	 3040	 3046	 3050	 3056	 3060
 3636	 3640	 3646	 3650	 3656	 3660
 4036	 4040	 4046	 4050	 4056	 4060

HEIGHT OF SASH BALANCE POCKET

HEIGHT OF SASH BALANCE POCKET	MAXIMUM AREA OF MASONRY OPENING	
	D.S.A. GLASS	PLATE GLASS
3 3/4"	30 SQ. FT.	15 SQ. FT.
4 1/2"	40 SQ. FT.	20 SQ. FT.
6"		40 SQ. FT.



CORNER MULLION

PATENTED
AND PATENTS
APPLIED FOR

SPECIFICATIONS AND DATA—SERIES 120 AND 220 SEALAIR DOUBLE-HUNG**SERIES 120, SPECIFICATIONS**

SCOPE. The work under this heading includes all exterior window frames and sash, fully weatherstripped.

(A) **ALUMINUM DOUBLE-HUNG WINDOWS.** Furnish and set aluminum (bronze) double-hung windows in all window openings where double-hung windows are shown on plans and/or called for in these specifications.

(B) **MATERIALS.** Extruded aluminum (bronze) where used in the windows shall be equivalent to Aluminum Company of America specifications 53S-T5 (or architectural bronze). Rolled, formed, or flat aluminum (bronze) members shall be equivalent to Aluminum Company of America specifications 52S (or 85-15 bronze). No exposed aluminum (bronze) shall be less than .050" in thickness. Sill members shall not be less than .078" thick. Exposed surfaces of all members shall be wheel cleaned to a uniform natural color before assembly. Felt used for weathering shall be all wool especially treated to give maximum resiliency and to prevent deterioration due to vermin, moisture, and exposure.

(C) Frame and integral reinforcing members shall be of aluminum (bronze). Side jambs shall be not less than 3 3/8" wide by 1 3/4" deep, and shall weigh not less than .70 lbs. per lineal foot, except in windows not over 5'6" in height, the minimum weight of side jambs shall be .50 lbs. per lineal foot. Head jambs shall be not less than 3 3/8" wide by 1 1/2" deep, and shall weigh not less than .50 lbs. per lineal foot. Sill members shall be not less than 3 3/8" wide by 1 1/4" deep, and shall weigh not less than .60 lbs. per lineal foot. Side and head jambs shall extend 1 1/4" beyond masonry opening, to form a continuous fin or weather stop. Steel subframes or fins will not be acceptable.

Portions of aluminum frames to be concealed in walls or masonry shall be well covered with a heavy coat of bitumastic paint or aluminum paint.

(D) Connections between aluminum (bronze) side jamb members and aluminum (bronze) sill members

and head jambs shall be neatly fitted, waterproof connections formed by a watertight welded joint.

(E) Parting strips, stops, and sash guides shall be made of aluminum (bronze), and shall be formed integral with the side jamb.

(F) All operating windows shall be equipped with spring sash balances. Access plates are to be neatly fitted at each end of the head jamb to permit the removal of the spring balances without removing the sash from the window frame.

(G) Sill members shall have an unrestricted slope for drainage, and shall have a double offset for weather protection.

(H) Mullions shall be built with aluminum (bronze) facing at both exterior and interior. Aluminum (bronze) covering shall be interlocked and joined with weather-tight joints. The overall width of the mullion from glass line to glass line shall not be more than 3 3/8".

(I) **SASH.** All sash shall be constructed of approved extruded aluminum (bronze) sections accurately coped or mitered at corners and firmly joined with mortise and tenon peened connection and/or welded joints to form a rigid sash frame. All sash sections shall be hollow to form an enclosed air space within the section to reduce condensation. Head rail, meeting rails, and bottom rail shall be built of tubular sections, the outside dimensions of which shall be not less than 1 3/8" in depth and 3/8" in width. The overall dimensions of the head rail shall be not less than 1 3/8" in depth and 1 3/4" in width. The overall width of each meeting rail shall be not less than 1 1/4" and the combined depth of both meeting rails shall be not less than 2 1/4". The overall depth of the bottom rail shall be not less than 1 1/4"; the overall width of bottom rail shall be not less than 1 1/2". Muntins shall be of a T section, and shall be firmly and neatly attached to the sash member with a riveted, peened, or welded joint, and shall be accurately and firmly joined at cross intersections.

(J) **GLAZING.** Sash and muntins shall have a retaining flange to hold putty, and glazing springs shall be furnished.

(K) **METAL WEATHERSTRIPS AND SASH SUPPORTS.** Sash shall be supported and guided at the jambs by weatherstrip members made of special zinc alloy (bronze). These weatherstrip members shall operate against aluminum (bronze) guide members to provide a continuous resilient support and guide for the sash, and shall hold the aluminum (bronze) sash members clear of contact with other aluminum (bronze) members. All sliding and guiding contacts shall be between the weatherstrip metal and aluminum (bronze).

(L) **WEATHERING ON HORIZONTAL SASH MEMBERS.** Contacts with top rails, meeting rails, and bottom rails of sash shall be sealed with felt, forming continuous weathertight contact between sash members and frame and between meeting rails.

(M) Weathering of windows shall prevent infiltration in excess of .5 cu. ft. per minute per lineal foot of sash perimeter under a static pressure equivalent to a wind velocity of 25 miles per hour. All weatherstrips, rubbing strips, or guide strips shall be attached to and concealed in the sash and shall move with the sash so that there will be no weatherstripping exposed in the side jamb, head jamb or sill when sash are raised or lowered.

(N) **HARDWARE.** The aluminum (bronze) windows shall be equipped with hardware by the manufacturer of the windows. Hardware shall consist of a continuous lift at the bottom rail, sash lock and bumpers.

(O) **PROTECTIVE COAT.** Before leaving the factory, the windows shall be coated with a protective coating as a precaution against damage to finish during transit and erection. Protective coating shall be readily removable with naphtha or other standard solvent.

SERIES 220, SPECIFICATIONS

SCOPE. The work under this heading includes all exterior window frames and sash; window cleaning equipment; fully weatherstripped.

(A) **ALUMINUM DOUBLE-HUNG WINDOWS.** Furnish and set aluminum double-hung windows in all window openings where double-hung windows are shown on plans and/or called for in these specifications.

(B) **MATERIALS.** Extruded aluminum where used in the windows shall be equivalent to Aluminum Company of America specifications 53S-T5. Rolled, formed, or flat aluminum members shall be equivalent to Aluminum Co. of America specifications 52S. No exposed aluminum shall be less than .050" in thickness. Sill members shall not be less than .078" thick. Exposed surfaces of all members shall be wheel cleaned to a uniform natural color before assembly. Felt used for weathering shall be all wool especially treated to give maximum resiliency and to prevent deterioration due to vermin, moisture, and exposure.

(C) Frame and integral reinforcing members shall be of aluminum. Side jambs shall be not less than 3 1/8" wide by 1 3/8" deep, and shall weigh not less than .75 lb. per lineal foot, except in windows not over 5'6" in height, the minimum weight of side jambs shall be .55 lb. per lineal foot. Head jambs shall be not less than 3 1/8" wide by 1 3/4" deep; and shall weigh not less than .60 lb. per lineal foot. Sill members shall be not less than 3 1/8" wide by 1 1/2" deep, and shall weigh not less than .60 lb. per lineal foot. Side and head jambs shall extend 1 1/4" beyond masonry opening, to form a continuous fin or weather stop. Steel sub-frames or fins will not be acceptable.

Portions of aluminum frames to be concealed in wall or masonry shall be well covered with a heavy coat of bitumastic paint or aluminum paint.

(D) Connections between aluminum side jamb members and aluminum sill members shall be neatly fitted, waterproof connections formed by a watertight welded joint.

(E) Parting strips, stops, and sash guides shall be made of aluminum, and shall be formed integral with the side jamb.

(F) Head Jambs are to be constructed to receive spring sash balances. Access plates are to be neatly fitted at each end of the head jamb to permit the removal of the spring balances without removing the sash from the window frame.

(G) Sill members shall have an unrestricted slope for drainage and shall have a double offset for weather protection.

(H) Mullions shall be built with aluminum facing at both exterior and interior. Aluminum covering shall be interlocked and joined with weathertight joints. The overall width of the mullion from glass line to glass line shall not be more than 3 3/4".

(I) **SASH.** All sash shall be constructed of approved extruded aluminum sections accurately coped or mitered at corners, and firmly joined with mortise and tenon peened connection and/or welded joints to form a rigid sash frame. All sash sections shall be hollow to form an enclosed air space within the section to reduce condensation. Head rail, meeting rails, and bottom rail shall be built of tubular sections. The outside dimensions of the tube shall be not less than 1" in depth and 1 1/8" in width. The overall dimensions of the head rail shall be not less than 1" in depth and 1 3/4" in width. The overall width of each meeting rail shall be not less than 1 1/2" and the combined depth of both meeting rails shall be not less than 2 1/2". The overall depth of the bottom rail shall be not less than 1 3/8"; the overall width of bottom rail shall be not less than 1 3/4". Muntins shall be of a T section, and shall be firmly and neatly attached to the sash member with a riveted, peened, or welded joint, and shall be accurately and firmly joined at cross intersections.

(J) **GLAZING.** Sash and muntins shall be fitted with patented Kawneer aluminum inside metal glazing moulding accurately and neatly fitted and attached with screws or interlocking with the sash frame.

(K) **METAL WEATHERSTRIPS AND SASH SUPPORTS.** Sash shall be supported and guided at the jambs by weatherstrip members made of special zinc alloy. These weatherstrip members shall operate against aluminum guide members to provide a continuous resilient support and guide for the sash, and shall hold the aluminum sash members clear of contact with other aluminum members. All sliding and guiding contacts shall be between the weatherstrip metal and aluminum.

(L) **WEATHERING ON HORIZONTAL SASH MEMBERS.** Contacts with top rails, meeting rails, and bottom rails of sash shall be sealed with felt, forming continuous weathertight contact between sash members and frame and between meeting rails.

(M) Weathering of windows shall prevent infiltration in excess of .5 cu. ft. per minute per lineal foot of sash perimeter under a static pressure equivalent to a wind velocity of 25 miles per hour. All weatherstrips, rubbing strips, or guide strips shall be attached to and concealed in the sash and shall move with the sash, so that there shall be no weatherstrips exposed in the side jamb, head jamb, or sill when the sash are raised or lowered.

(N) **HARDWARE.** The aluminum windows shall be equipped with hardware by the manufacturer of the windows. Hardware shall consist of a continuous lift at the bottom rail and sash lock, and sash pole plate on the top rail.

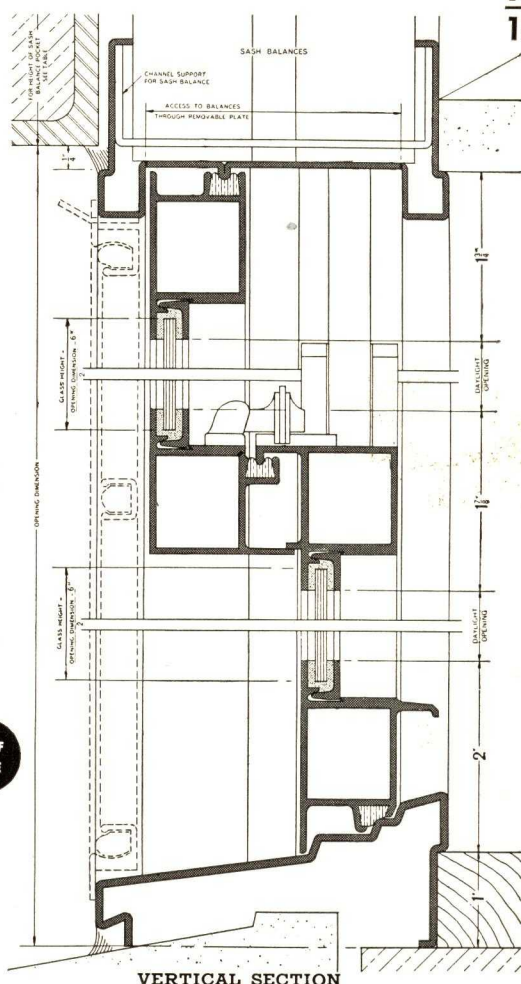
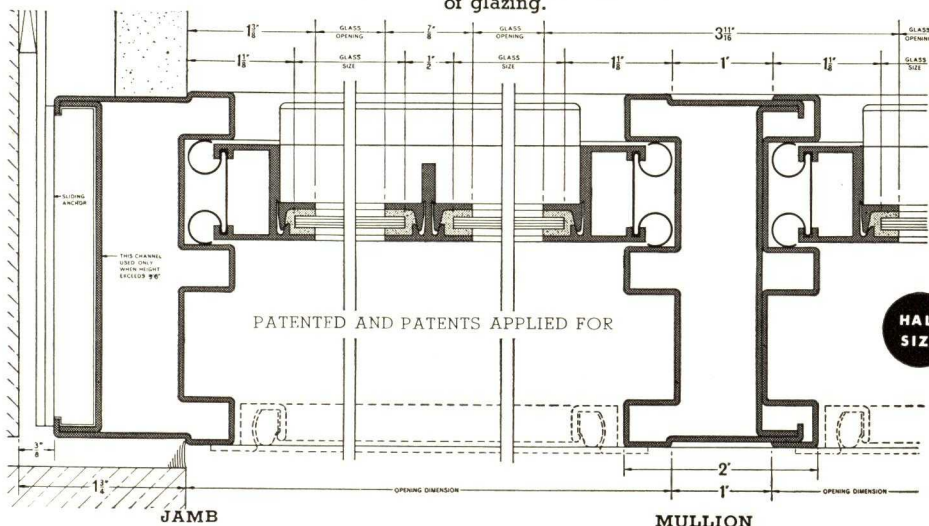
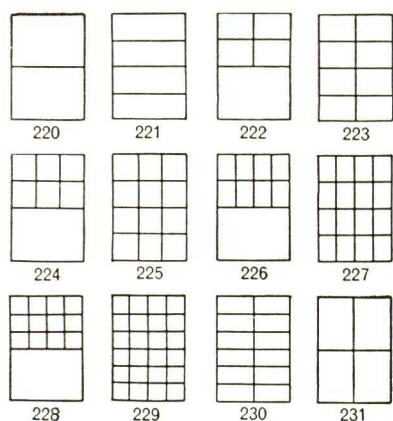
(O) **PROTECTIVE COAT.** Before leaving factory, windows shall be coated with a protective coating as a precaution against damage to finish during transit and erection. Protective coating shall be readily removable with naphtha or other standard solvent.

(P) **TWO WINDOW CLEANER BOLTS** of an approved type shall be provided for each window unit, except where the masonry sills are less than six feet above the adjacent grade, flat roofs or bottoms of open areas; and where sash is two feet or less in width or where the total height of both sash is five feet or less. Two window cleaner belts shall be provided.

SERIES 220—SELAIR DOUBLE-HUNG WINDOWS

In standard sizes for masonry openings up to 5'0" x 9'0". Metal glazed sash. Suitable for general use in all types of schools, apartments, residences, hospitals, hotels, commercial, public and monumental buildings.

★ **SERIES 220 Sealair Double-Hung Windows** are furnished in all-aluminum construction in standard sizes listed below. These modern windows admit more daylight, offer rich, lasting beauty, maximum protection against wind, dust and weather, and smooth, quiet, easy operation—plus very substantial upkeep savings for the life of the building. No painting is ever required. There are no steel subframes to rust or cause trouble. Notice particularly the patented Kawneer Inside Glazing Stops which assure true, straight lines around glass—the most advanced method of glazing.

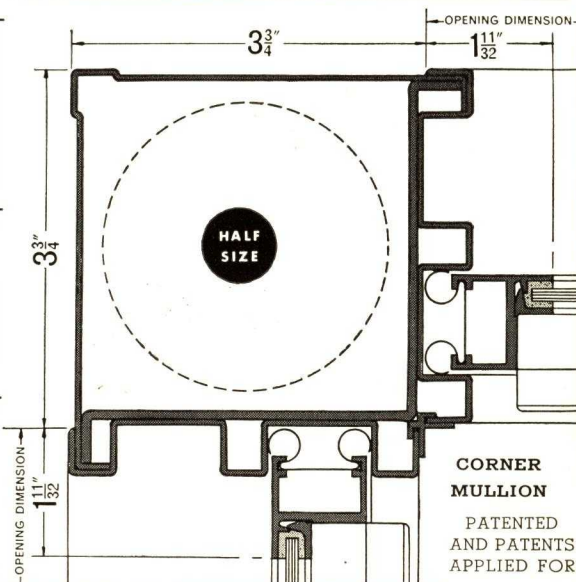


STANDARD SIZE NUMBERS
OTHER STANDARD SIZES UP TO 5'-0" x 9'-0"

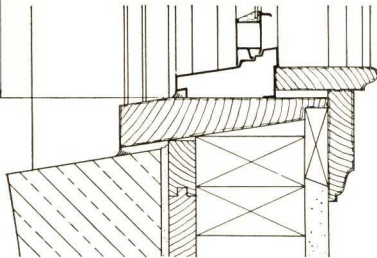
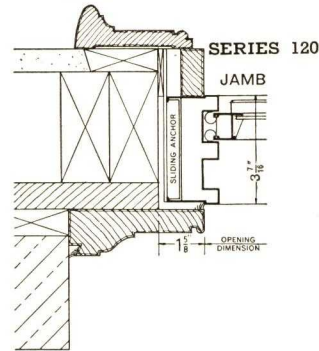
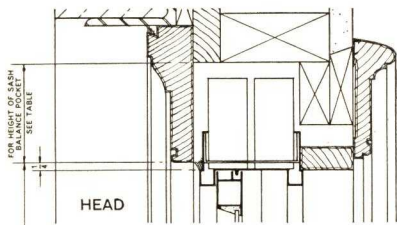
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<p>3640</p>	<p>3650</p>	<p>3660</p>	<p>3670</p>	<p>3680</p>	<p>3690</p>
<p>4040</p>	<p>4050</p>	<p>4060</p>	<p>4070</p>	<p>4080</p>	<p>4090</p>
<p>4640</p>	<p>4650</p>	<p>4660</p>	<p>4670</p>	<p>4680</p>	<p>4690</p>

HEIGHT OF SASH BALANCE POCKET

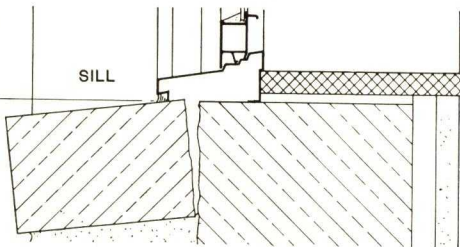
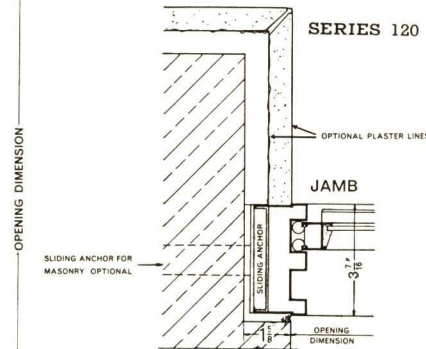
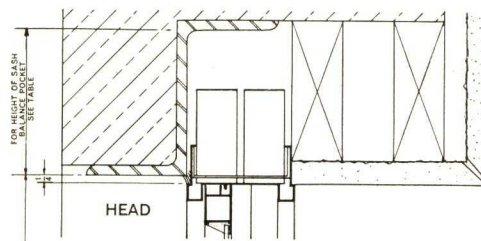
HEIGHT OF SASH BALANCE POCKET	MAXIMUM AREA OF MASONRY OPENING	
	D.S.A. GLASS	PLATE GLASS
3 $\frac{3}{4}$ "	30 SQ. FT.	15 SQ. FT.
4 $\frac{1}{2}$ "	45 SQ. FT.	20 SQ. FT.
6"		45 SQ. FT.



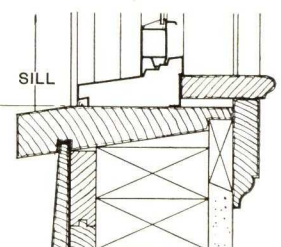
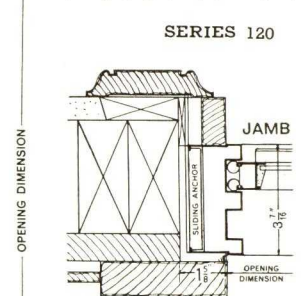
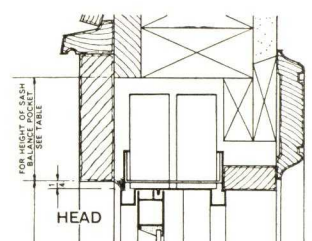
**SERIES 120 AND 220 INSTALLATION—GROUPED WINDOWS
SCREENS AND STORM SASH**



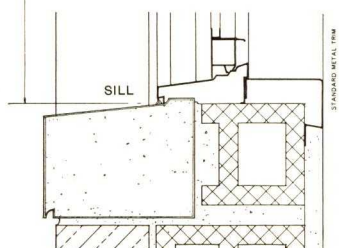
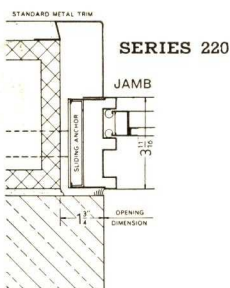
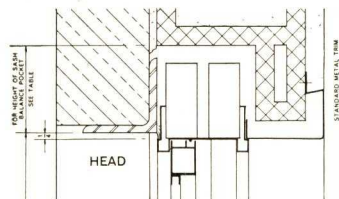
BRICK VENEER—COLONIAL



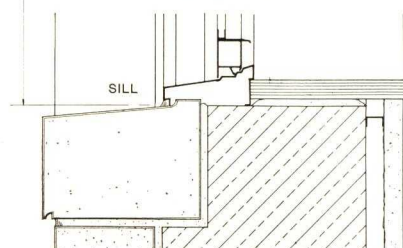
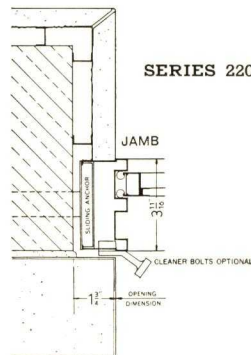
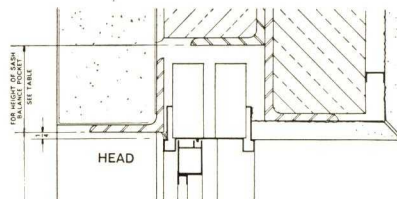
BRICK CONSTRUCTION



FRAME AND SIDING



**BRICK FACING-TILE BACKING-INSIDE
METAL TRIM-REINFORCED TILE LINTEL**



**STONE FACING-BRICK BACKING-
PLASTER RETURN-STEEL LINTEL**

★ **INSTRUCTIONS FOR INSTALLING.** Where possible, windows should not be installed until all masonry work has been completed, but in any event protective coating should be removed only after all plastering is done. Check opening to make certain that opening is correct in size, and is square, plumb and true, and sub-sill is level. Any blocking should be full width to support sill and jambs substantially and should be level and true.

Anchors are attached to jambs and head, screwed to grounds or set in masonry as shown, after proper caulking space has been established. If setting is made on masonry subsill, set in cement grout, cut back to allow for caulking.

Make certain that sill has been set level and true, frame is square, and that sash operate and lock properly, before blocking and caulking.

Caulk with best grade of gray caulking compound, taking pains to fill the space all around the window; and neatly remove excess material.

Protective coating on the window is wax. If not dirty, it may be rubbed to a polish with a dry cloth. If excessively dirty or rough, it may be removed with naphtha and then wiped dry and clean.

GROUPED WINDOWS. Twin, triple and larger groups of windows are shipped from the factory, separate window units ready for grouping in the opening when erected. The first window has standard jambs on both sides. Others have a special mullion jamb on the right hand edge to fit against standard jamb of adjoining windows with a slip joint. Windows are first set in place loosely, and lined up. Jamb anchors, head anchors and mullion anchors (top and bottom) are then attached.

SCREENS AND STORM SASH. Sealair Windows are prepared for easy installation of screens and storm sash. Hangers are applied in the field by removing 4 screws in the head jamb. Full (or half length) screens made of the same metal as the window are wired with 16-mesh screen wire of the same metal, complete with hangers and latch.

Storm sash are interchangeable, and hang from the same hangers used for screens and are fitted with latches. Ventilator arms are provided where required.

SERIES 500—SEALAIR CASEMENT WINDOWS

★ **SERIES 500 Sealair Casement Windows** are fabricated to order for any architectural requirements—in any combination of inswinging, outswinging, hinged or pivoted type sash. All-aluminum (or bronze) Sealair construction assures long, dependable service for the life of the building, with practically no maintenance expense. Famous Kawneer 3-point contact (*double metal-to-felt, plus metal-to-metal contact*) produces the extremely weathertight infiltration figure of 0.124 cubic ft. per minute per lineal ft. of sash perimeter at a wind velocity of 25 m.p.h.

These Sealair Windows have been specified for many outstanding buildings—because of their scale, dignity, perfection of detail and durability. Typical details show Inside Metal Glazing and other features.

DETAIL FOLDERS AVAILABLE

SERIES 100 SEALAIR WINDOWS. Weight-hung. Stock and standard sizes—openings to 36" wide. Metal Glazing.

SERIES 120 SEALAIR WINDOWS. Double-hung. (Spring balance.) Stock and standard sizes for openings up to 4'0" x 8'0". Putty Glazing.

SERIES 140 SEALAIR WINDOWS. Same as Series 120—but with Metal Glazing.

SERIES 220 SEALAIR WINDOWS. Double-hung. (Spring balance.) Standard sizes—openings to 5'0" x 9'0". Metal glazing.

SERIES 300 SEALAIR WINDOWS. Weight-hung. Fabricated to order for openings up to 66" in width. Metal Glazing.

SERIES 400 SEALAIR WINDOWS. Casement. Standard sizes. Metal Glazing.

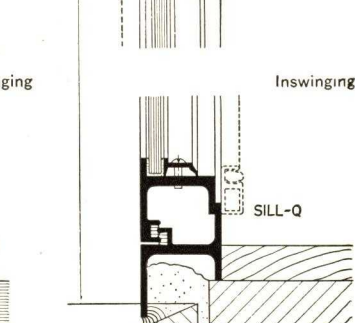
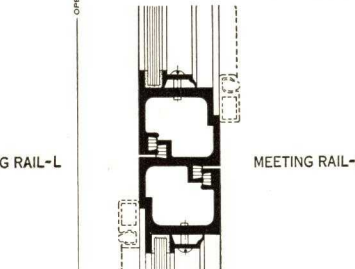
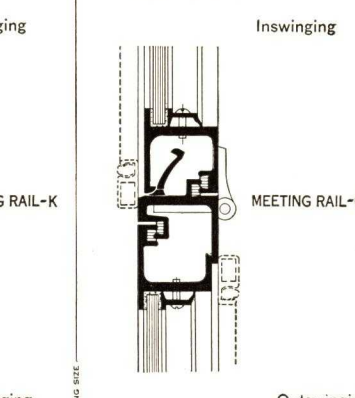
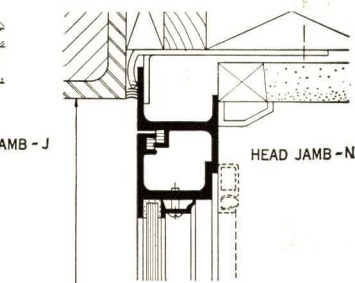
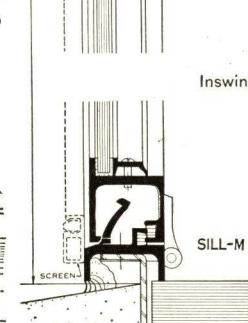
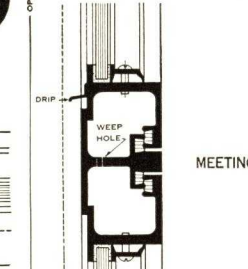
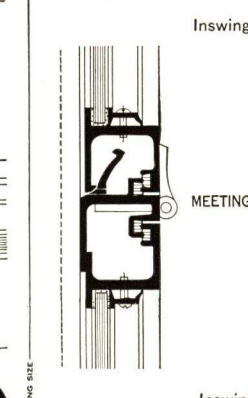
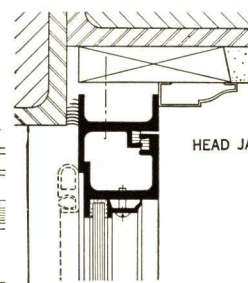
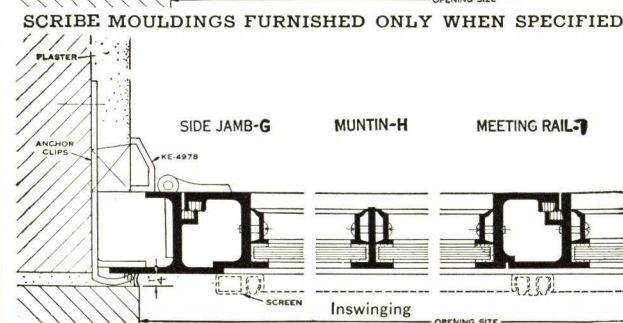
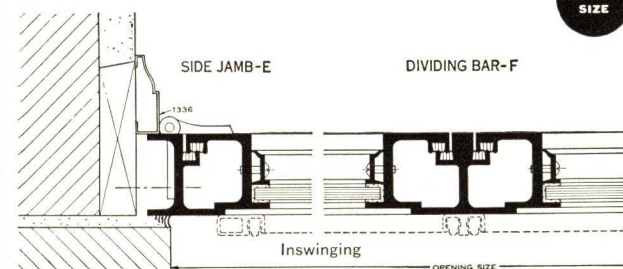
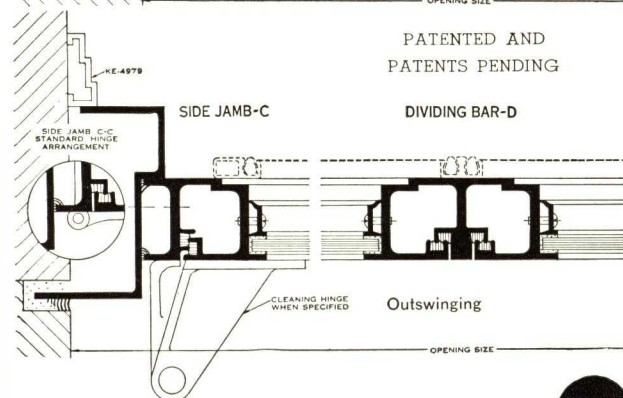
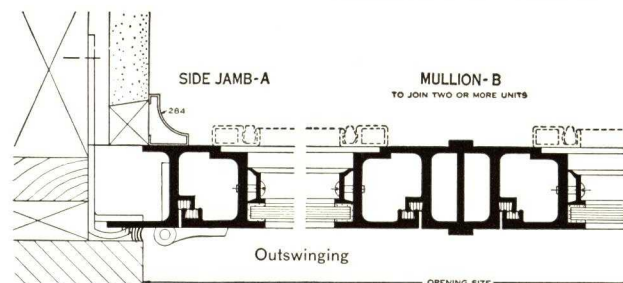
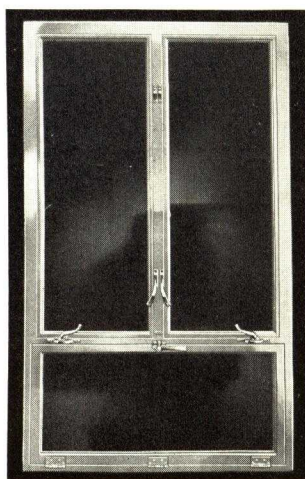
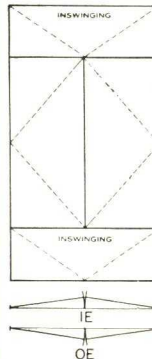
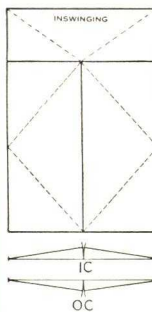
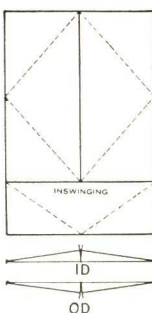
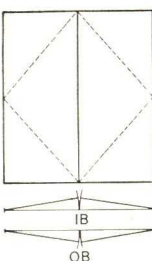
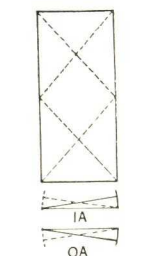
SERIES 500 SEALAIR WINDOWS. Casement. Fabricated to order. Metal Glazing.

SERIES 600—RESIDENTIAL DOORS.

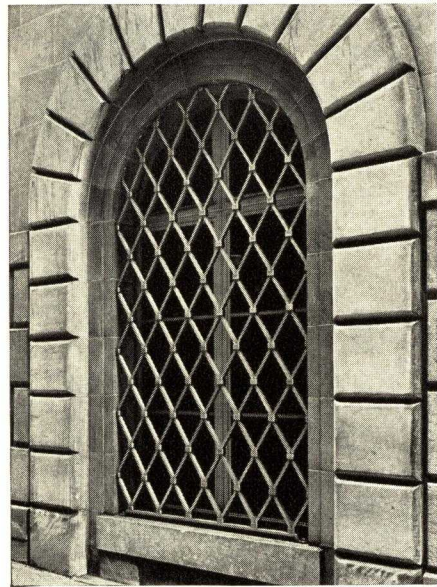
SERIES 700—COMMERCIAL DOORS.

SERIES 800—SHOWER DOORS.

TYPICAL ELEVATIONS



ARCHITECTURAL METAL WORK



Grille furnished for use with Sealair Windows.

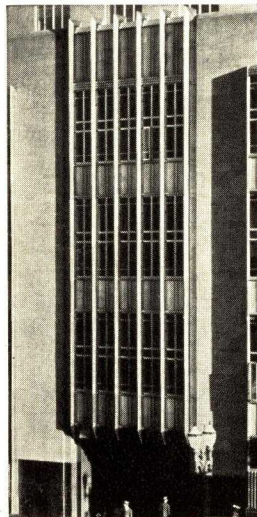
★ Kawneer has had wide experience in furnishing all types of architectural metal work and is well equipped with a large, modern foundry, bronze fitting shop, and ample facilities for all types of finishing, including the durable alumilite finish on aluminum.

This experience and equipment is especially valuable to the architect in view of the increasing architectural use of modern metal alloys for ornaments, grilles, pilasters, tablets, stair rails, special fixtures, marquees, gates, signs, escalators and entrances and other features.

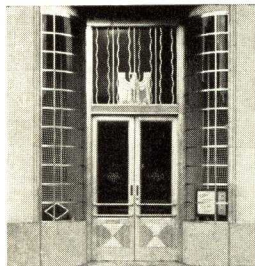
METALS. Aluminum, bronze, stainless steel, nickel silver and others.

TYPES. Extruded, wrought, cast, hollow metal.

SEE ALSO KAWNEER CATALOGS
IN SWEET'S ON STORE FRONTS
AND ESCALATOR BALUSTRADES.



Mullions on St. Paul Post Office.



Typical cast ornament.



Typical bronze tablet.



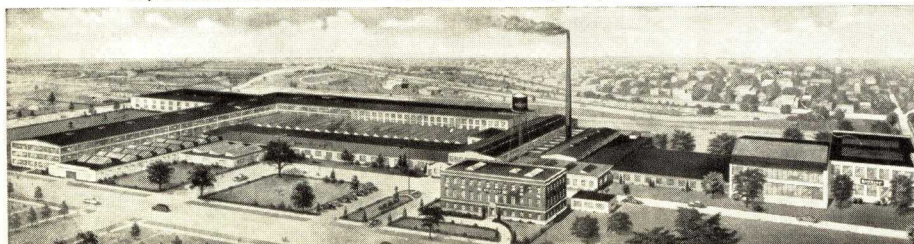
Typical Escalator Balustrade.

WRITE FOR FURTHER INFORMATION ON ANY KAWNEER PRODUCT.

THE
Kawneer
COMPANY

NILES, MICHIGAN. BRANCHES: NEW YORK, CHICAGO, BERKELEY, CALIF.
DEALERS IN PRINCIPAL CITIES.

Experienced metal fabricators. The Kawneer Company plant at Niles, Michigan.



SERIES 700 DOORS

SPECIFICATIONS

EXTERIOR ENTRANCES shall be as manufactured by the Kawneer Company, Niles, Michigan, and shall include tubular doors, frames, scribe mould trim two sides and sub-buck.

MATERIALS: To be of Aluminum (or Bronze) extruded and/or drawn as detailed of the best commercial alloy for the purpose intended, and to be furnished by a reliable manufacturer of extruded materials. Sub-buck shall be steel.

FINISH: All materials under this heading shall be given a fine satin finish (No. 180 grain) uniform and free from scratches and other surface blemishes, and a protective coating shall be applied before shipment. (Satin Alumilite Alternate) After the satin finish has been completed, all finished and exposed work shall be given an anodic oxide coating in accordance with Aluminum Company of America specification No. 204-C1. A protective coating shall be applied before shipment.

(Polished Alumilite Alternate) All materials under this heading shall be sanded and buffed to uniformly smooth polished surface free from scratches and other surface blemishes. After the polished finish has been completed, all finished and exposed work shall be given an anodic oxide coating in accordance with Aluminum Company of America specification No. 204-A1, and a protective coating shall be applied before shipment.

(Bronze Polished Alternate) All materials under this heading shall be sanded and buffed to uniformly smooth polished surface free from scratches and other surface blemishes, and a protective coating shall be applied before shipment.

(Bronze Statuary Alternate) After the satin finish has been completed, all finished and exposed work shall be chemically oxidized to a light (or medium or dark) statuary finish according to sample approved by the Architect, and to be uniform in color and free from scratches and other surface blemishes, and shall be given a coat of lacquer before shipment.

CONSTRUCTION: Frames shall be made of extruded sections, not less than .093" in thickness, corners to be accurately mitered and welded along the entire line of contact on the unexposed side. Sub-buck shall be steel plate, $\frac{3}{16}$ " thick and within $\frac{1}{4}$ " of the full width of the door jamb.

Doors shall be made of drawn seamless tubing not less than .109" thick if Aluminum or .093" thick if Bronze. Joints in tubes to be accurately mitered to a hair line joint and welded along the entire line of contact and to show no discoloration on face after finishing. Kick plates .078" thick shall be applied to both sides of bottom rails. Extruded glazing molds shall be accurately mitered and screwed in place.

SIDE LIGHTS and TRANSOMS shall be made with jambs of same size and section as for doors and assembled in the same manner, and shall be complete with glazing molds prepared for glazing in jambs.

(Alternate) Side Lights and Transom shall be made with jambs of same size and section as for doors, assembled in the same manner, and shall include tubular side lights and transoms. The tubes shall be drawn seamless tubing $1\frac{1}{8}$ " x $1\frac{1}{8}$ " not less than .078" in thickness, shall be mitered and welded as specified for doors, and shall have extruded glazing molds screwed in place. Side lights shall be secured permanently fixed in place and transoms hinged.

Scribe mold trim shall be furnished for both sides, to be cold-rolled, and secured in place after jambs are set.

Doors and transoms shall be accurately fitted to jambs and hardware shall be fitted and applied by the door manufacturer before shipment.

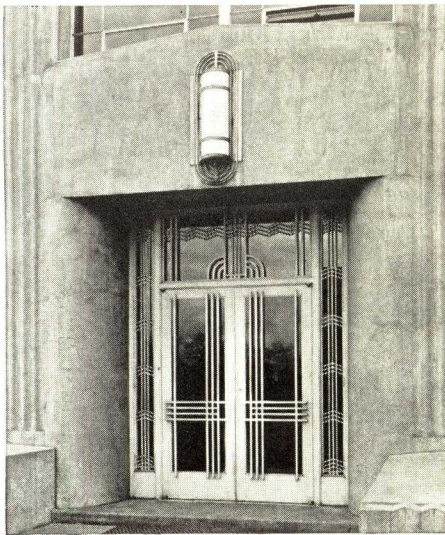
HARDWARE: Shall be furnished by the door manufacturer, finish to correspond to the door finish and shall consist of the following: (Include hardware schedule.)

THRESHOLD: (Please indicate type desired) shall be included, bored and countersunk with screws ready for fitting and installation by the erecting contractor.

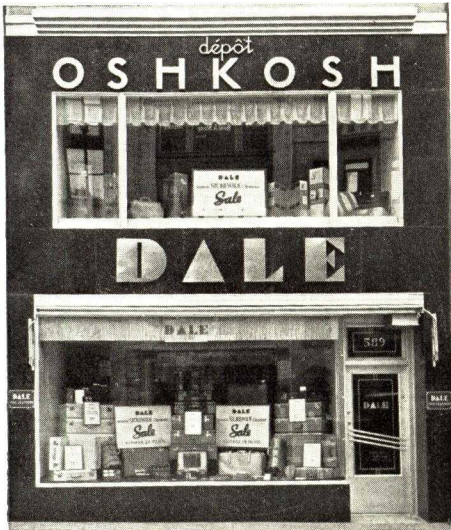
GLAZING: Shall be done as specified under "Glass and Glazing" and is not included in this part of the contract.

ERECTION: Shall be done by the General Contractor and is not included in this part of the contract.

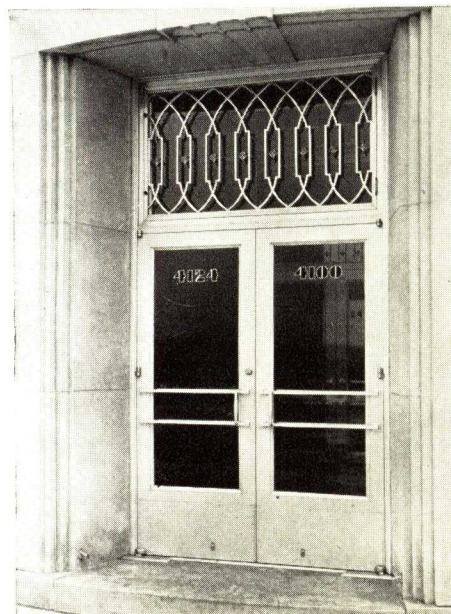
SERIES 700—RUSTLESS METAL DOORS



Gulf Research Laboratory, Harmarville, Penn.



Dale Shop Store Front, New York City.



Casper Tin Plate Co., Chicago. A. Epstein, Arch.

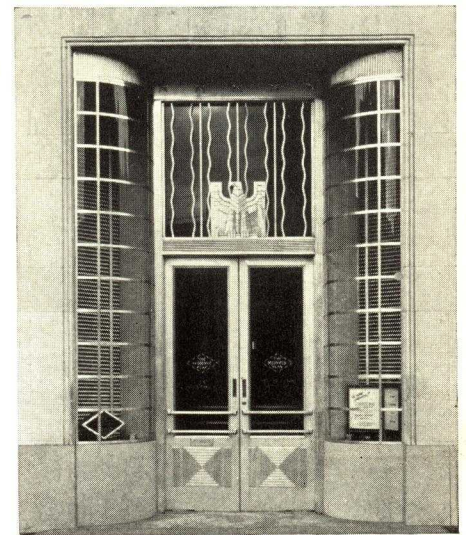
DETAILS SHOWN ON PAGES 10 AND 11

★ SERIES 700 Kawneer Rustless Metal Entrance Doors are of strong, welded-tubular construction—especially designed and engineered for exterior or interior use in all types of buildings and for extensive use with Kawneer Store Fronts.

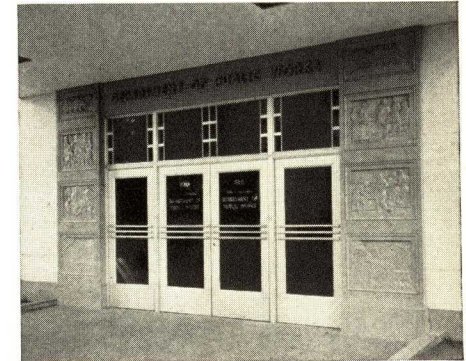
Standard types are given numbers and include frames, sidelights and transoms as shown on page 11. Flush, casement, and residential type doors are also furnished, and complete entrances involving grilles, windows, ornaments, marquees, soffets, thresholds, door jambs, and all types of architectural metal work are also fabricated to architects details and specifications. Hardware is applied by Kawneer.

The use of Kawneer doors and entrances has increased rapidly in recent years, because they are precisely and sturdily built, give dependable service, are easy to maintain, will not rust, swell, shrink, warp, rot out or sag—and never require painting. Their rich, lasting beauty becomes a valuable decorative feature of the building.

WRITE FOR NEW ILLUSTRATED DOOR BOOKLET, INCLUDING COMPLETE DATA.



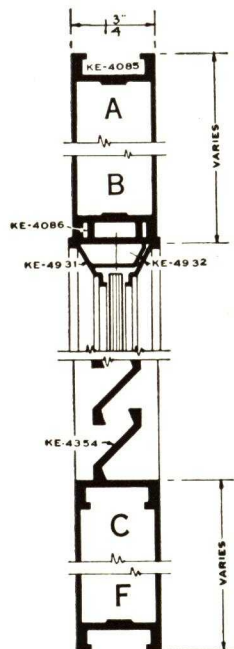
Morris Plan Bank, Atlanta, Tucker & Howell, Arch.



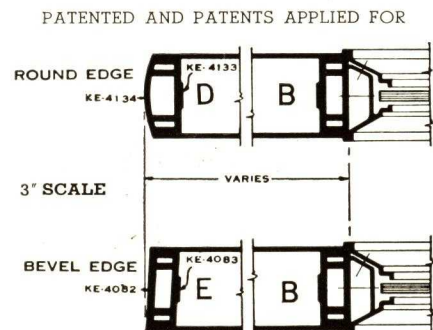
Dept. of Public Works Bldg., Sacramento, California.

FLUSH-TYPE DOORS

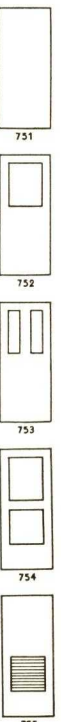
Kawneer also fabricates Flush-type Doors as shown in these details. This construction is employed where stiles and top rails wider than 4" are required—for special design effects, cutouts, or louvers. Applied ornaments may be used for memorials, elevators, and any special requirements.



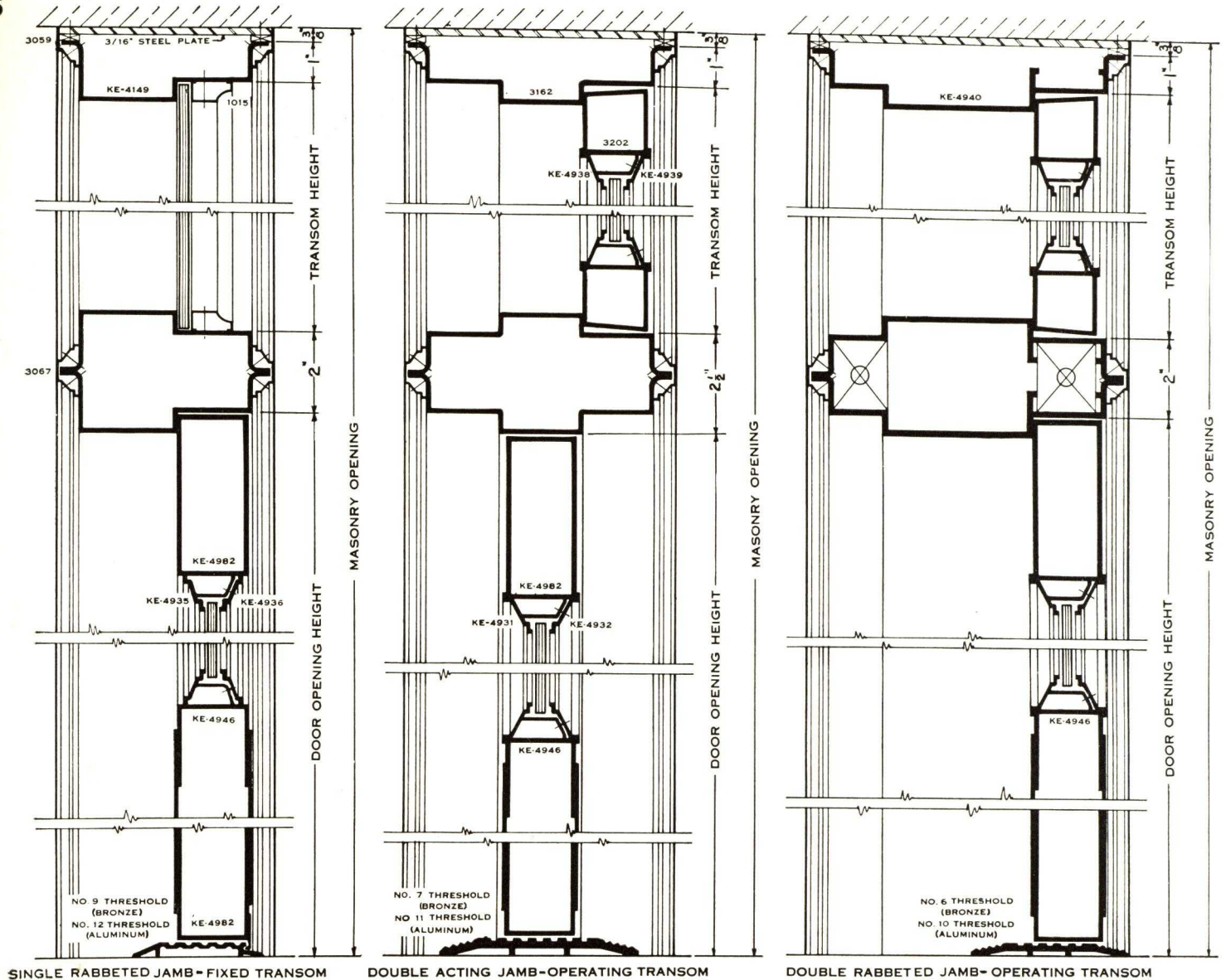
VERTICAL SECTION



HORIZONTAL SECTIONS



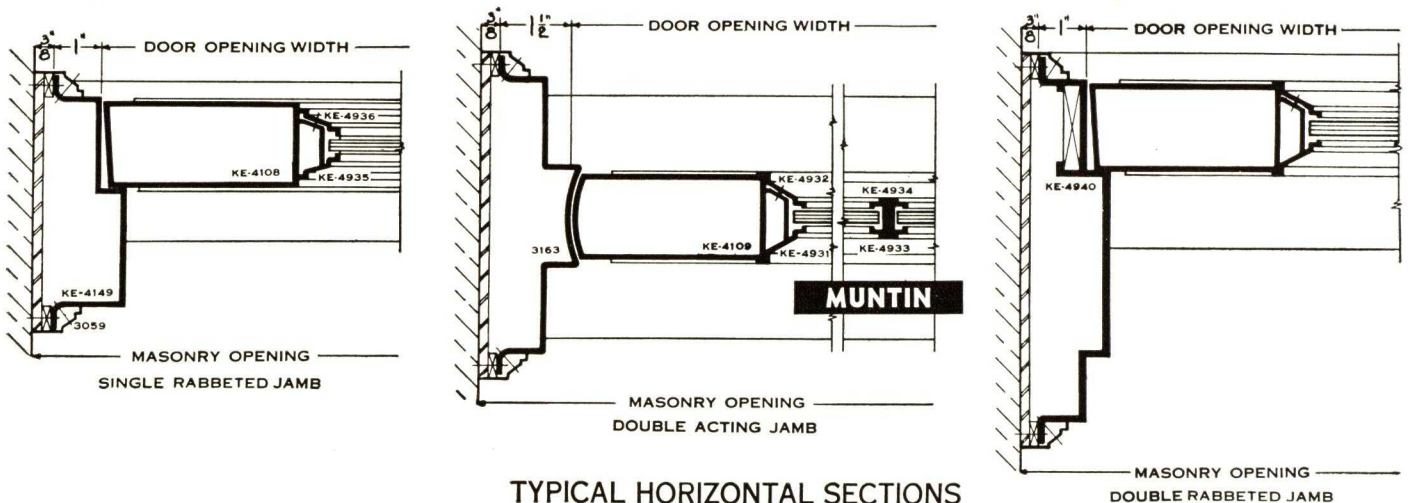
SERIES 700—RUSTLESS METAL DOORS



TYPICAL VERTICAL SECTIONS

PATENTED AND PATENTS PENDING

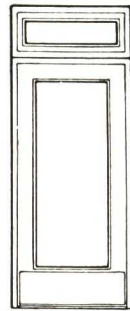
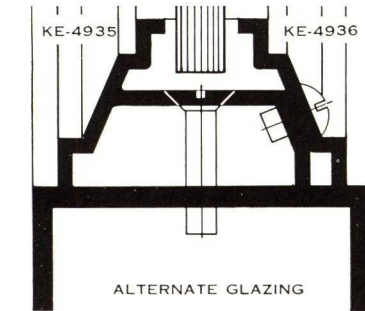
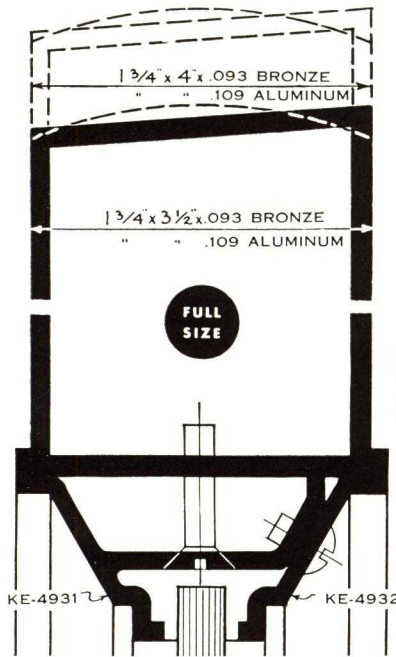
QUARTER
SIZE



TYPICAL HORIZONTAL SECTIONS

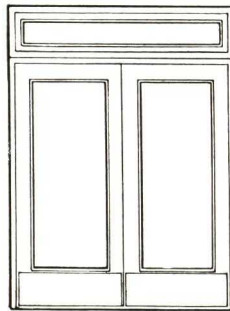
SERIES 700—RUSTLESS METAL DOORS

TYPICAL ELEVATIONS WITH TUBULAR SIDE LIGHTS AND TRANSOM



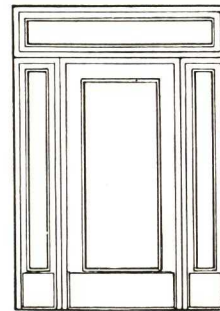
721 WITHOUT TRANSOM

723 WITH TRANSOM



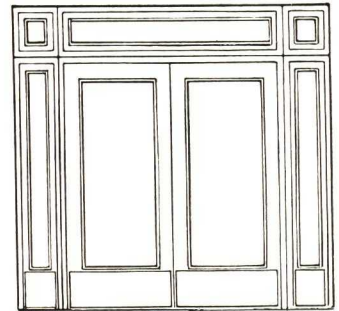
731 WITHOUT TRANSOM

733 WITH TRANSOM



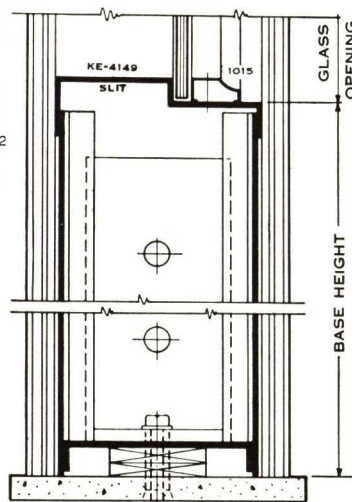
724 WITHOUT TRANSOM

725 WITH TRANSOM

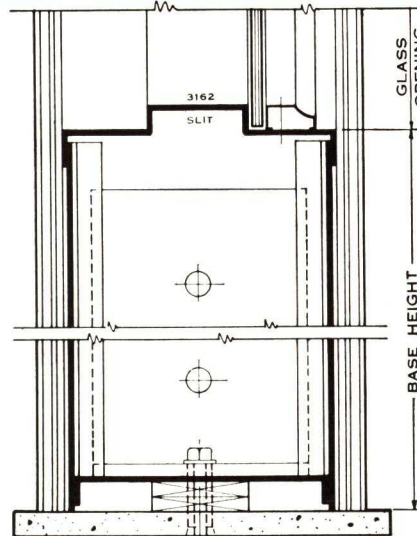


734 WITHOUT TRANSOM

735 WITH TRANSOM



SINGLE RABBETED JAMB

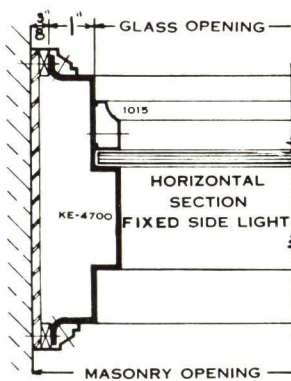


DOUBLE RABBETED JAMB

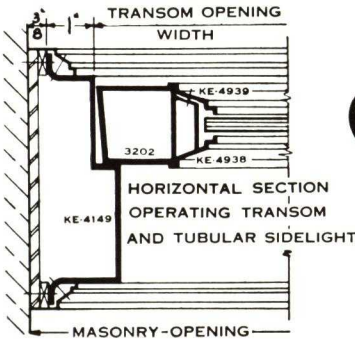


726

TYPICAL SECTIONS THROUGH FIXED SIDE LIGHT BASES

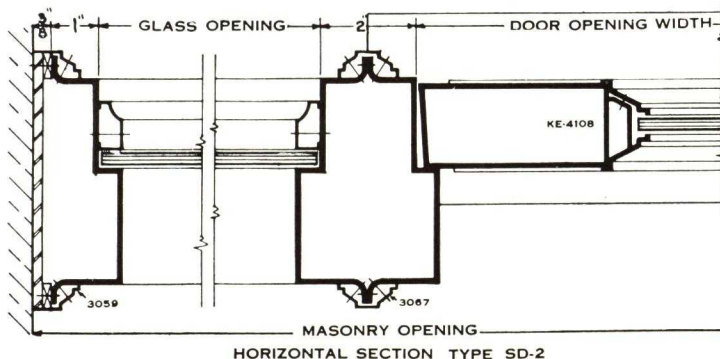


MASONRY OPENING



MASONRY-OPENING

QUARTER SIZE



HORIZONTAL SECTION TYPE SD-2

PATENTED AND PATENTS PENDING



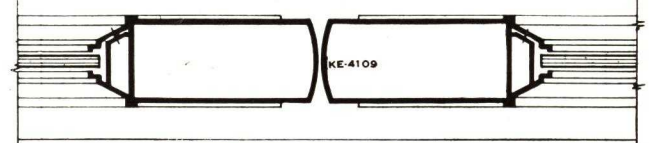
ALTERNATE WITH "T" ASTRAGAL (OPTIONAL)

730-M3



ALTERNATE WITH COMPENSATING ASTRAGALS (OPTIONAL)

730-M2



STANDARD MEETING STILES

730-M1

TYPICAL SECTIONS THROUGH STANDARD MEETING STILES

WINDOWS, DOORS AND ARCHITECTURAL METAL WORK

NILES

THE
Kawneer
COMPANY

MICHIGAN

BRANCHES: NEW YORK, CHICAGO, BERKELEY, CALIF.

DEALERS IN PRINCIPAL CITIES

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Way, Tel. 8710 | Harrisburg, Pa., P. O. Box 82, Tel.
2-9365 | Philadelphia, Pa., 1726 Sansom St.,
Rittenh. 2872 |
| Billings, Montana, 2610-14 Montana
Ave., Tel. 3896 | Houston, Texas, 1612 Miller Street,
Fairfax 9932 | Pittsburgh, Pa., 200 Cedarhurst St.,
Tel. Everglade 2814 |
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Street, Tel. 5-1572 | Portland, Ore., 2145 N. W. Petty-
grove St., Atw. 9648 |
| Charlotte, N. C., P. O. Box 1672,
Tel. 32486 | Knoxville, Tenn., 427 West Depot
Ave., Tel. 3-6141 | Richmond, W. Va., 6th & Stockton Sts.,
30181 |
| Chicago, Ill., 336 W. 37th Street,
Blvd. 4540 | Lansing, Mich., 410 Saginaw St.,
Tel. 4-3303 | Salt Lake City, Utah, 1526 S.W.
Temple, Hyland 95 |
| Cleveland, Ohio, 1836 Euclid Ave.,
Cherry 7830 | Lexington, Ky., 221 N. Limestone,
Tel. 8570 | Scranton, Pa., 711 Linden St., Tel.
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Tel. Prospect 4084 | Seattle, Wash., 1813 Seventh Ave.,
Main 7147 |
| Davenport, Iowa, 205 Kresge Bldg.,
Tel. 2-1282 | Mexico City, Mexico, A. P. 2724,
Mex. J-40-55 | St. Louis, Mo., 915 Syndicate Trust,
Main 1906 |
| Dayton, Ohio, 221 N. Wilkinson St.,
Fulton 1442 | Milwaukee, Wisconsin, 216-226 N.
Water St., Tel. Marg. 3911 | Tampa, Fla., 215 S. Rome Ave., Tel.
H 1215 |
| Denver, Colo., 1534 Blake St., Kay-
stone 8201 | Minneapolis, Minn., 614 Third Ave.,
S., Main 4471 | Toronto, Ontario, 19 Mercer Street,
Adel. 1106 |
| Detroit, Mich., 439 Penobscot Bldg.,
Ran. 5500. | Nashville, Tenn., 1207 Warner Bldg.,
6-7688 | Troy, New York, 279-281 River St.,
Tel. Troy 998 |
| Erie, Pa., 11 W. 11th St., Tel. 23-201 | New Orleans, La., 318 Carondelet
St., Raym. 7007 | Vancouver, B. C., 787 Hornby St.,
Seymour 8844-5-6 |
| Evansville, Ind., 1110-12 Main St.,
Tel. 7281 | New York, N. Y., 101 Park Ave.,
Murray-H. 5-9381 | Washington, D. C., 1612 "K" St.,
N. W., Metro. 1563-1564 |
| Ft. Wayne, Ind., 709 Clay Street,
Anthony 6425 | Oklahoma City, Okla., Colcord Bldg.,
Tel. 3-2508 | |

LUNDELL-ECKBERG MANUFACTURING CO., INC.

Manufacturers of High Grade Standard and Custom Built Steel Casements
and Solid Bronze Casement Hardware

JAMESTOWN, N. Y.



Four complete lines of metal windows to meet all requirements can be furnished in designs and sizes to meet Architect's specifications.

A wide range of standard sizes can also be supplied in light and intermediate sections.

Both Standard and Custom-built Casements incorporate every worthwhile feature in design and operation.

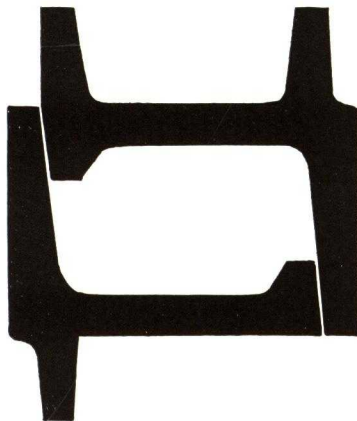


ware combine to perfect, durable, weathertight installations.

Hardware for both screen and non-screen type windows can be supplied according to standard practice or to individual specifications.

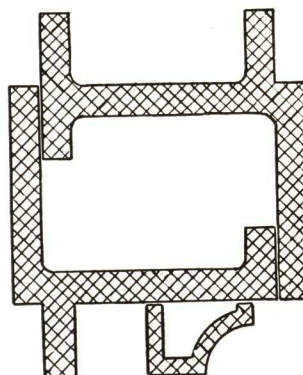
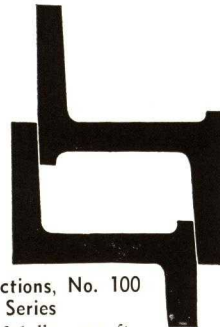
Optional designs are available as well as special features.

Usual accessories necessary for installation are included with each order.

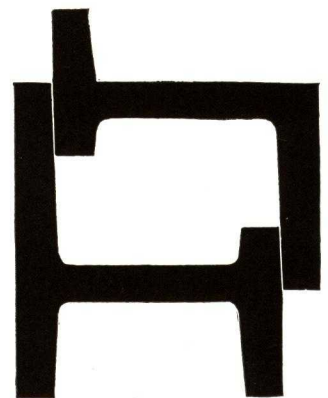


Heavy Sections, No. 300 Series
Weight, 4.88 lbs. per ft.

Light Sections, No. 100 Series
Weight, 3.6 lbs. per ft.



Bronze Sections, No. 500 Series
Weight, 3.6 lbs. per ft.
(Also supplied in heavier sections)



Intermediate Sections, No. 600 Series
Weight, 2.0 lbs. per ft.

They are produced with exceptional care in manufacture and will comply with the most exacting specifications. The smooth finish, electrically welded corners, double contact weathering, assembly performed by skilled workmen and rigid mounting of all hard-

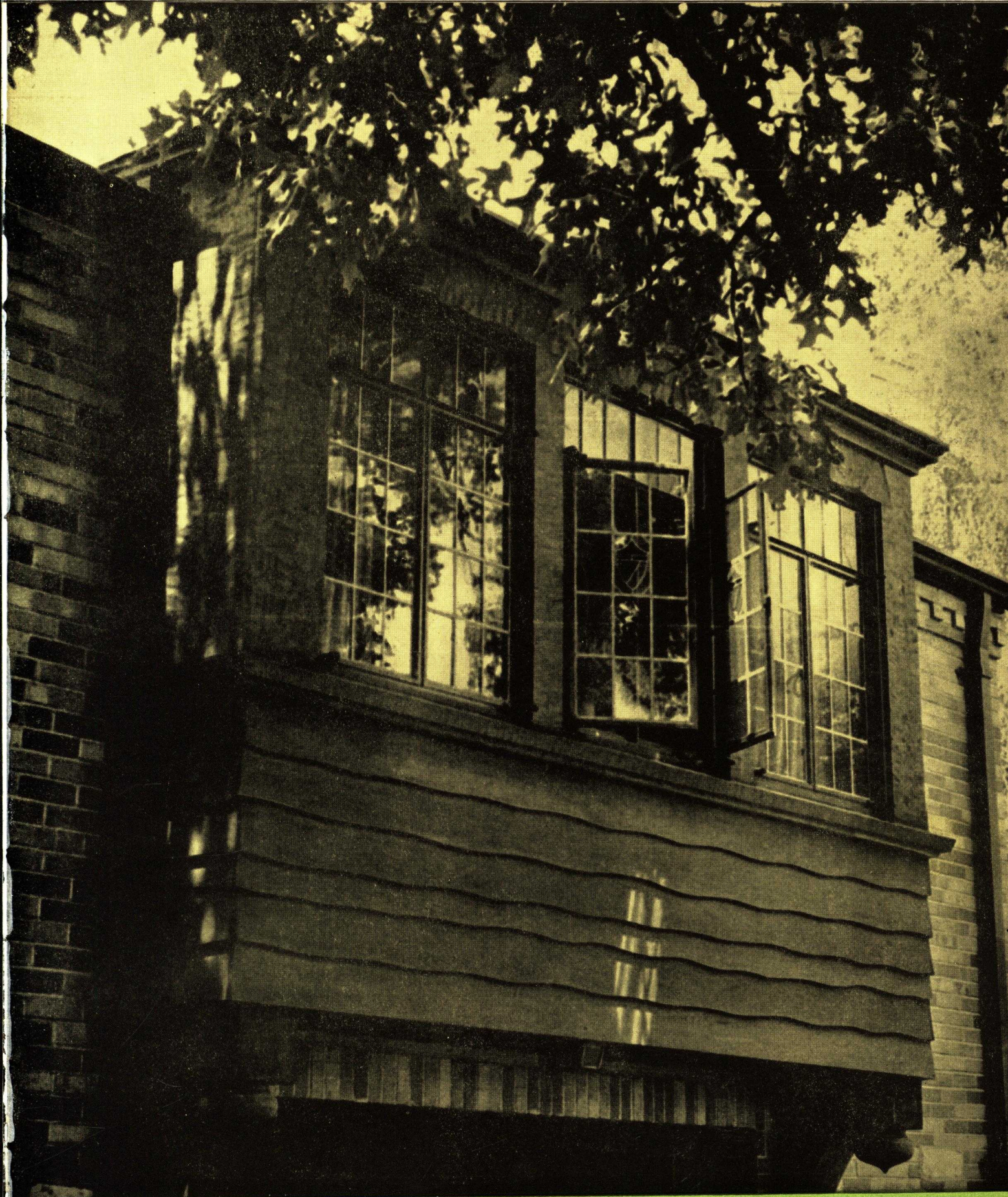
118T

Screens, glazed storm frames, subframes and other materials incidental with casement windows can also be furnished.

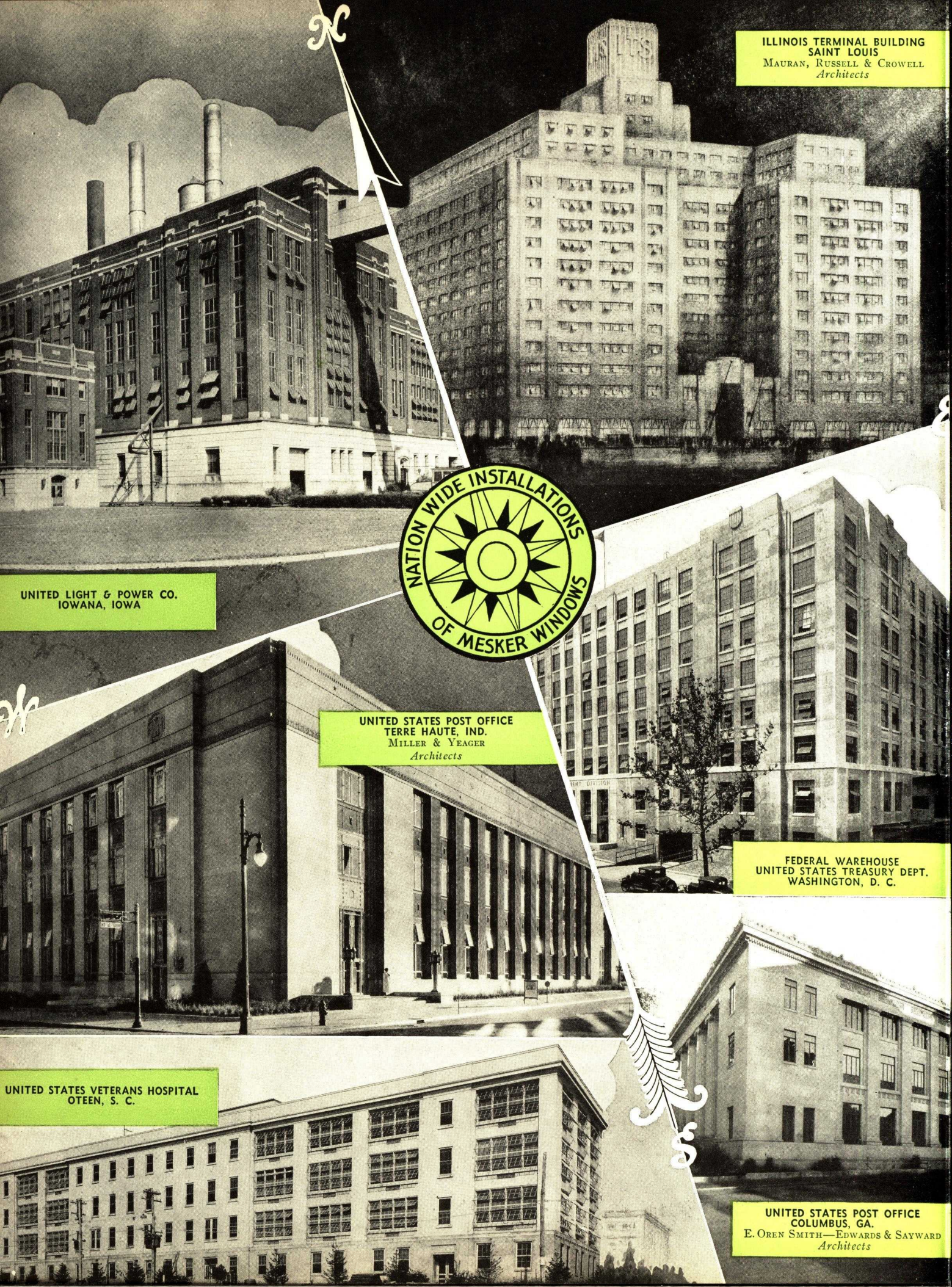
A complete catalog of LEMCO products will be gladly sent on request.

(All Sections Are Illustrated Full Size)

MEMORANDA



Mesker METAL WINDOWS
SINCE 1879



ILLINOIS TERMINAL BUILDING
SAINT LOUIS
MAURAN, RUSSELL & CROWELL
Architects

UNITED LIGHT & POWER CO.
IOWANA, IOWA



UNITED STATES POST OFFICE
TERRE HAUTE, IND.
MILLER & YEAGER
Architects

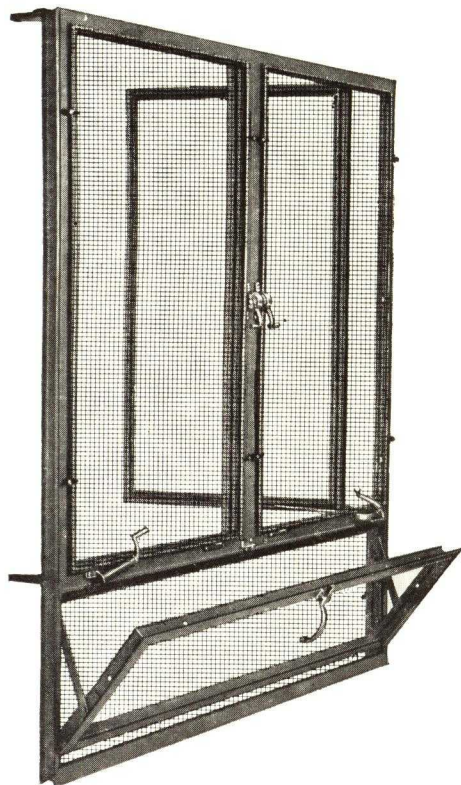
FEDERAL WAREHOUSE
UNITED STATES TREASURY DEPT.
WASHINGTON, D. C.

UNITED STATES VETERANS HOSPITAL
OTTEEN, S. C.

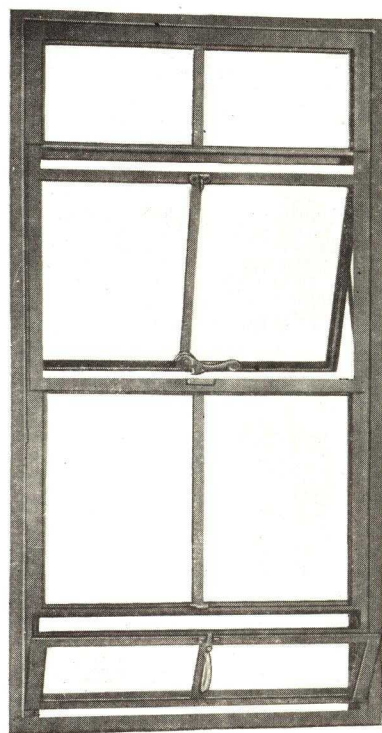
UNITED STATES POST OFFICE
COLUMBUS, GA.
E. OREN SMITH—EDWARDS & SAYWARD
Architects

Mesker METROPOLITAN CASEMENTS

FOR SCHOOLS, LIBRARIES, MONUMENTAL BUILDINGS, AND HOSPITALS



Metropolitan—Series M



Metropolitan—Series P

FEATURES

All vent sections are $1\frac{5}{8}$ in. deep—frames are $1\frac{1}{2}$ in. deep, providing greater rigidity and durability. All joints are solid welded for greater strength. Hardware is of extra heavy solid bronze. With Genuine Wrought Iron Sills these casements will last the life of any building. These windows are also available in Genuine Wrought Iron. Project-in sill vents as illustrated provide excellent no-draft ventilation during cold and rainy weather. At slight additional cost sight lines can be maintained throughout.

SPECIFICATIONS

General—Furnish where shown on plans and according to specifications Mesker Metropolitan Casements or equal approved by the Architect.

Materials—Sections shall be hot rolled new billet steel (or Genuine Wrought Iron) not less than $1\frac{5}{8}$ in. in depth or $\frac{1}{8}$ in. thick . . . and shall be process straightened with heavy fillets in re-entrant angles.

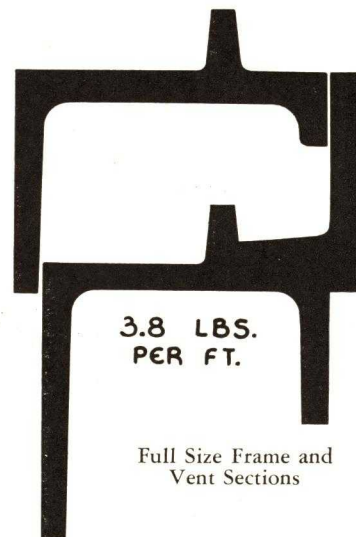
Construction—All joints shall be coped or mitred and solidly welded . . . all exposed welds shall be dressed down smooth . . . hinges shall be extension cleaning type of $\frac{3}{16}$ in. steel plate with bronze pins and washers . . . adjustable friction device shall be supplied on hinges for non-screen casements . . . windows shall be designed for outside glazing (if inside glazing or glazing beads are required specify here) . . . projected ventilators shall be supported by two heavy extension arms and attached to bronze sliding shoes . . . barrel type friction device shall be supplied on all bronze shoes.

Hardware—Hardware shall be solid bronze statuary finish of plain heavy pattern . . . it shall be shipped separately in safely packed cartons . . . furnish locking handle and gear operator for side hinged screen type vents . . . furnish cam type locking handle for side hinged non-screen vents . . . furnish cam handle for project in vents and non-screen project out vents . . . furnish underscreen transom adjuster for screen type project out vents . . . all hardware shall be designed to operate without moving the screens.

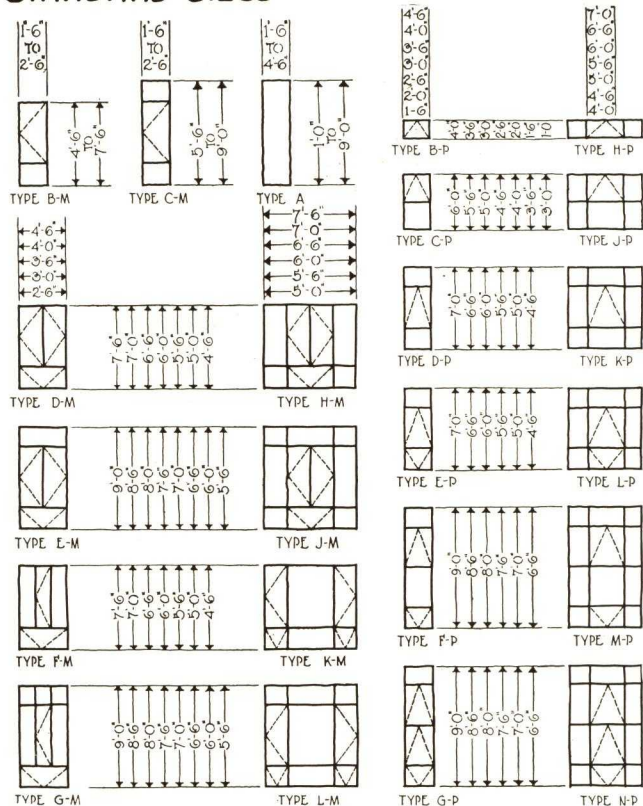
Painting—Windows shall receive one priming coat of metallic paint baked on in the factory.

Screens—Furnish where shown and called for Mesker Metal Screens and prepare windows for same . . . frames shall be solid section $\frac{3}{8} \times \frac{5}{8}$ in. with removable aluminum spline . . . cloth shall be antique finish copper 16 mesh size . . . corner joints shall be mitred and welded . . . one coat of enamel baked on shall be applied in the factory . . . furnish necessary screen clips and fittings.

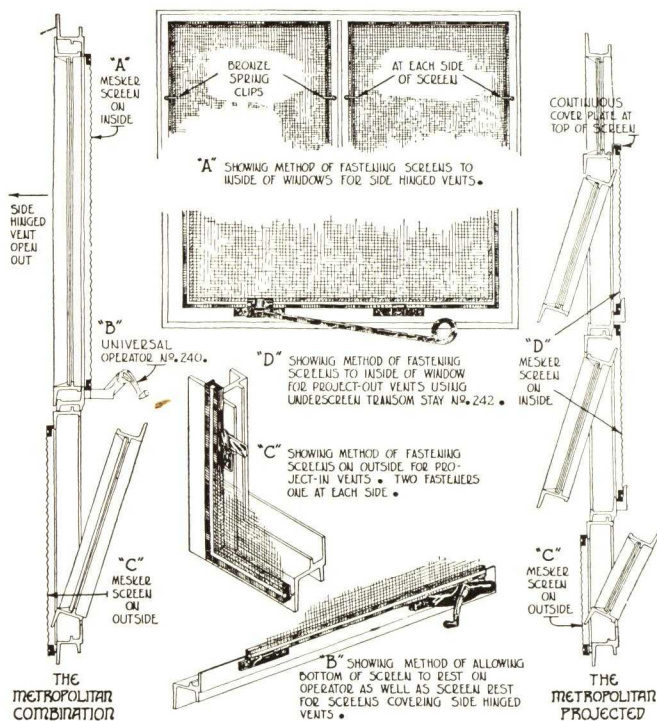
Erection—Casements shall be set plumb and square and carefully caulked and grouted in place . . . vents shall be adjusted before glazing . . . manufacturer shall furnish sufficient caulking compound.



STANDARD SIZES

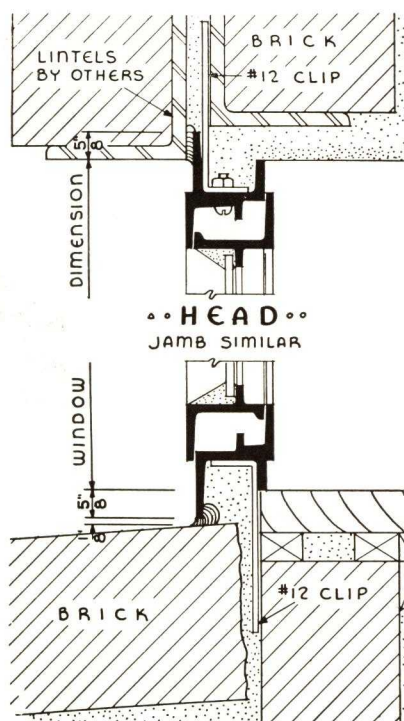


THE APPLICATION of MESKER SCREENS and SCREEN TYPE HARDWARE to METROPOLITANS

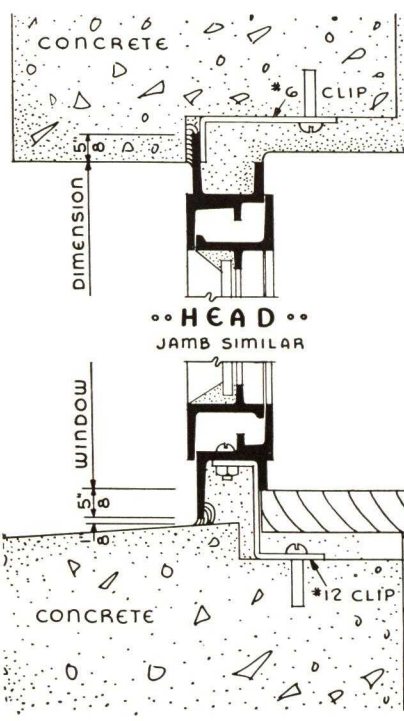


INSTALLATION DETAILS

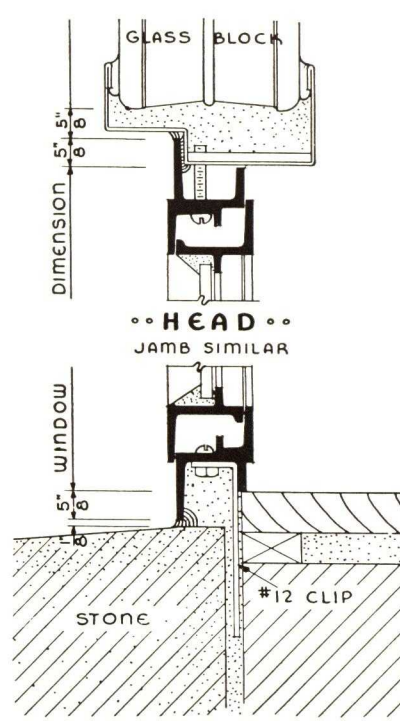
SCALE: 3"=1'-0"



• BRICK •

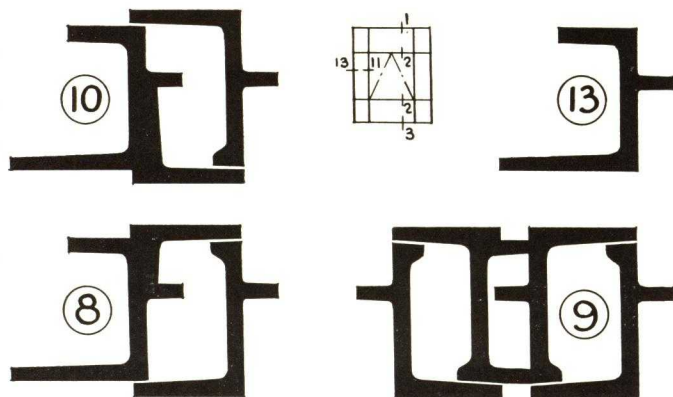
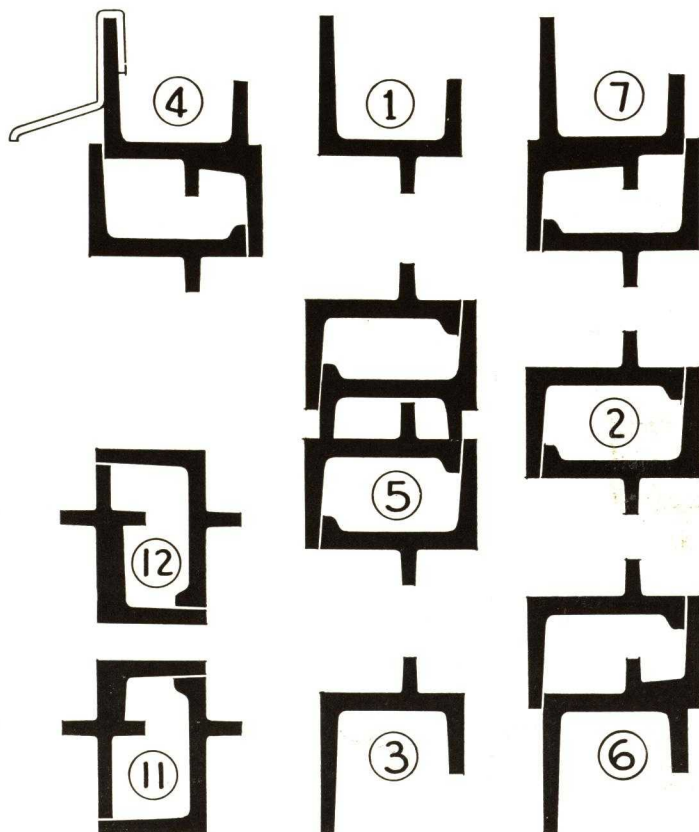
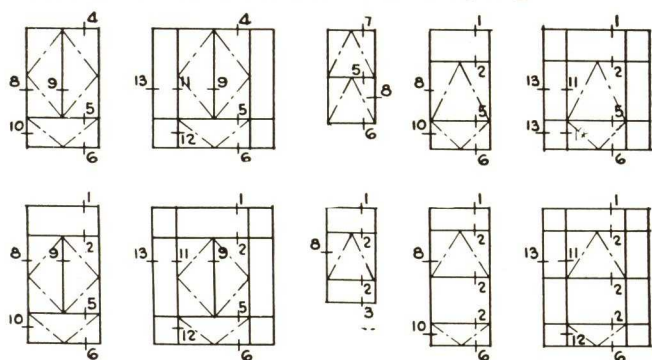


• CONCRETE •



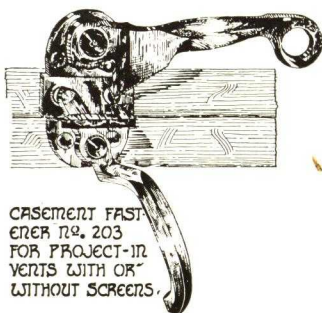
• GLASS BLOCK •

HALF FULL SIZE SECTIONS



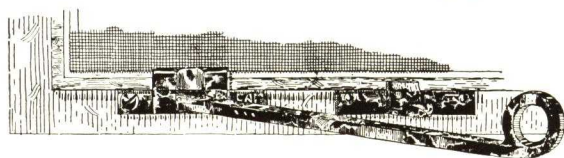
SOLID BRONZE HARDWARE

CASEMENT FASTENER No. 230 FOR PROJECT-OUT NON SCREEN VENTS.



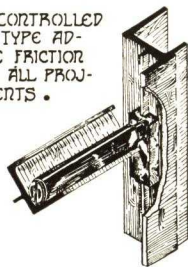
CASEMENT FASTENER No. 203 FOR PROJECT-IN VENTS WITH OR WITHOUT SCREENS.

POLE RING No. 236 FOR PROJECT-OUT VENTS WITHOUT SCREENS.

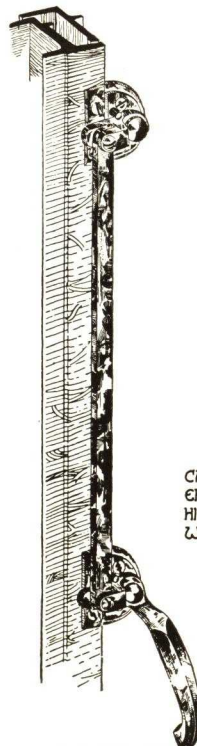


TRANSOM STAY No. 242 FOR PROJECT-OUT VENTS WITH SCREENS.

SPRING CONTROLLED BARREL TYPE ADJUSTABLE FRICTION SHOE FOR ALL PROJECTED VENTS.

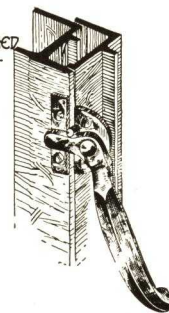


SPRING LOCK No. 235 FOR PROJECT-IN VENTS WITH OR WITHOUT SCREENS.



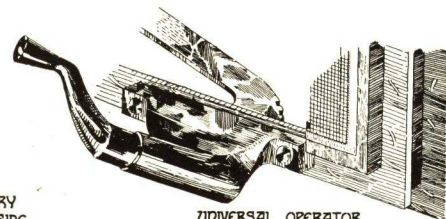
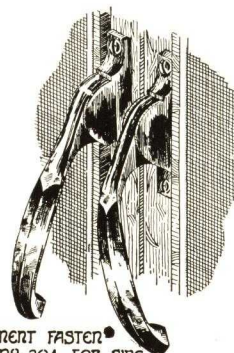
CASEMENT FASTENERS No. 204 FOR SIDE HINGED OPEN OUT VENTS WITH SCREENS.

CASEMENT FASTENER No. 201 FOR SIDE HINGED OPEN OUT VENTS WITH-OUT SCREENS.



HARDWARE FINISHES

STANDARD FINISH IS MESKER OLD CONAGE. OTHER FINISHES AVAILABLE AT NO EXTRA COST INCLUDE BRIGHT POLISHED, VERDE ANTIQUE, SATIN, AND ORDINARY TUMBLED FINISH. (NOTE: SINCE ALL BRONZE HARDWARE IS MANUFACTURED COMPLETE IN MESKER'S FOUNDRY BY SPECIAL DESIGNS, FITTINGS AND FINISHES ARE AVAILABLE TO THE ARCHITECT AT A NOMINAL COST.)



CASEMENT AND AUXILIARY FASTENER No. 202 FOR SIDE HINGED VENTS OVER 5'-0" HIGH WITHOUT SCREENS.

UNIVERSAL OPERATOR No. 240 FOR OPEN OUT SIDE HINGED VENTS WITH SCREENS.

Mesker MASTER CASEMENTS

FOR RESIDENCES, OFFICES, AND APARTMENTS WHERE QUALITY IS ESSENTIAL

FEATURES

Both frame and vent sections are $1\frac{5}{8}$ in. deep for maximum durability. All joints are solidly welded. Deeper sections and full welding makes the Master Casement one of the finest casements available. For maximum rust resistance specify Genuine Wrought Iron Sills, or Genuine Wrought Iron throughout.

SPECIFICATIONS

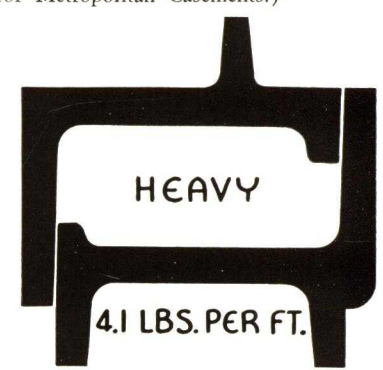
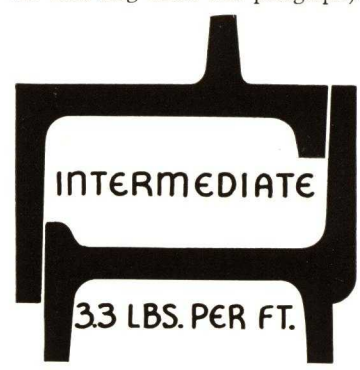
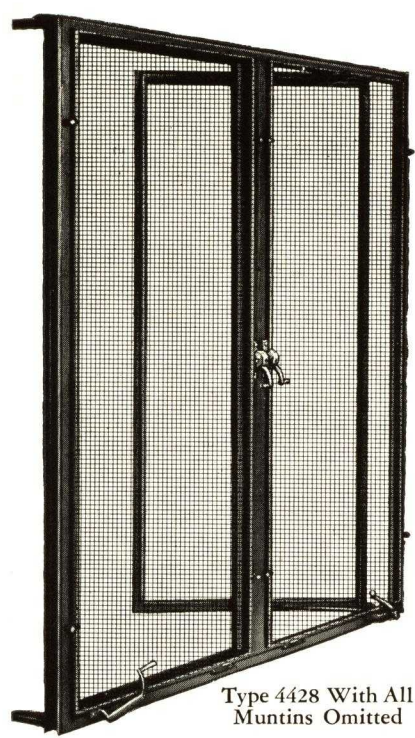
General—Furnish where shown on plans and according to specifications Mesker Master Casements or equal approved by the Architect.

Materials—(Specifications under this paragraph on page 3 for Metropolitan Casements also apply here without exception.)

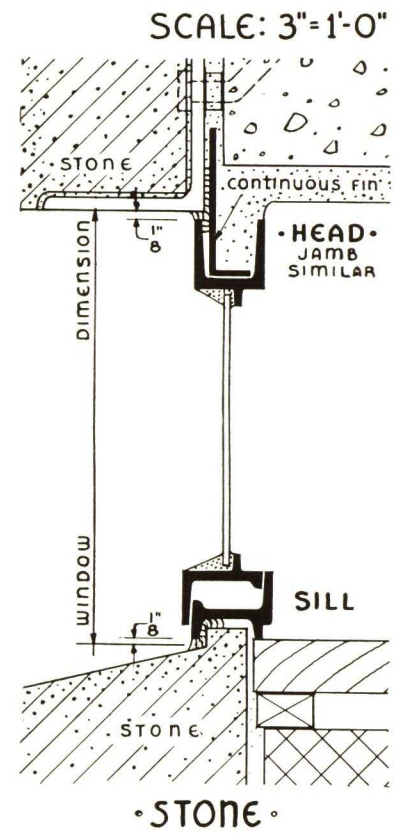
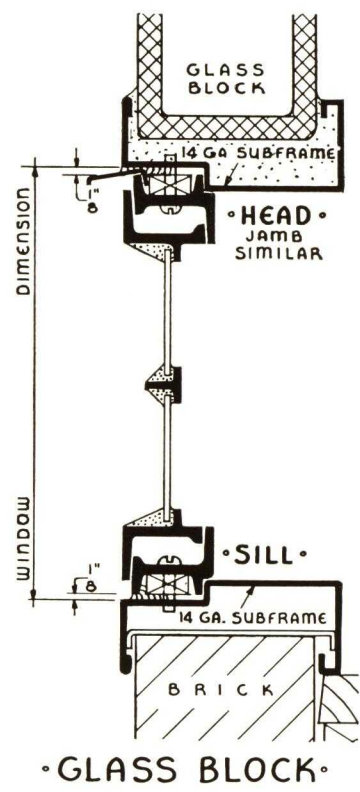
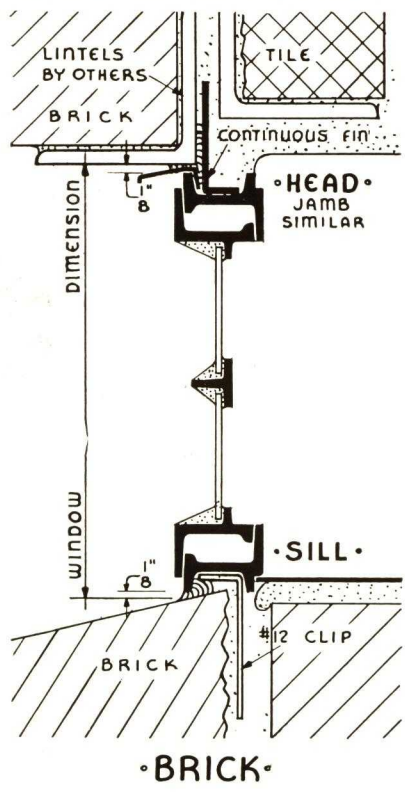
Construction—(Specifications under this paragraph on page 3 for Metropolitan Casements also applies here without exception . . . add the following under this paragraph): All mun-

tins shall be in perfect alignment . . . glass size shall be approximately 8 x 11 in. . . casements set into masonry shall be provided with continuous fins at head and jambs . . . casements set into wood bucks or subframes shall be supplied with wood screws or lag screws for setting into stone.

Hardware, Painting, Screens and Erection—(Specify according to information given on page 3 for Metropolitan Casements.)

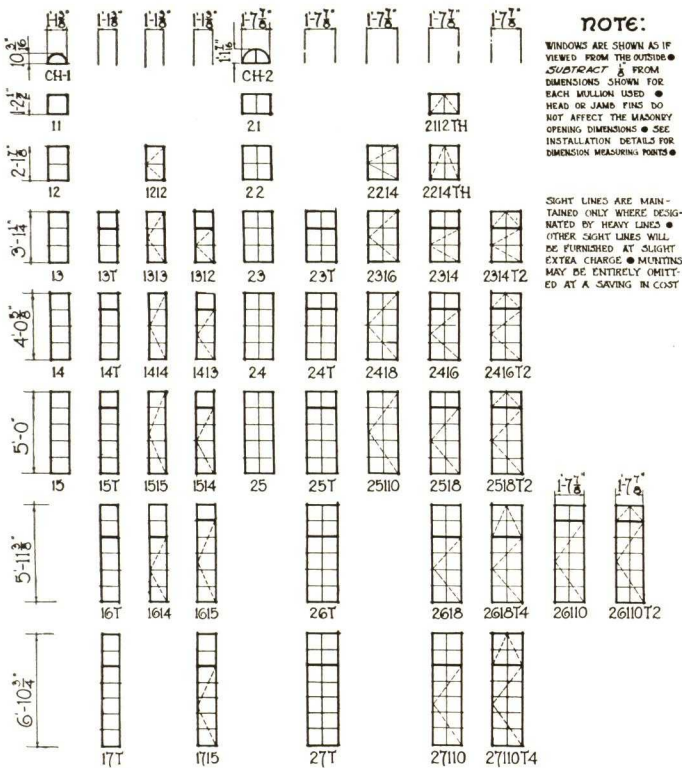


INSTALLATION DETAILS



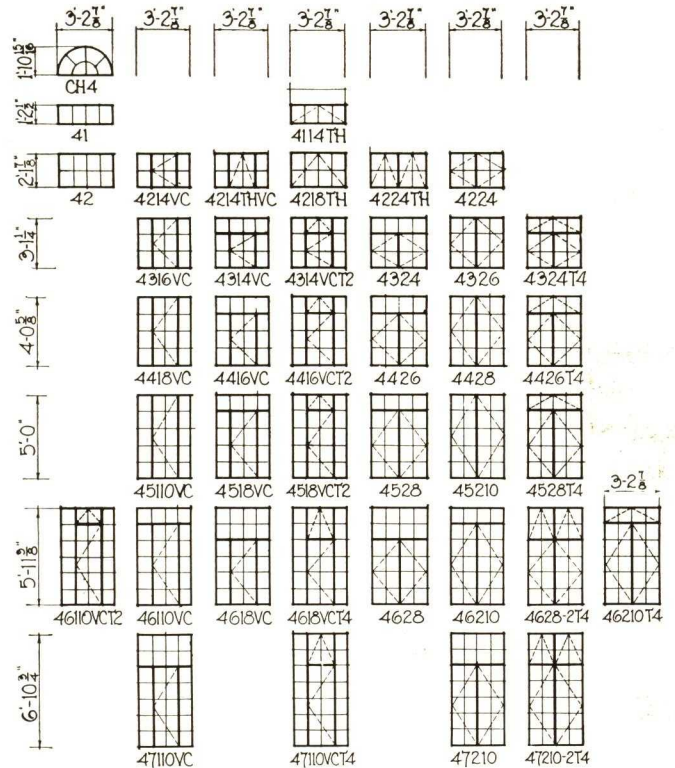
STANDARD SIZES

1 & 2 LIGHTS WIDE



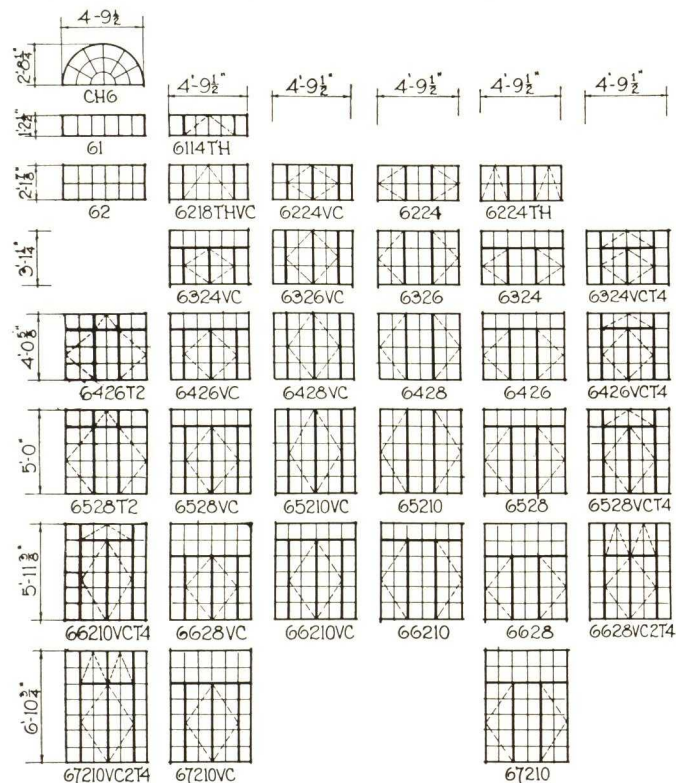
STANDARD SIZES

4 LIGHTS WIDE

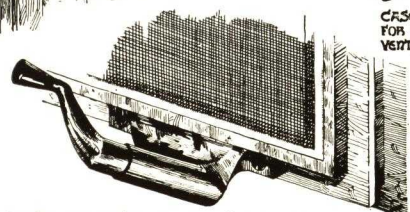
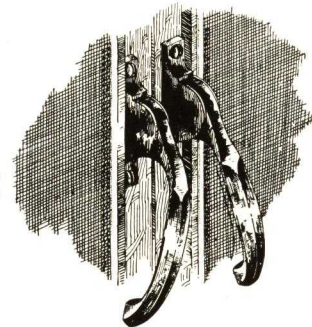
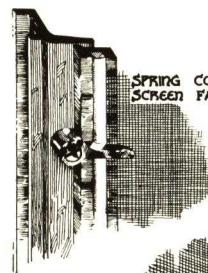


STANDARD SIZES

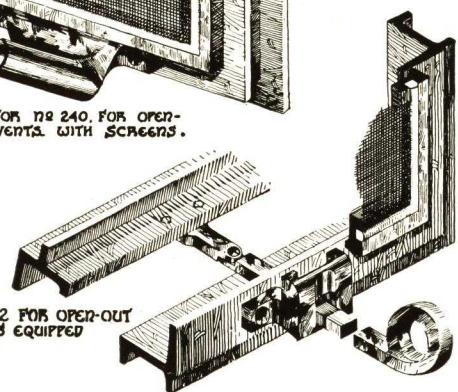
6 LIGHTS WIDE



SOLID BRONZE HARDWARE



UNIVERSAL OPERATOR NO. 240 FOR OPEN-OUT SIDE HINGED VENTS WITH SCREENS.



PEG STAY NO. 242 FOR OPEN-OUT TRANSOM VENTS EQUIPPED WITH SCREENS.

Mesker GUILDHALL CASEMENTS

FOR RESIDENCES, APARTMENTS, AND ALL HOUSING DEVELOPMENTS

FEATURES

All hardware is genuine solid bronze. It is beautiful, lasting, and chip-proof. Gear operators are built for long life with extra large and heavy cut steel worm gears. Worm gear is a full $\frac{5}{8}$ in. in diameter and beveled gear is a full $2\frac{1}{2}$ in. in diameter. All gears are made of case hardened cut steel. Muntins are only $\frac{5}{8}$ in. wide for neat appearance. Screen frames are solid welded steel and have a slender, graceful appearance.

SPECIFICATIONS

General—Furnish where shown on plans and according to specifications Mesker Guildhall Casements.

Materials—Sections shall be hot rolled billet steel at least 1 in. in depth and $\frac{1}{8}$ in. thick of Z bar design.

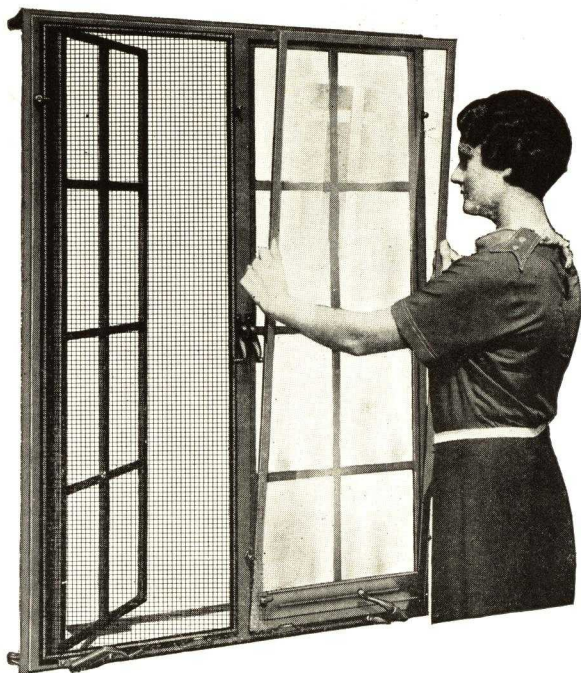
Construction—Corner joints shall be mitre cut and solidly welded . . . hinges shall be $\frac{3}{16}$ in. plate steel extension cleaning type with bronze pins and washers . . . adjustable friction device shall be supplied on hinges of non-screen casements . . . windows shall be designed for outside glazing with putty and clips . . . ventilators shall have a continuous double contact at least $\frac{1}{4}$ in. wide . . . glass size shall be 8x12 in. for Guildhall windows . . . furnish continuous fins where casements are set into masonry . . . furnish wood screws where units are set in wood frames.

Hardware—All hardware shall be solid bronze, including casings, gear housings, locking handle, and operator cranks . . . for screen type vents furnish locking handle and worm gear operator.

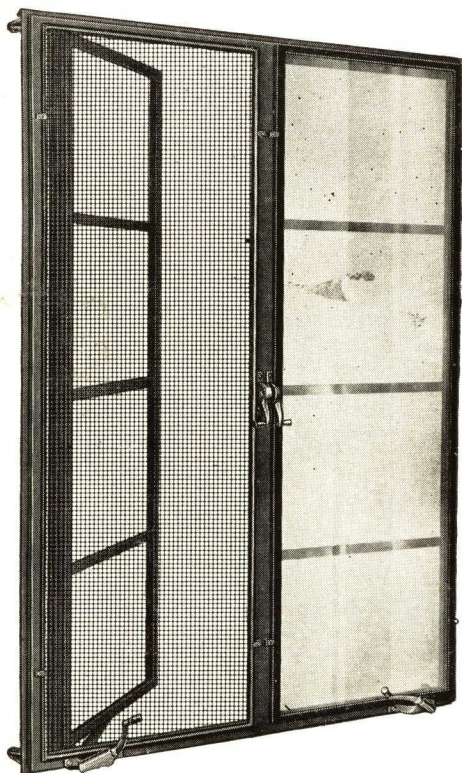
Painting—All casements shall be rust-treated with one coat of metallic primer especially developed for steel casements.

Screens—All windows where shown shall be prepared to receive screens . . . a separate screen shall be furnished for each vent . . . screen frames shall be $\frac{3}{8}$ x $\frac{5}{8}$ in. solid steel section with aluminum spline . . . corner joints shall be welded and mitred . . . cloth shall be statutory bronze finish copper of 16 mesh size . . . frames to receive coat of enamel baked on in the factory.

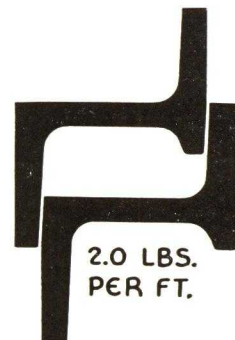
Storm Sash—Furnish where called for Mesker Insulaire Storm Sash and prepare casements to receive them . . . storm sash frames shall be tubular steel . . . they shall be glazed with $\frac{1}{8}$ in. DSA glass set in cork and held in place with continuous bronze splines . . . units shall have felt contact strip around entire perimeter.



Standard Guildhall Type 4428 with Screen and Insulaire Storm Sash

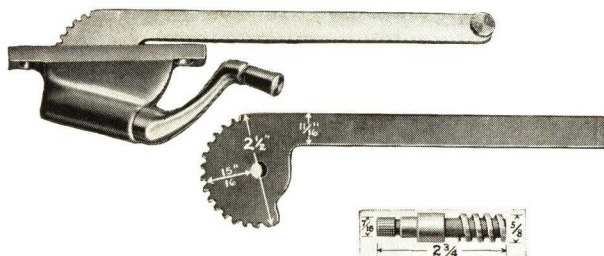


VMO Guildhall Type VMO 4428 with Screen and Storm Sash



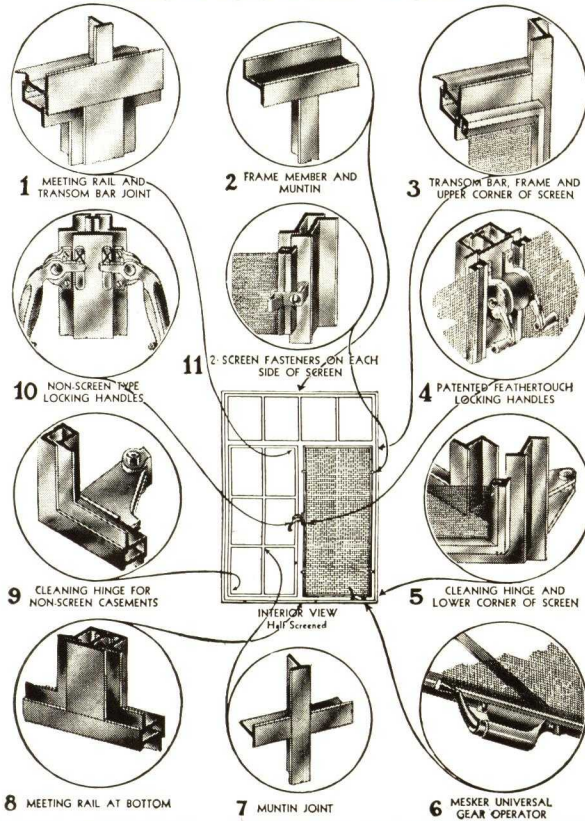
2.0 LBS.
PER FT.

Full Size Vent and Frame Sections

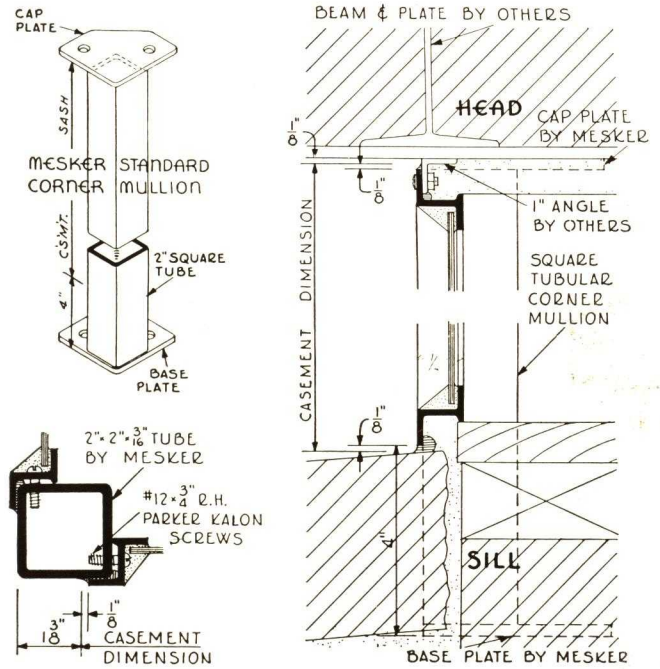


Mesker Solid Bronze Feathertouch Hardware and Heavy Duty Gear Operator

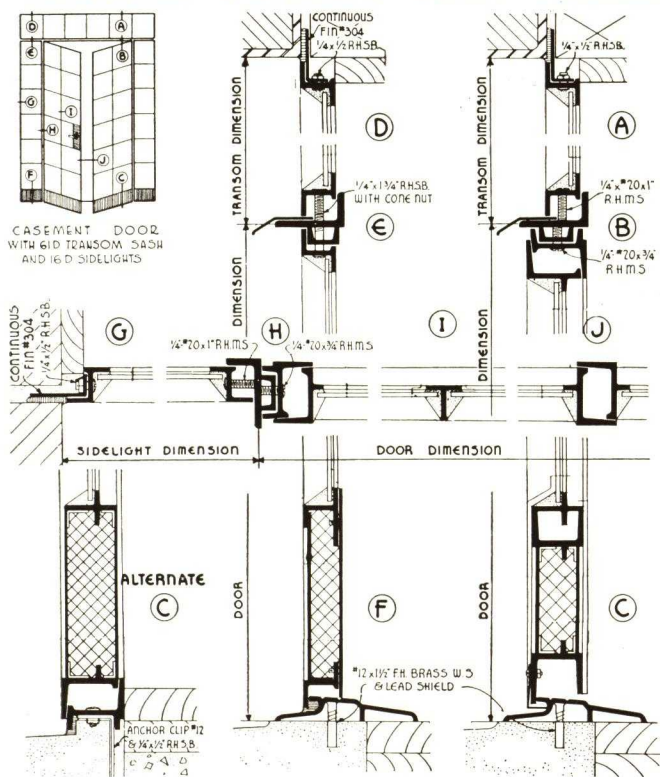
CONSTRUCTION DETAILS



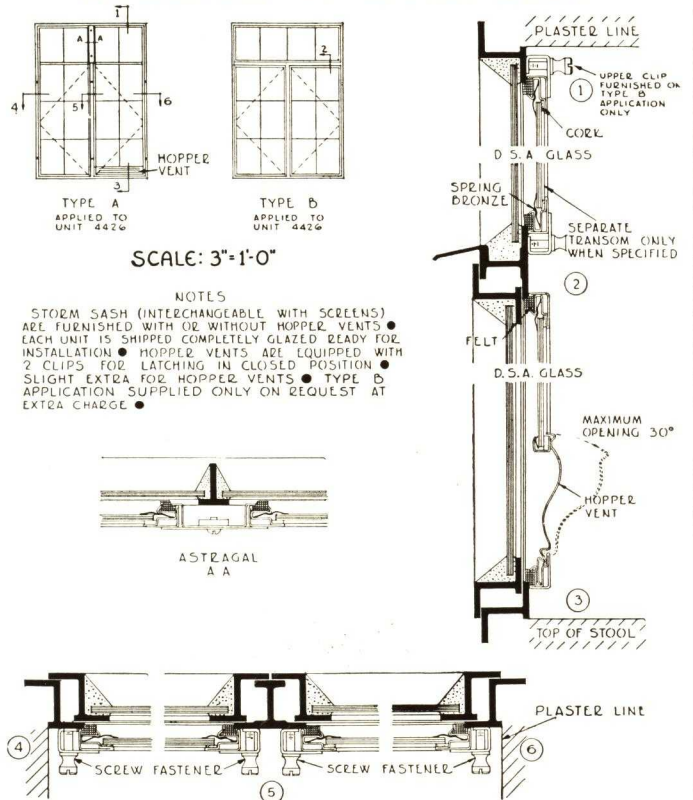
CORNER MULLIONS SCALE: 3"=1'-0"



GUILDHALL CASEMENT DOOR DETAILS



APPLICATION OF STORM SASH



STANDARD SIZES

STANDARD GUILDHALLS

1212	2214	2222	4214VC	4224	6214VC	6224	8224VC	8224VC	1212	2214	2316	4214VC	4224	6214VC	6224	8224VC	8224VC
1312	2314	2373	4314VC	4324	6314VC	6324	8324VC	8324VC	1312	2314	2316	4314VC	4324	6314VC	6324	8324VC	8324VC
1413	2416	2424	4416VC	4426	6416VC	6426	8426VC	8426VC	1413	2416	2418	4416VC	4426	6416VC	6426	8426VC	8426VC
1514	2518	2550	4518VC	4528	6518VC	6528	8528VC	8528VC	1514	2518	2550	4518VC	4528	6518VC	6528	8528VC	8528VC
1614	2618	2668	4618VC	4628	6618VC	6628	8628VC	8628VC	1614	2618	2668	4618VC	4628	6618VC	6628	8628VC	8628VC

GLASS SIZES

1212	2214	2316	4214VC	4324	6214VC	6324	8224VC	8324VC
1312	2314	2373	4314VC	4426	6314VC	6426	8324VC	8426VC
1413	2416	2424	4416VC	4528	6416VC	6528	8426VC	8528VC
1514	2518	2550	4518VC	4628	6518VC	6628	8528VC	8628VC

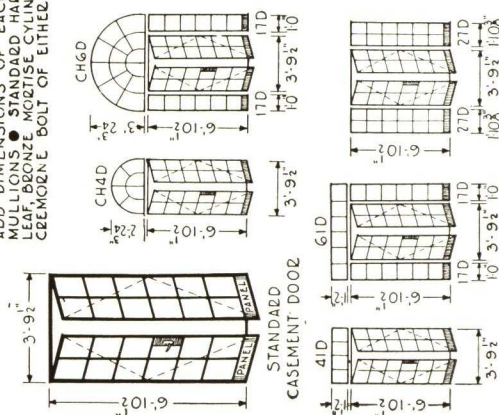
PANES NOT MARKED TAKE 1/2" GLASS

IMPORTANT: TO DISTINGUISH BETWEEN THESE TYPES AND THE OPPOSITE TYPE, ALWAYS USE THE SUFFIX WITH V.M.O. WHICH MEANS VERTICAL OMITTED. EXAMPLE: 4416VCVMO

PANES NOT MARKED TAKE 1/2" GLASS

STANDARD CASEMENT DOOR AND SIDE-LIGHTS

FOR COMPLETE INFORMATION ON STANDARD CASEMENT DOOR CONSTRUCTION AND INSTALLATION REFER TO PAGE 9. DOORS AND SIDE-LIGHTS SHOWN ARE VIEWED FROM THE OUTSIDE. DOORS MAY SWING EITHER IN OR OUT. GLASS SIZE IN BOTH DOORS AND SIDE-LIGHTS IS STANDARDIZED AT 10" x 12". GLASS IN CIRCLE HEADS AND TRANSOMS CUT TO TEMPLATE. FOR TOTAL OPENING DIMENSIONS IN COMPOSITE OPENINGS AND DIMENSIONS OF EACH UNIT AND DISCARD. DIMENSIONS FOR COMPOSITE OPENINGS DO NOT INCLUDE LOCK PLATE TOP OR BOTTOM. BRONZE, OR BRONZE GREEN MOORE BOLT OF EITHER FLUSH OR CONCEALED TYPE.

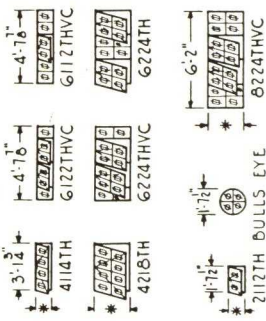


CIRCLE HEADS
CH1, CH2, CH3, CH4, CH5, CH6, CH7, CH8
THESE UNITS ARE STOCK TYPES EXCEPT UNIT CH8

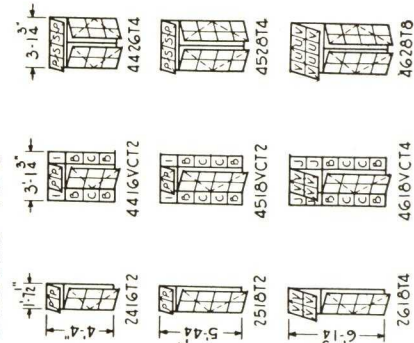
TOP HINGED
2214TH, 4224TH, 4214THVC, 4214THVC

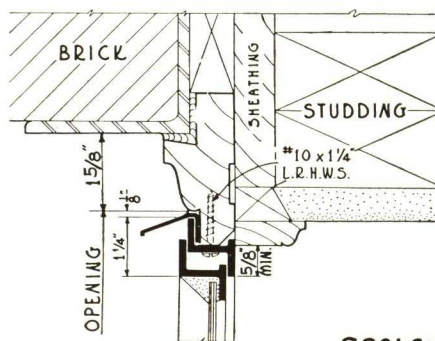
BOTTOM HINGED
2152, 4154, 4152, 6154

SPECIAL TYPE

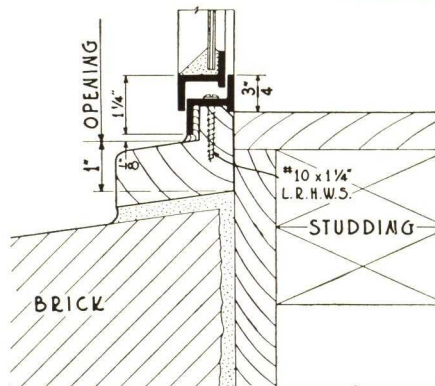
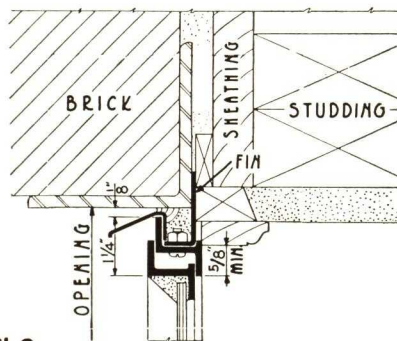


TRANSOM TYPE

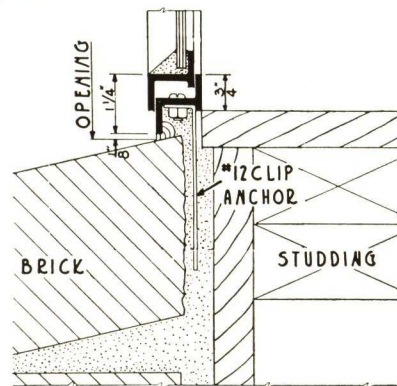




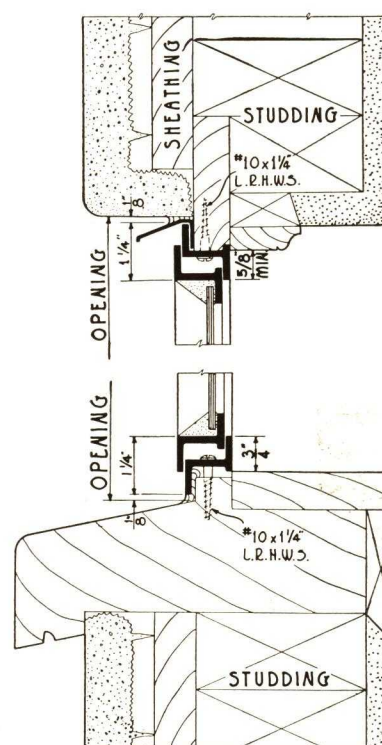
SCALE: 3"=1'-0



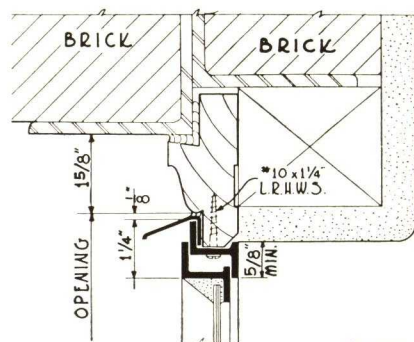
BRICK VENEER
WOOD SURROUNDS



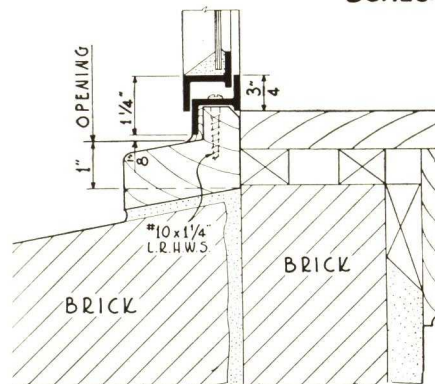
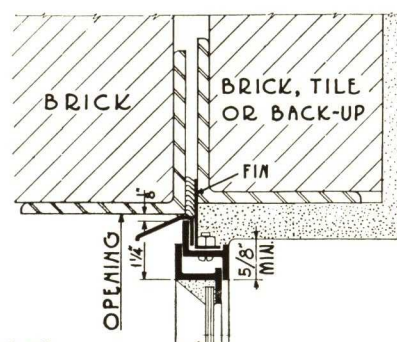
BRICK VENEER WITH FINS



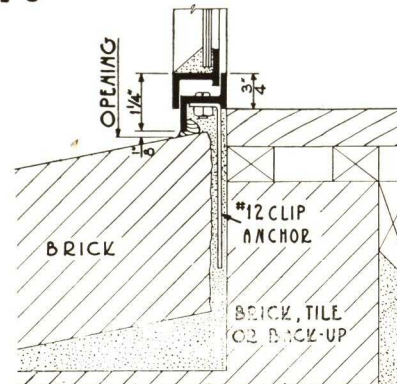
STUCCO WITHOUT FINS



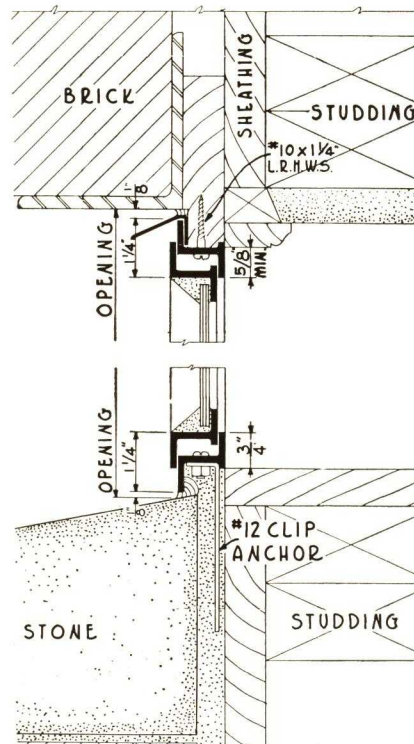
SCALE: 3"=1'-0"



SOLID BRICK
WOOD SURROUNDS



SOLID BRICK
WITH FINS

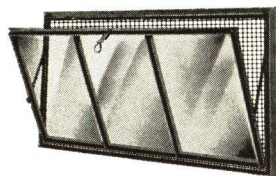


BRICK VENEER WITHOUT FINS

Mesker BASEMENT • UTILITY • SECURITY

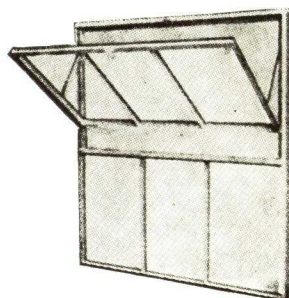
15
17

BASEMENT SASH



Mesker Basement Sash are ideal for all types of residences. They admit more daylight, are termite proof, never swell and stick and are very easily screened from the outside. Vents may be opened a full ninety degrees and may be entirely removed in a few seconds. Dimensions shown are taken at a point $\frac{5}{8}$ in. from the outermost edge, the $\frac{5}{8}$ in. being that part of the flange that is anchored in the wall.

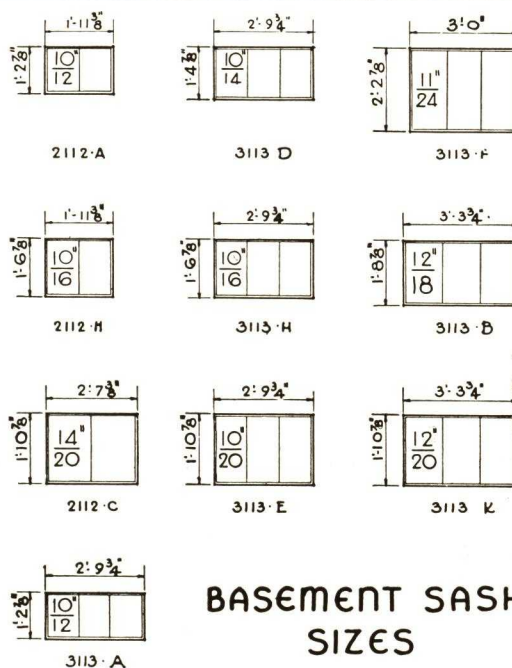
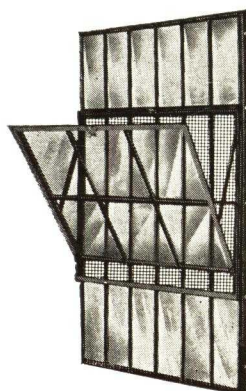
UTILITY SASH



Utility Sash are especially suited for small garages and farm buildings. They are easily screened on the outside and the vent is of the project-in-at-top type, which slides up from the bottom at the same time. Dimensions are taken at a point $\frac{5}{8}$ in. in from the outermost edge, leaving a flange for anchorage.

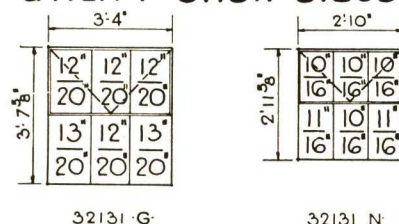
SECURITY SASH

Security Sash are recommended for the side and rear elevations of all types of store buildings and general warehouses. Guard bars are spaced approximately 6 in. apart, preventing entry from the outside even though the glass is broken. When the vent is open a grid of guard bars protects the opening. These sash are easily screened on the outside, and in general are less expensive than ordinary windows protected by separate grilles. Ventilators project-in-at-top and are equipped with a solid bronze spring lock. Dimensions are taken at a point $\frac{5}{8}$ in. in from the outermost edge, allowing a full $\frac{5}{8}$ in. anchorage in the wall.

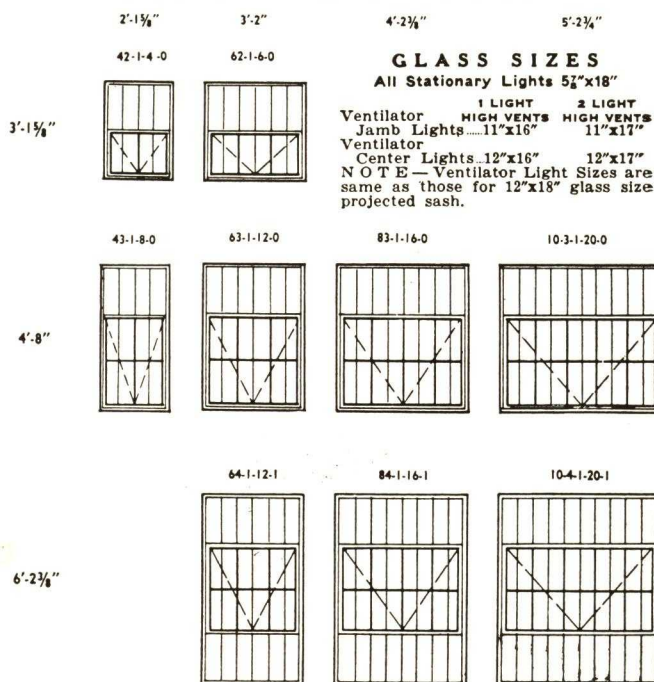


BASEMENT SASH SIZES

UTILITY SASH SIZES



SECURITY SASH SIZES



Mesker PIVOTED & PROJECTED SASH

FOR ALL INDUSTRIAL BUILDINGS, SCHOOLS, GARAGES, STORES, POWER HOUSES, ETC.

FEATURES

Mesker Pivoted and Projected Sash are built for heavy duty use. They are more weathertight than ordinary windows and will stand up under the most severe conditions. All sections are at least $1\frac{1}{2}$ in. deep. Vent sections are $1\frac{5}{8}$ in. deep. Weathering members throughout are made of $\frac{1}{8}$ in. thick hot rolled angle sections. Every joint is solidly arc welded in addition to being riveted or interlocked. Pivoted vents are hung on the famous Mesker Cup Pivot that is made up of a solid bronze disc about which revolves a malleable iron cup. Pivots cannot rust, come loose or fall to pieces. Projected vents are supported on two extra heavy side arms made of $\frac{1}{8}$ in. hot rolled angle sections, giving maximum freedom from lateral sway and rack. When Genuine Wrought Iron Sills are used on these windows it is a definite guarantee against premature sill failure and will make the windows last the life of the building without the need of costly repairs. (See page 18.) These windows are also available in Genuine Wrought Iron throughout.

SPECIFICATIONS

General—Furnish where shown on plans and according to specifications (Mesker Heavy Duty Pivoted Sash) (Mesker Heavy Duty Projected Sash) or equal approved by the Architect.

Materials—Sections shall be hot rolled new billet steel (or Genuine Wrought Iron) not less than $1\frac{1}{2}$ in. deep and $\frac{1}{8}$ in. thick. Vent sections shall be $1\frac{5}{8}$ in. deep.

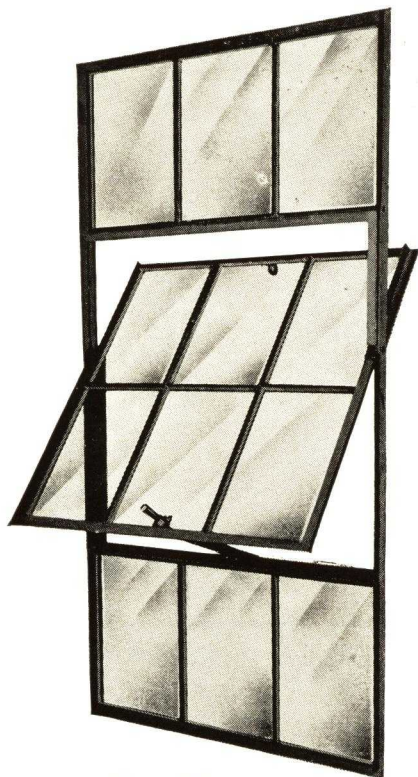
Construction—Corner joints shall be mortised and tenoned and in addition welded . . . muntin joints shall be interlocked and welded . . . muntins shall run continuous from jamb to jamb and head to sill . . . pivots on pivoted sash shall be malleable iron cups and bronze discs of standard cup pivot design . . . weathering members shall be $\frac{1}{8}$ in. hot rolled angles throughout . . . projected vents shall be supported by angle side arms . . . frictionless bronze shoes attached to butt hinges shall allow projected vents to slide vertically . . . friction nuts shall be furnished at point where side arms are attached to frames . . . sash shall be putty glazed on the inside . . . (specify outside putty glazing if required . . . slight extra cost, see page 18) . . . furnish T mullions for all multiple openings . . . furnish necessary anchors and erection fittings.

Hardware—Hardware for sash shall be malleable iron . . . furnish cam lock and push bar for pivoted vents within reach . . . furnish cam lock for projected vents within reach . . . furnish chain controlled cam locks or spring latches for vents out of reach.

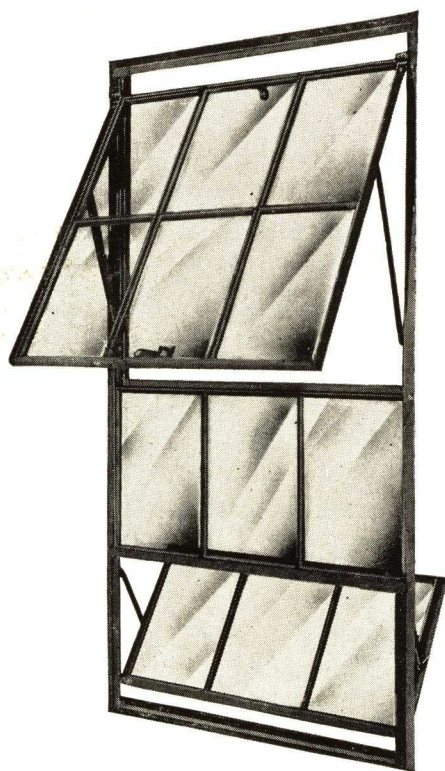
Painting—All sash and fittings shall receive one coat of metallic primer paint in the factory.

Screens—(See page 19 for special sash construction) . . . Screens shall have $\frac{3}{8} \times \frac{5}{8}$ in. solid steel frames with rewirable aluminum spline . . . cloth shall be statutory bronze finish copper of 16 mesh size . . . corner joints shall be mitre cut and welded . . . one coat of enamel baked on shall be applied to frames in the factory . . . furnish necessary screen clips and erection fittings . . . screens shall be boxed for shipment.

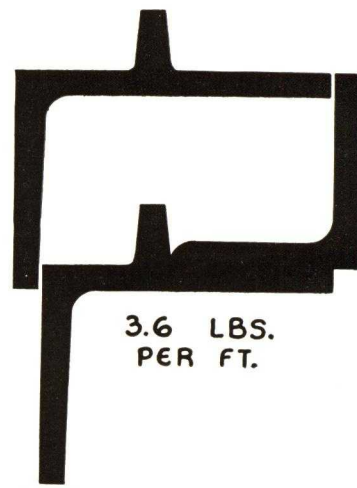
Erection—All sash shall be erected in prepared openings . . . set plumb and square and carefully grout . . . adjust all vents before glazing.



Pivoted Type 34161



Projected Type 3423602



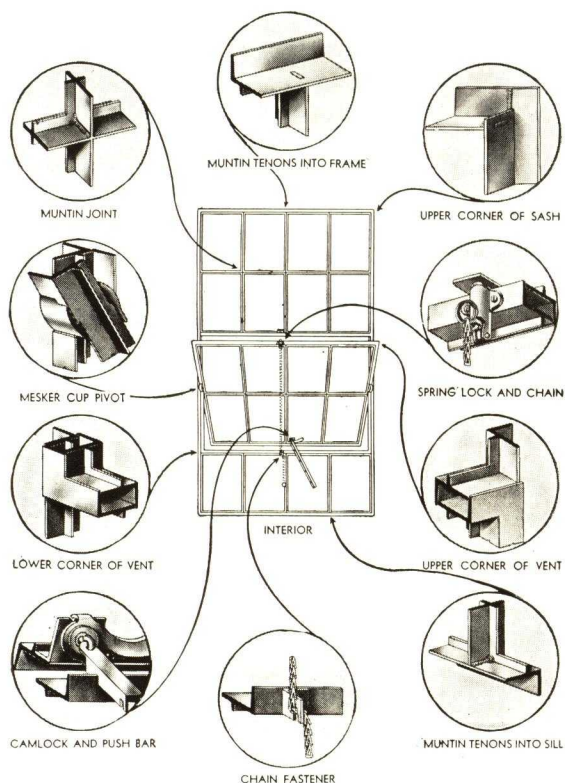
3.6 LBS.
PER FT.

Full Size Vent and Frame Sections

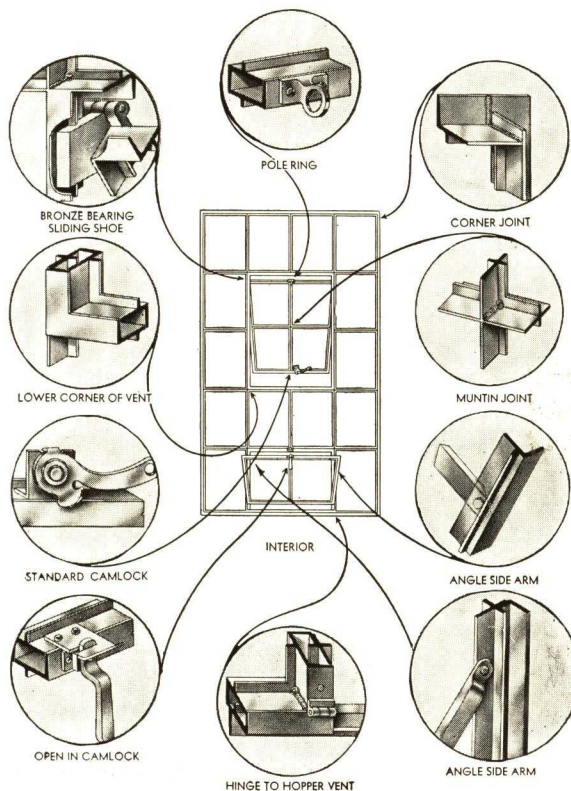
Mesker PIVOTED & PROJECTED SASH

15
17

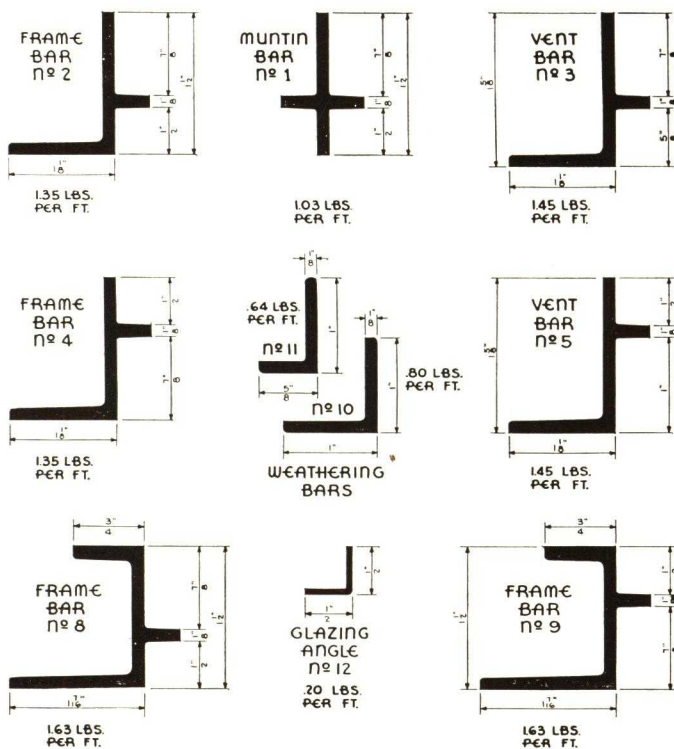
PIVOTED SASH



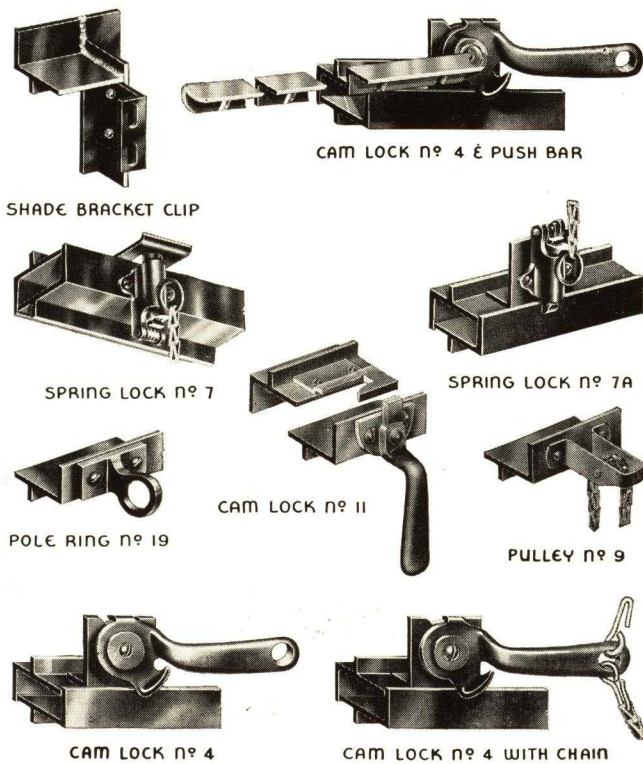
PROJECTED SASH



HALF FULL SIZE SECTIONS



HARDWARE



Mesker PIVOTED & PROJECTED SASH

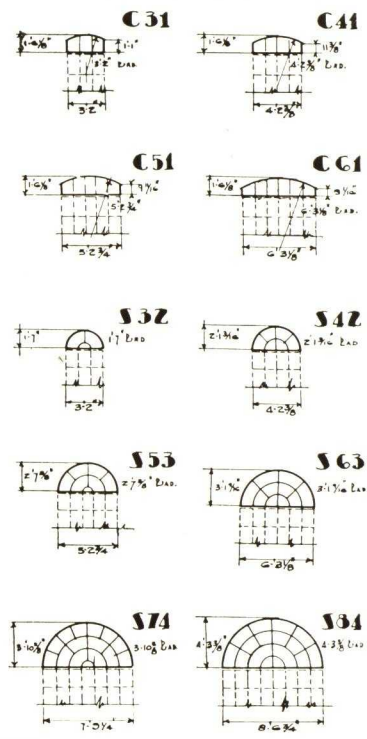
PIVOTED SASH

12'x18"	2'-1 5/8"	3'-2"	4'-2 3/8"	5'-2 3/4"	6'-3 1/8"
14'x20"	2'-5 5/8"	3'-8"	4'-10 3/8"	6'-0 3/4"	7'-3 1/8"
10'-9 1/2"	9'-3 3/8"	7'-8 3/4"	6'-2 3/8"	4'-8"	3'-1 5/8"
11'-1 1/2"	10'-3 1/8"	8'-6 3/4"	6'-10 3/8"	5'-2"	3'-5 5/8"
2 LTS.	3 LTS. WIDE	4 LIGHTS WIDE	5 LTS. WIDE	6 LTS. WIDE	
22	31 3130	41	51 5130		
22140	32 32160	42 42140	52 52160	62 62180	
23141	33 33161	43 43141	53 53161	63 63181	
24141	34 34161	44 44141	54 54161	64 64181	
25141	35 35162	45 45141	55 55162	65 65181	
	36 36163	46 46141	56 56161	66 66181	
	37 37161	47 47181	57 57161	67 67181	
	38 38164	48 48184	58 58164	68 68184	
	39 39164	49 49184	59 59164	69 69184	
	40 40164	50 50164	60 60164	70 70164	
	41 41164	51 51164	61 61164	71 71164	
	42 42164	52 52164	62 62164	72 72164	
	43 43164	53 53164	63 63164	73 73164	
	44 44164	54 54164	64 64164	74 74164	
	45 45164	55 55164	65 65164	75 75164	
	46 46164	56 56164	66 66164	76 76164	
	47 47164	57 57164	67 67164	77 77164	
	48 48164	58 58164	68 68164	78 78164	
	49 49164	59 59164	69 69164	79 79164	
	50 50164	60 60164	70 70164	80 80164	

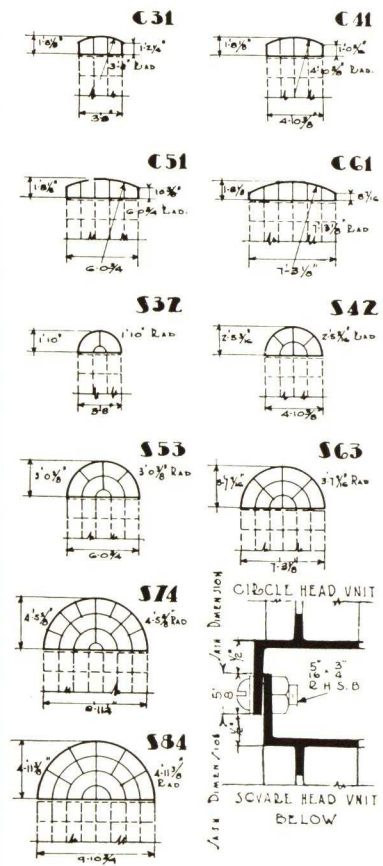
PROJECTED SASH

12'x18"	2'-1 5/8"	3'-2"	4'-2 3/8"	5'-2 3/4"
14'x20"	2'-5 5/8"	3'-8"	4'-10 3/8"	6'-0 3/4"
10'-9 1/2"	9'-3 3/8"	7'-8 3/4"	6'-2 3/8"	4'-8"
11'-1 1/2"	10'-3 1/8"	8'-6 3/4"	6'-10 3/8"	5'-2"
2 LTS.	3 LIGHTS WIDE	4 LIGHTS WIDE	5 LIGHTS WIDE	
22140	32160	42140	52160	
23141	33161	43141	53161	
24141	34161	44141	54161	
25141	35162	45141	55162	
	36163	46141	56161	
	37161	47181	57161	
	38164	48184	58164	
	39164	49184	59164	
	40164	50164	60164	
	41164	51164	61164	
	42164	52164	62164	
	43164	53164	63164	
	44164	54164	64164	
	45164	55164	65164	
	46164	56164	66164	
	47164	57164	67164	
	48164	58164	68164	
	49164	59164	69164	
	50164	60164	70164	

12' X 18" GLASS



14' X 20" GLASS

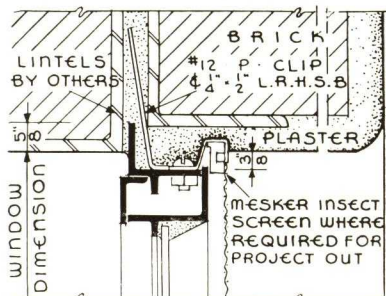


Mesker PIVOTED & PROJECTED SASH

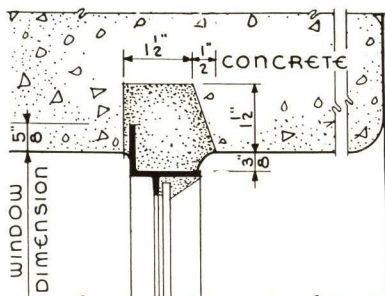
15
17

INSTALLATION DETAILS

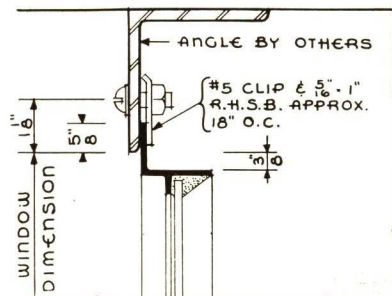
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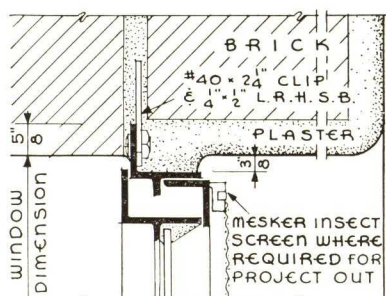
HEAD



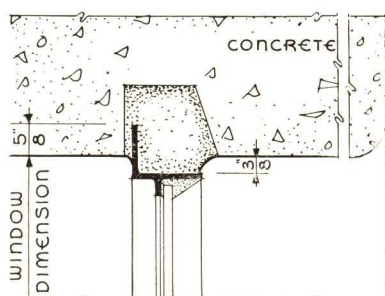
HEAD



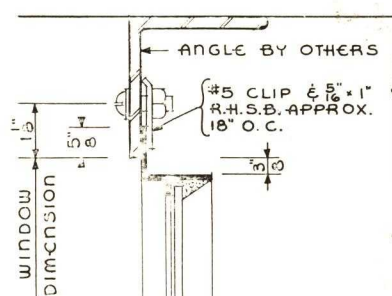
HEAD



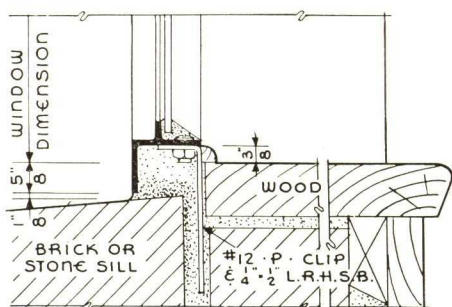
JAMB



JAMB



JAMB



SILL
BRICK

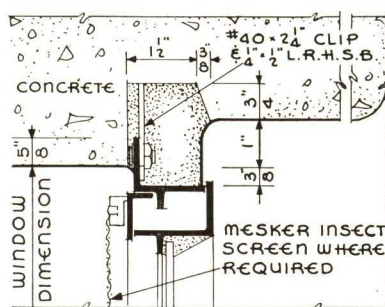
SCALE 3"=1'-0"

FOR BRICK

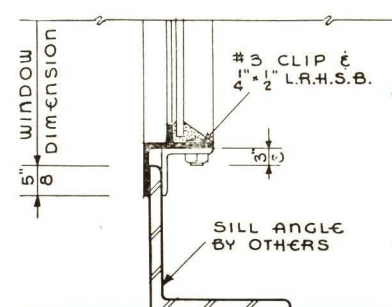
BUILD SASH INTO WALLS AS MASONRY IS RUN UP. REST BOTTOM EDGE OF WINDOW ON MASONRY SILL; BRACE WINDOW PLUMB & TRUE. LAY UP BRICK JAMBS & SLUSH IN GROUT AROUND SASH FLANGE. SEPARATE ANGLE LINTELS ABOUT 3/8" TO ALLOW SASH FLANGE TO RIDE UP INTO SLOT. DO NOT ALLOW WEIGHT FROM ANGLES TO REST ON SASH.

FOR MULTIPLE UNIT RUNS SET SASH AFTER OPENING HAS BEEN COMPLETELY PREPARED. LEAVE A RAKED OUT VERTICAL MORTAR JOINT IN MASONRY JAMBS TO RECEIVE FLANGE OF SASH. OMIT MASONRY SILL UNTIL WINDOWS HAVE BEEN ERECTED. MEANWHILE SUPPORT SASH SILL ON BRICKBATS.

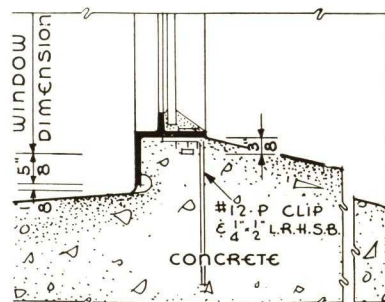
AFTER SASH ARE SET UP, FASTEN HEAD CLAMP & SILL ANCHOR & ADJUST UNITS LENGTHWISE TO REQUIRED WIDTH. THEN BOLT ON MULLIONS, TIGHTEN CLAMPS & ANCHORS.



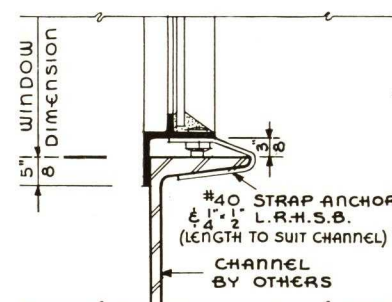
JAMB OR HEAD



SILL



SILL
CONCRETE

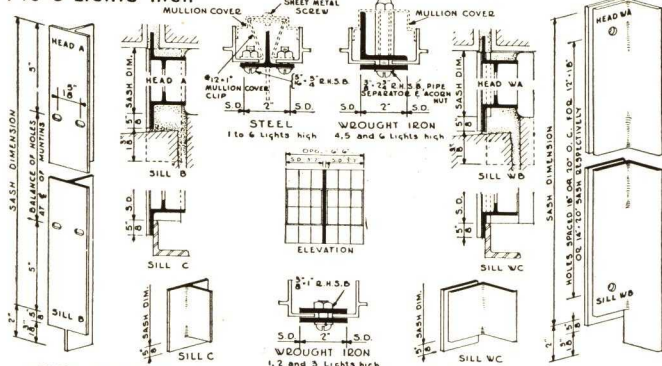


SILL
STEEL

Mesker PIVOTED & PROJECTED SASH

VERTICAL MULLIONS

1 TO 6 LIGHTS HIGH



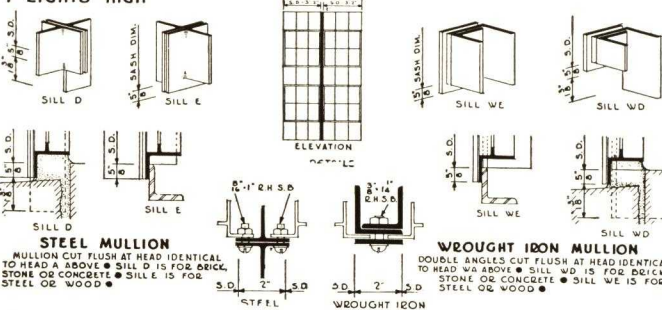
STEEL MULLIONS

T-MULLIONS ABOVE ARE FURNISHED IN STEEL ONLY. STEEL SASH JAMB MEMBERS HAVE VERTICAL SLOTTED HOLES. EACH MULLION INCREASES OPENING WIDTH BY 2". PRESSED STEEL MULLION COVERS ARE FURNISHED ON SPECIFICATION ONLY AND AT SLIGHT ADDITIONAL COST. TURN T-STEM OUTWARD FOR GREAT STRENGTH. MULLION ANCHORAGE PROVIDED AT SILL ONLY. HEAD CONDITION A FITS ALL TYPES OF WALL CONSTRUCTION. SILL B IS FOR BRICK, STONE OR CONCRETE. SILL C IS FOR STEEL OR WOOD CONSTRUCTION.

WROUGHT IRON MULLIONS

PLATE AND ANGLE MULLIONS ARE FURNISHED IN WROUGHT IRON ONLY. WROUGHT IRON SASH JAMB MEMBERS ARE NOT PUNCHED. EACH MULLION INCREASES OPENING WIDTH BY 2". GALVANIZED STEEL MULLION COVERS ARE FURNISHED ON SPECIFICATION ONLY AND AT SLIGHT ADDITIONAL COST. MULLION ANCHORAGE IS PROVIDED AT SILL ONLY. HEAD WA FITS ALL TYPES OF WALL CONSTRUCTION. SILL WB IS FOR BRICK, STONE OR CONCRETE. SILL WC IS FOR STEEL OR WOOD CONSTRUCTION.

7 LIGHTS HIGH



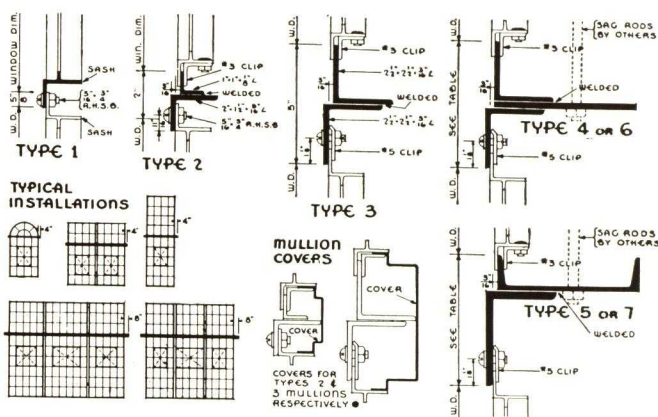
STEEL MULLION

MULLION CUT FLUSH AT HEAD IDENTICAL TO HEAD A ABOVE. SILL D IS FOR BRICK, STONE OR CONCRETE. SILL E IS FOR STEEL OR WOOD.

WROUGHT IRON MULLION

DOUBLE ANGLES CUT FLUSH AT HEAD IDENTICAL TO HEAD WA ABOVE. SILL WD IS FOR BRICK, STONE OR CONCRETE. SILL WE IS FOR STEEL OR WOOD.

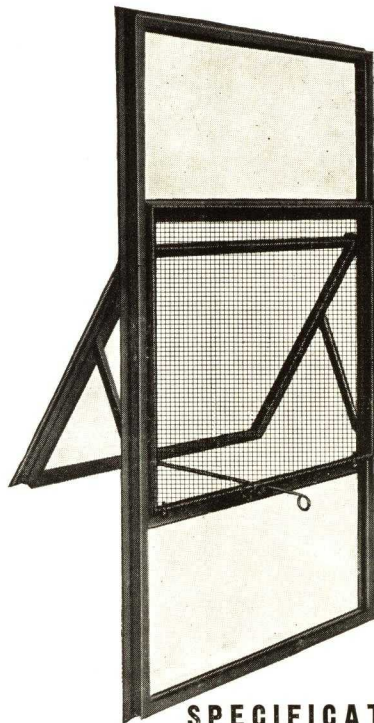
HORIZONTAL MULLIONS



STANDARD WIDTHS											
LIGHTS WIDE			LIGHTS WIDE			LIGHTS WIDE			LIGHTS WIDE		
OPENING DIMENSION 12-18	IN EACH UNIT	IN	OPENING DIMENSION 14-20	IN EACH UNIT	IN	OPENING DIMENSION 16-22	IN EACH UNIT	IN	OPENING DIMENSION 18-24	IN EACH UNIT	IN
20-26	2	2 1/2	22-28	3	3 1/2	24-30	4	4 1/2	26-32	5	5 1/2
28-34	2	2 1/2	30-36	3	3 1/2	32-38	4	4 1/2	34-40	5	5 1/2
36-42	3	3 1/2	38-44	4	4 1/2	40-46	5	5 1/2	42-48	6	6 1/2
44-50	3	3 1/2	46-52	4	4 1/2	48-54	5	5 1/2	50-56	6	6 1/2
52-58	4	4 1/2	54-60	5	5 1/2	56-62	6	6 1/2	58-64	7	7 1/2
60-66	4	4 1/2	62-68	5	5 1/2	64-70	6	6 1/2	66-72	7	7 1/2
68-74	5	5 1/2	70-76	6	6 1/2	72-78	7	7 1/2	74-80	8	8 1/2
76-82	5	5 1/2	78-84	6	6 1/2	80-86	7	7 1/2	82-88	8	8 1/2
84-90	6	6 1/2	86-92	7	7 1/2	88-94	8	8 1/2	90-96	9	9 1/2
92-98	6	6 1/2	94-100	7	7 1/2	96-102	8	8 1/2	98-104	9	9 1/2
100-106	7	7 1/2	102-108	8	8 1/2	104-110	9	9 1/2	106-112	10	10 1/2
108-114	7	7 1/2	110-116	8	8 1/2	112-118	9	9 1/2	114-120	10	10 1/2
116-122	8	8 1/2	118-124	9	9 1/2	120-126	10	10 1/2	122-128	11	11 1/2
124-130	8	8 1/2	126-132	9	9 1/2	128-134	10	10 1/2	130-136	11	11 1/2
132-138	9	9 1/2	134-140	10	10 1/2	136-142	11	11 1/2	138-144	12	12 1/2
140-146	9	9 1/2	142-148	10	10 1/2	144-150	11	11 1/2	146-152	12	12 1/2
148-154	10	10 1/2	150-156	11	11 1/2	152-158	12	12 1/2	154-160	13	13 1/2
156-162	10	10 1/2	158-164	11	11 1/2	160-166	12	12 1/2	162-168	13	13 1/2
164-170	11	11 1/2	166-172	12	12 1/2	168-174	13	13 1/2	170-176	14	14 1/2
172-178	11	11 1/2	174-180	12	12 1/2	176-182	13	13 1/2	178-184	14	14 1/2
180-186	12	12 1/2	182-188	13	13 1/2	184-190	14	14 1/2	186-192	15	15 1/2
188-194	12	12 1/2	190-196	13	13 1/2	192-198	14	14 1/2	194-200	15	15 1/2
196-202	13	13 1/2	198-204	14	14 1/2	200-206	15	15 1/2	202-208	16	16 1/2
204-210	13	13 1/2	206-212	14	14 1/2	208-214	15	15 1/2	210-216	16	16 1/2
212-218	14	14 1/2	214-220	15	15 1/2	216-222	16	16 1/2	218-224	17	17 1/2
220-226	14	14 1/2	222-228	15	15 1/2	224-230	16	16 1/2	226-232	17	17 1/2
228-234	15	15 1/2	230-236	16	16 1/2	232-238	17	17 1/2	234-240	18	18 1/2
236-242	15	15 1/2	238-244	16	16 1/2	240-246	17	17 1/2	242-248	18	18 1/2
244-250	16	16 1/2	246-252	17	17 1/2	248-254	18	18 1/2	250-256	19	19 1/2
252-258	16	16 1/2	254-260	17	17 1/2	256-262	18	18 1/2	258-264	19	19 1/2
260-266	17	17 1/2	262-268	18	18 1/2	264-270	19	19 1/2	266-272	20	20 1/2
268-274	17	17 1/2	270-276	18	18 1/2	272-278	19	19 1/2	274-280	20	20 1/2
276-282	18	18 1/2	278-284	19	19 1/2	280-286	20	20 1/2	282-288	21	21 1/2
284-290	18	18 1/2	286-292	19	19 1/2	288-294	20	20 1/2	290-296	21	21 1/2
292-298	19	19 1/2	294-300	20	20 1/2	296-302	21	21 1/2	298-304	22	22 1/2
300-306	19	19 1/2	302-308	20	20 1/2	304-310	21	21 1/2	306-312	22	22 1/2
308-314	20	20 1/2	310-316	21	21 1/2	312-318	22	22 1/2	314-320	23	23 1/2
316-322	20	20 1/2	318-324	21	21 1/2	320-326	22	22 1/2	322-328	23	23 1/2
324-330	21	21 1/2	326-332	22	22 1/2	328-334	23	23 1/2	330-336	24	24 1/2
332-338	21	21 1/2	334-340	22	22 1/2	336-342	23	23 1/2	338-344	24	24 1/2
340-346	22	22 1/2	342-348	23	23 1/2	344-350	24	24 1/2	346-352	25	25 1/2
348-354	22	22 1/2	350-356	23	23 1/2	352-358	24	24 1/2	354-360	25	25 1/2
356-362	23	23 1/2	358-364	24	24 1/2	360-366	25	25 1/2	362-368	26	26 1/2
364-370	23	23 1/2	366-372	24	24 1/2	368-374	25	25 1/2	370-376	26	26 1/2
372-378	24	24 1/2	374-380	25	25 1/2	376-382	26	26 1/2	378-384	27	27 1/2
380-386	24	24 1/2	382-388	25	25 1/2	384-390	26	26 1/2	386-392	27	27 1/2
388-394	25	25 1/2	390-396	26	26 1/2	392-398	27	27 1/2	394-400	28	28 1/2
396-402	25	25 1/2	398-404	26	26 1/2	400-406	27	27 1/2	402-408	28	28 1/2
404-410	26	26 1/2	406-412	27	27 1/2	408-414	28	28 1/2	410-416	29	29 1/2
412-418	26	26 1/2	414-420	27	27 1/2	416-422	28	28 1/2	418-424	29	29 1/2
420-426	27	27 1/2	422-428	28	28 1/2	424-430	29	29 1/2	426-432	30	30 1/2
428-434	27	27 1/2	430-436	28	28 1/2	432-438	29	29 1/2	434-440	30	30 1/2
436-442	28	28 1/2	438-444	29	29 1/2	440-446	30	30 1/2	442-448	31	31 1/2
444-450	28	28 1/2	446-452	29	29 1/2	448-454	30	30 1/2	450-456	31	31 1/2
452-458	29	29 1/2	454-460	30	30 1/2	456-462	31	31 1/2	458-464	32	32 1/2
460-466	29	29 1/2	462-468	30	30 1/2	464-470	31	31 1/2	466-472	32	32 1/2
468-474	30	30 1/2	470-476	31	31 1/2	472-478	32	32 1/2	474-480	33	33 1/2
476-482	30	30 1/2	478-484	31	31 1/2	480-486	32	32 1/2	482-488	33	33 1/2
484-490	31	31 1/2	486-492	32	32 1/2	488-494	33	33 1/2	490-496	34	34 1/2
492-498	31	31 1/2	494-500	32	32 1/2	496-502	33	33 1/2	498-504	34	34 1/2
500-506	32	32 1/2	502-508	33	33 1/2	504-510	34	34 1/2	506-512	35	35 1/2
508-514	32	32 1/2	510-516	33	33 1/2	512-518	34	34 1/2	514-520	35	35 1/2
516-522	33	33 1/2	518-524	34	34 1/2	520-526	35	35 1/2	522-528	36	36 1/2
524-530	33	33 1/2	526-532	34	34 1/2	528-534	35	35 1/2	530-536	36	36 1/2
532-538	34	34 1/2	534-540	35	35 1/2	536-542	36	36 1/2	538-544	37	37 1/2
540-546	34	34 1/2	542-548	35	35 1/2	544-550	36	36 1/2	546-552	37	37 1/2
548-554	35	35 1/2	550-556	36	36 1/2	552-558	37	37 1/2	554-560	38	38 1/2
556-562	35	35 1/2	558-564	36	36 1/2	560-566	37	37 1/2	562-568	38	38 1/2
564-570	36	36 1/2	566-572	37	37 1/2	568-574	38	38 1/2	570-576	39	39 1/2
572-578	36	36 1/2	574-580	37	37 1/2	576-582	38	38 1/2	578-584	39	39 1/2
580-586	37	37 1/2	582-588	38	38 1/2	584-590	39	39 1/2	586-592	40	40 1/2
588-594	37	37 1/2	590-596	38	38 1/2	592-598	39	39 1/2	594-600	40	40 1/2
596-602	38	38 1/2	598-604	39	39 1/2	600-606	40	40 1/2	602-608	41	41 1/2
604-610	38	38 1/2	606-612	39	39 1/2	608-614	40	40 1/2	610-616	41	41 1/2
612-618	39	39 1/2	614-620	40	40 1/2	616-622	41	41 1/2	618-624	42	42 1/2
620-626	39	39 1/2	622-628	40	40 1/2	624-630	41	41 1/2	626-632	42	42 1/2
628-634	40	40 1/2	630-636	41	41 1/2	632-638	42	42 1/2	634-640	43	43 1/2
636-642	40	40 1/2	638-644	41	41 1/2	640-646	42	42 1/2	642-648	43	43 1/2
644-650	41	41 1/2	646-652	42	42 1/2	648-654	43	43 1/2	650-656	44	44 1/2
652-658	41	41 1/2	654-660	42	42 1/2	656-662	43	43 1/2	658-664	44	44 1/2
660-666	42	42 1/2	662-668	43	43 1/2	664-670	44	44 1/2	666-672	45	45 1/2
668-674	42	42 1/2	670-676	43	43 1/2	672-678	44	44 1/2	674-680	45	45 1/2
676-682	43	43 1/2	678-684	44	44 1/2	680-686	45	45 1/2	682-688	46	46 1/2
684-690	43	43 1/2	686-692	44	44 1/2	688-694	45	45 1/2	690-696	46	46 1/2
692-698	44	44 1/2	694-700	45	45 1/2	696-702	46	46 1/2	698-704	47	47 1/2
700-706	44	44 1/2	702-708	45	45 1/2	704-710	46	46 1/2	706-712	47	47 1/2
708-714	45	45 1/2	710-716	46	46 1/2	712-718	47	47 1/2	714-720	48	48 1/2
716-722	45	45 1/2	718-724	46	46 1/2	720-726	47	47 1/2	722-728	48	48 1/2
724-730	46	46 1/2	726-732	47	47 1/2	728-734	48	48 1/2	730-736	49	49 1/2
732-738	46	46 1/2	734-740	47	47 1/2	736-742	48	48 1/2	738-744	49	49 1/2
740-746	47	47 1/2	742-748	48	48 1/2	744-750	49	49 1/2	746-752	50	50 1/2
748-754	47	47 1/2	750-756	48	48 1/2	752-758	49	49 1/2	754-760	50	50 1/2
756-762	48	48 1/2	758-764	49	49 1/2	760-766	50	50 1/2	762-768	51	51 1/2
764-770	48	48 1/2	766-772	49	49 1/2	768-774	50	50 1/2	770-776	51	51 1/2
772-778	49	49 1/2	774-780	50	50 1/2	776-782	51	51 1/2	778-784	52	52 1/2
780-786	49	49 1/2	782-788	50	50 1/2	784-790	51	51 1/2	786-792	52	52 1/2
788-794	50	50 1/2	790-796	51	51 1/2	792-798	52	52 1/2	794-800	53	53 1/2
796-802	50	50 1/2	798-804	51	51 1/2	800-806	52	52 1/2	802-808	53	53 1/2
804-810	51	51 1/2	806-812	52	52 1/2	808-814	53	53 1/2	810-816	54	54 1/2
812-818	51	51 1/2	814-820	52	52 1/2	816-822	53	53 1/2			

Mesker ARCHITECTURAL PROJECTED

FOR SCHOOLS, OFFICE BUILDINGS, AND MONUMENTAL BUILDINGS



SPECIFICATIONS

General—Furnish where shown on plans and according to specifications Mesker Architectural Projected Windows or equal approved by the Architect.

Materials—Sections shall be of hot rolled new billet steel (or Genuine Wrought Iron) not less than $1\frac{1}{2}$ in. in depth and $\frac{1}{8}$ in. thick . . . glass rebates shall be not more than $\frac{7}{8}$ in. deep front to back to avoid excessive putty.

Construction—All joints shall be riveted and welded . . . vents shall be balanced on heavy side arms and slide on bronze shoes . . . applied weathering shall be $\frac{1}{8}$ in. hot rolled angles throughout . . . glass shall be applied from the outside with putty (if desired specify inside glazing with glazing moulding attached with bronze screws . . . slight extra cost) . . . furnish mullions and covers for multiple openings.

Hardware—Hardware shall be solid bronze statuary finish . . . cam handles for project in or out vents . . . underscreen stay bar for screen type project out vents . . . all hardware shall be shipped separately and securely packed.

Painting—Windows shall receive a prime coat of metallic paint applied in the factory.

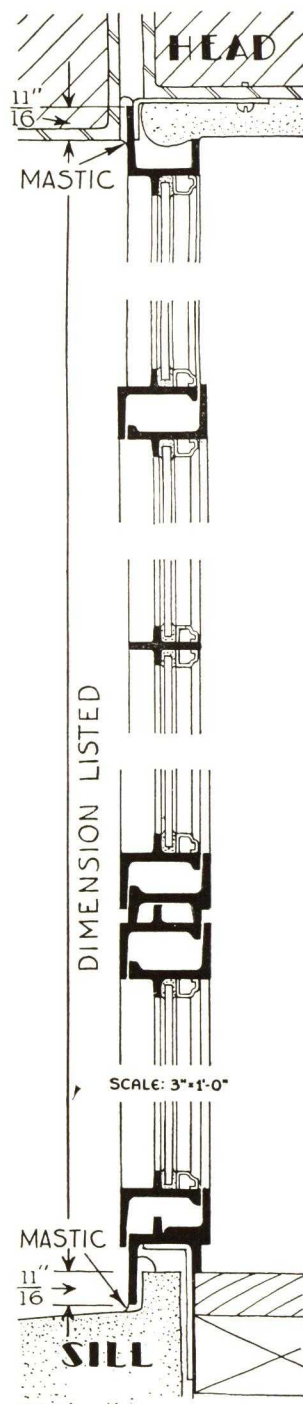
Screens—Where shown and required prepare windows to receive screens. (See page 3 under Screen Paragraph for typical specification and insert here.)

FEATURES

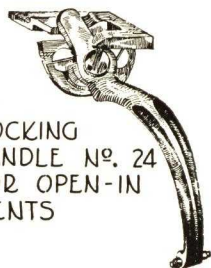
All sections are $1\frac{1}{2}$ in. deep. Vent members are $1\frac{5}{8}$ in. deep. Glazing moulding is used instead of ordinary, unpleasant looking glazing angles. All joints are solidly arc welded. Hardware is solid bronze throughout.

STANDARD SIZES

1'-0" 2'-6"	1'-6" 3'-0"	2'-0" 3'-6"	2'-6" 4'-0"	3'-0" 4'-6"	4'-0" 5'-6"	4'-6" 6'-0"	5'-0" 6'-6"	5'-6" 7'-0"
A	B	C	D	E	F	G	H	I
J	K	L	M	N	O	P		



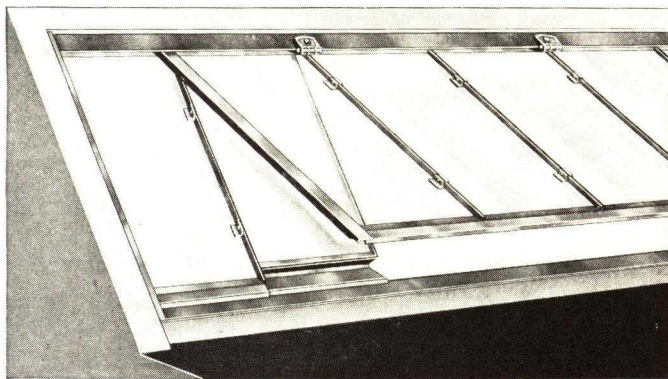
LOCKING
HANDLE NO. 10
FOR OPEN-OUT VENTS



LOCKING
HANDLE NO. 24
FOR OPEN-IN
VENTS

Mesker CONTINUOUS TOP HUNG SASH

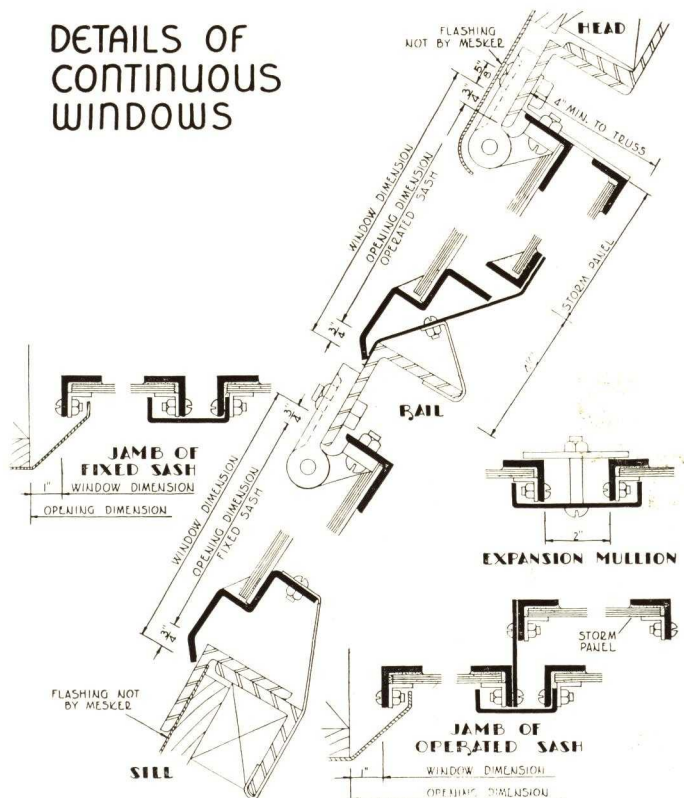
15
17



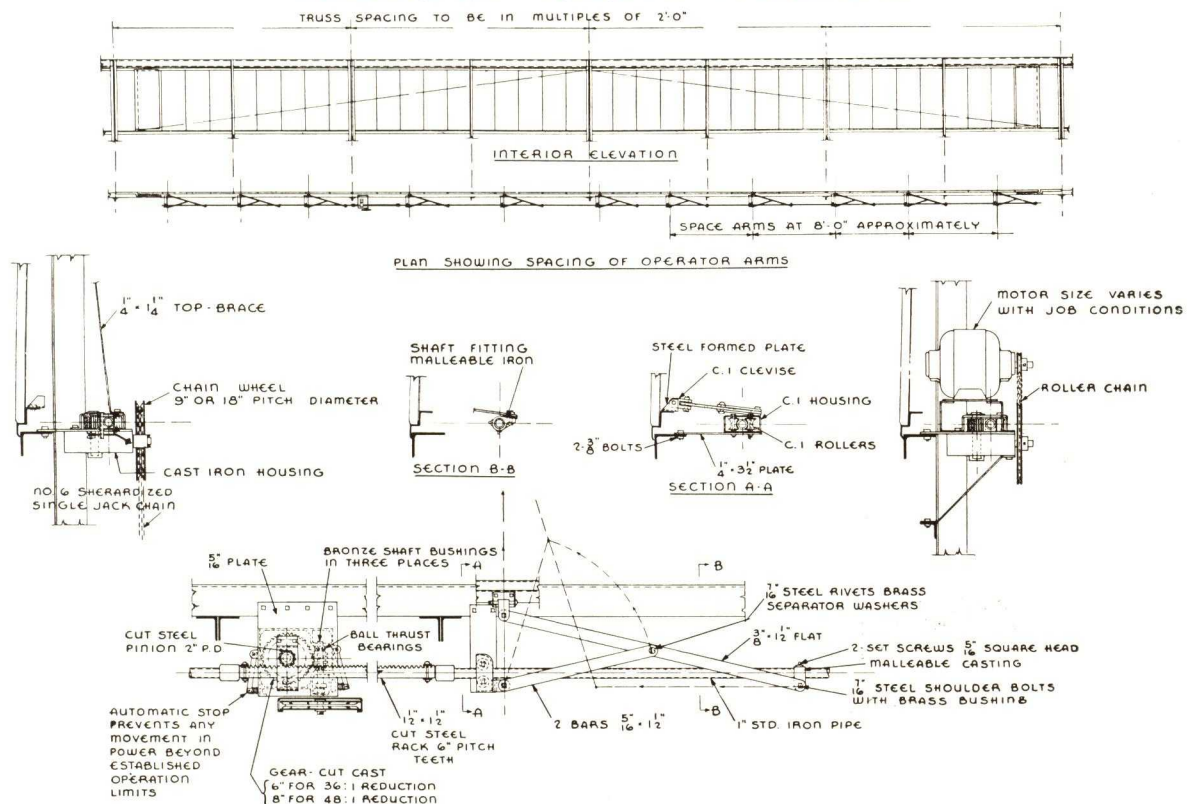
Mesker Continuous Sash are designed for industrial use where lighting and ventilation are prime requisites. These windows form a perfect ventilating system, especially where large quantities of gases are to be carried off, and their lighting features very closely approximate a skylight. No other type of window adapts itself so easily to mass control from one centrally located station.

These windows come in standard heights of 3, 4, 5, and 6 feet and in lengths of multiples of 2 feet. Practically any length may be obtained from 10 feet up to several hundred feet. Storm panels should be used at each end of a ventilated run. Windows are operated by means of tension type operators shown below.

DETAILS OF CONTINUOUS WINDOWS

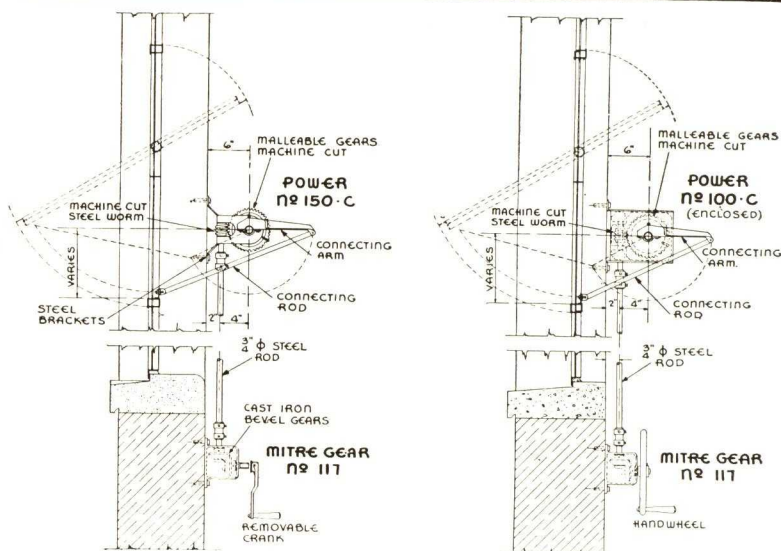
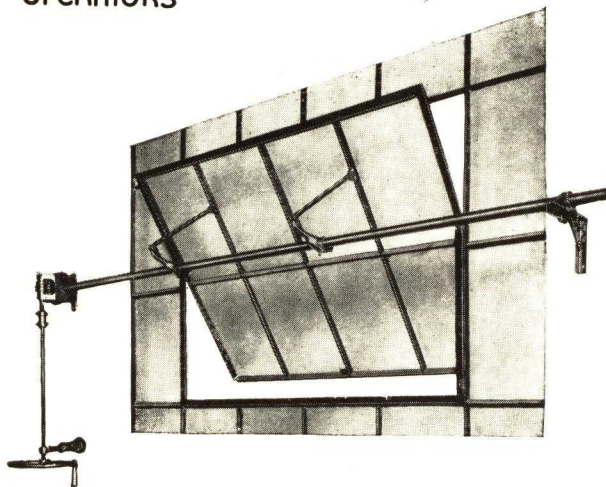


DETAILS OF TENSION OPERATORS

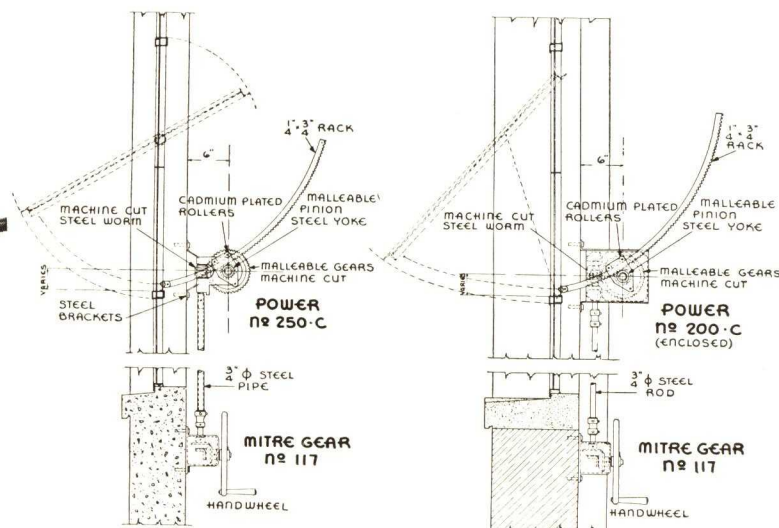
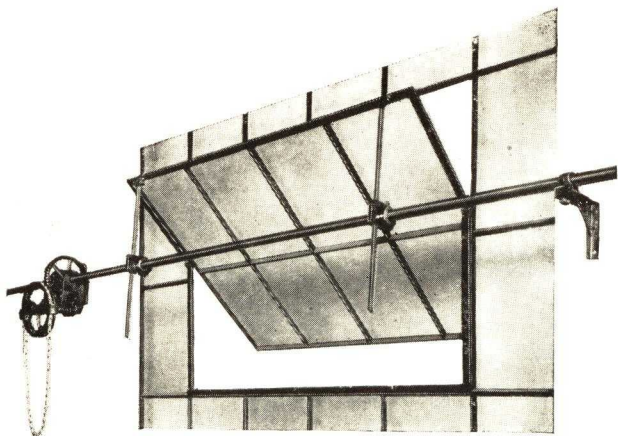


Mesker MECHANICAL OPERATORS

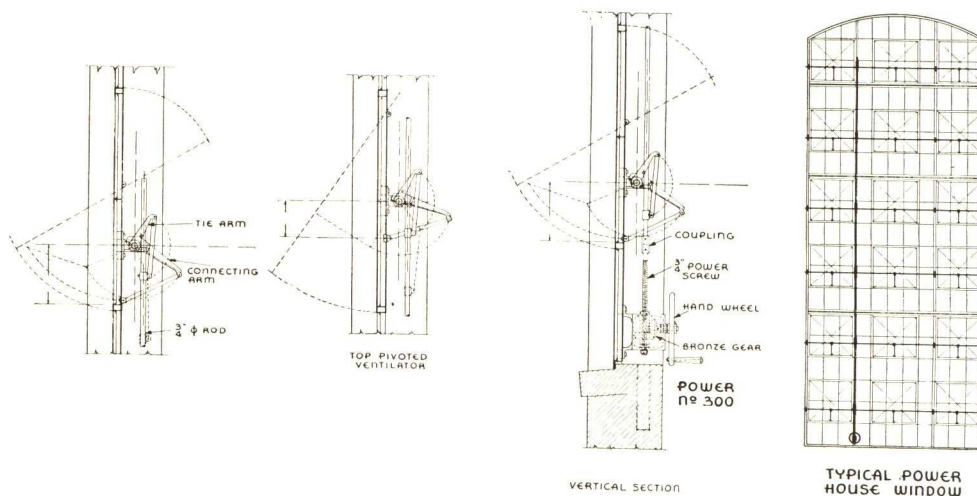
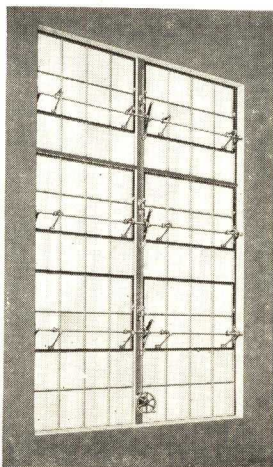
TORSION OPERATORS



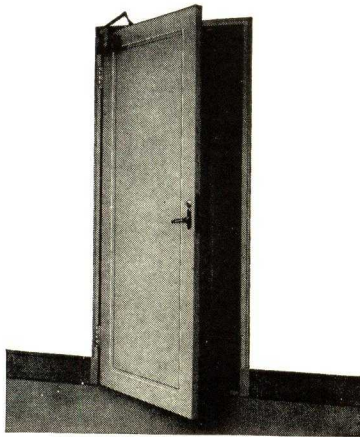
RACK & PINION OPERATORS



SCREW TYPE OPERATORS



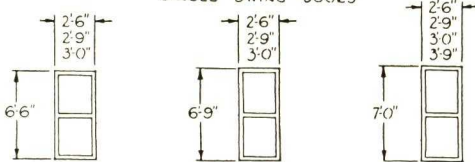
Mesker INDUSTRIAL TUBULAR DOORS



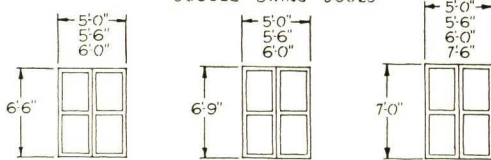
MESKER VULCAN DOORS

These doors are used in industrial buildings, offices, garages, apartments, and wherever a sturdy fire-resistant door is required. Door rails, stiles, frames and panels are 16 gauge steel. Frames are made for 4, 6 and 8 in. walls. There are four designs available, one solid steel panel, two steel panel type, panel below and single glass light above, and panel below and four glass lights above. These doors are furnished only in swing types.

SINGLE SWING DOORS



DOUBLE SWING DOORS

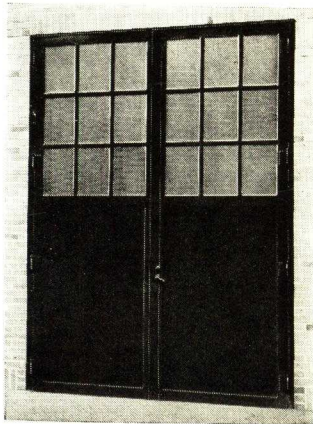
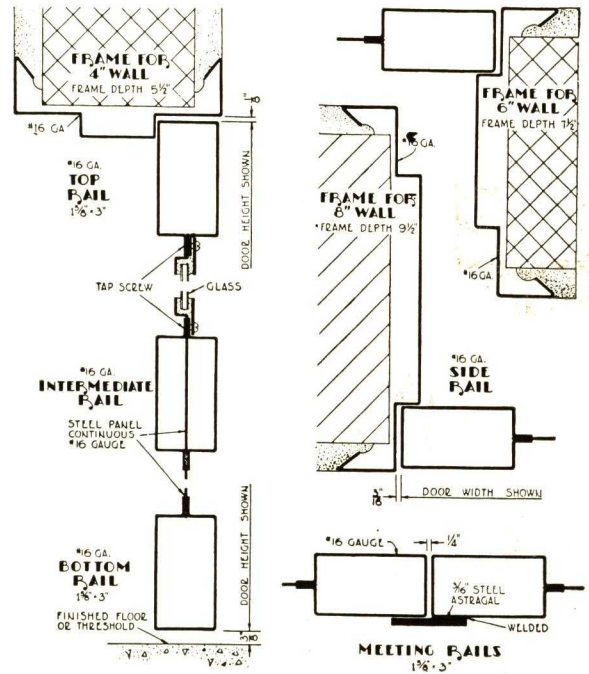


DIMENSIONS SHOWN ARE ACTUAL DIMENSIONS OF DOOR LEAVES. ● FOR MASONRY OPENING ADD $\frac{3}{4}$ " TO HEIGHT SHOWN FOR ALL DOORS—ADD $\frac{3}{4}$ " TO WIDTH OF SINGLE DOORS—ADD 1" TO WIDTH OF DOUBLE DOORS ●

DOOR SIZES GREATER THAN THOSE LISTED ARE IMPRACTICAL AND SHOULD NOT BE USED ●

FRAMES ARE SHIPPED ASSEMBLED WITH CHANNEL IRON BRACE TACK WELDED TO THE BOTTOM ENDS ●

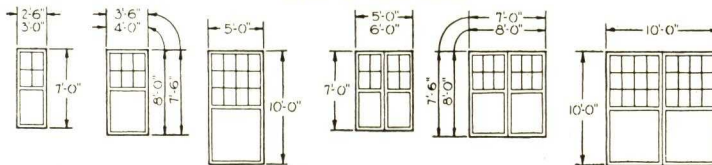
CONSTRUCTION DETAILS



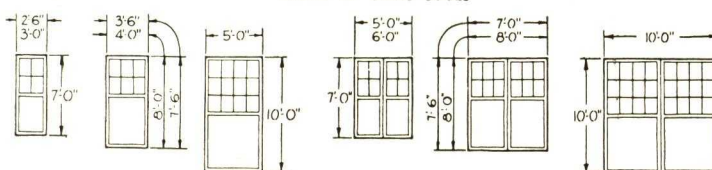
MESKER SERIES 14 DOORS

These doors are heavier than the Vulcan type, and should be used for the larger sizes and where heavy duty use is demanded. Stiles, rails, frames and panels are of 14 gauge steel. Either the pressed steel frame or the channel frame may be used. Standard design is with the glass lights above but all steel panels may be substituted instead. These doors are furnished in both swing and slide types.

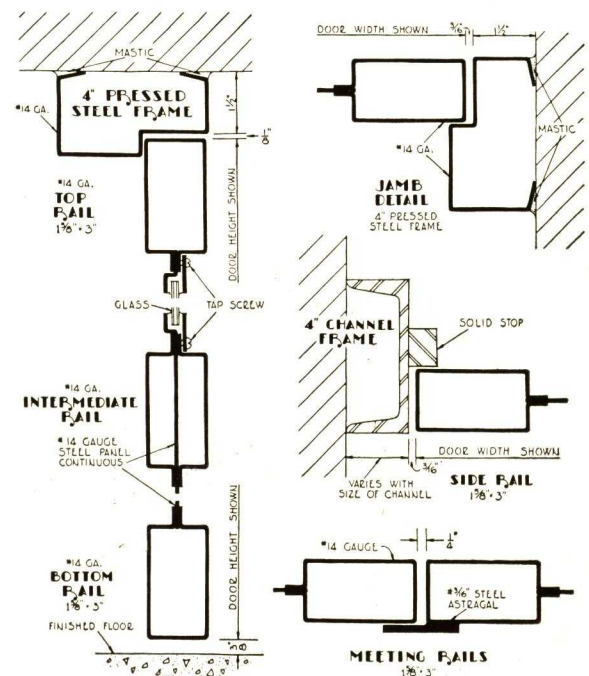
SERIES 14 SLIDE DOORS



SERIES 14 SWING DOORS



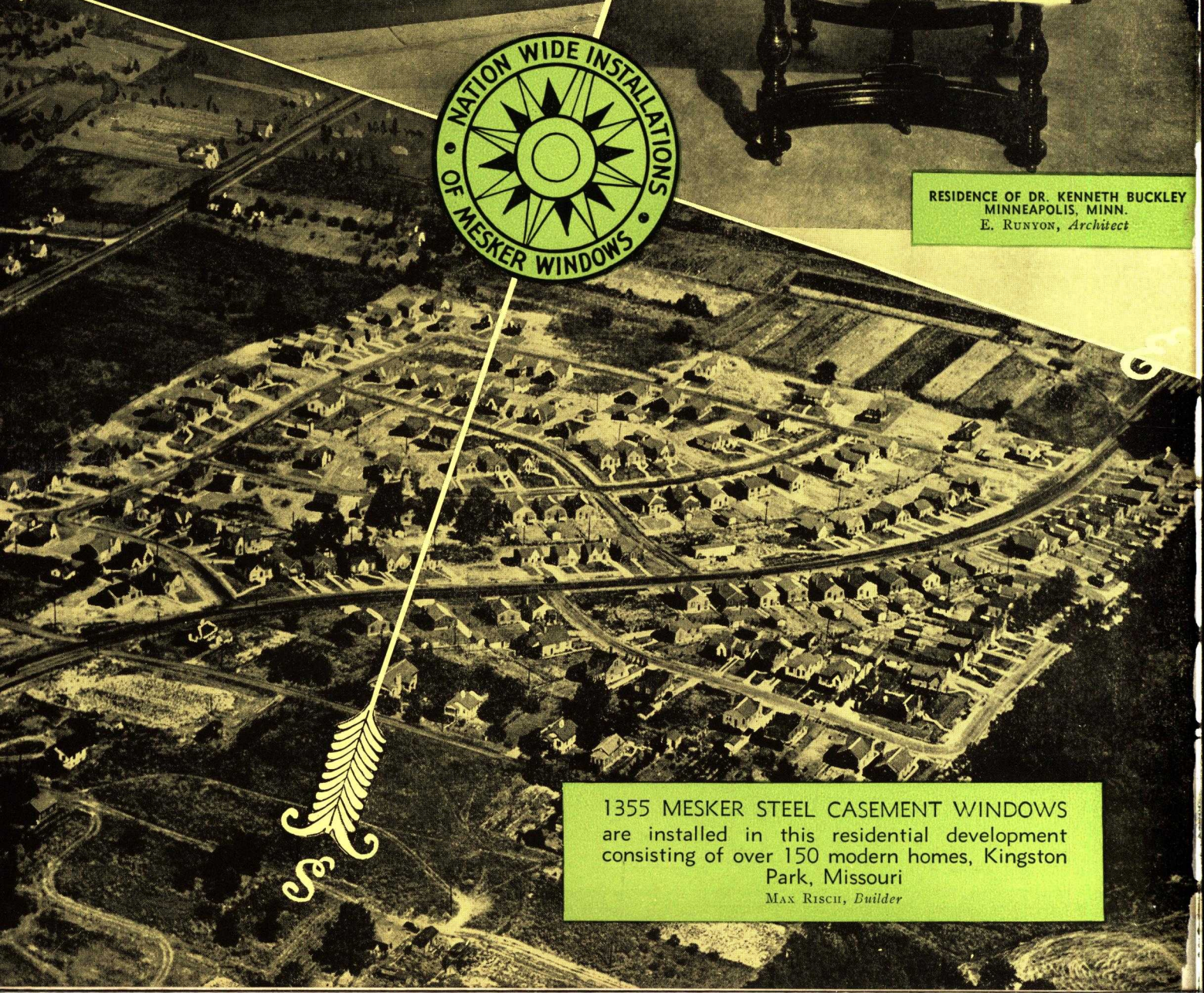
CONSTRUCTION DETAILS



MODERN RESIDENCE
MOLINE, ILLINOIS
R. C. SANDBERG, *Architect*



RESIDENCE OF DR. KENNETH BUCKLEY
MINNEAPOLIS, MINN.
E. RUNYON, *Architect*



1355 MESKER STEEL CASEMENT WINDOWS
are installed in this residential development
consisting of over 150 modern homes, Kingston
Park, Missouri

MAX RISCII, *Builder*



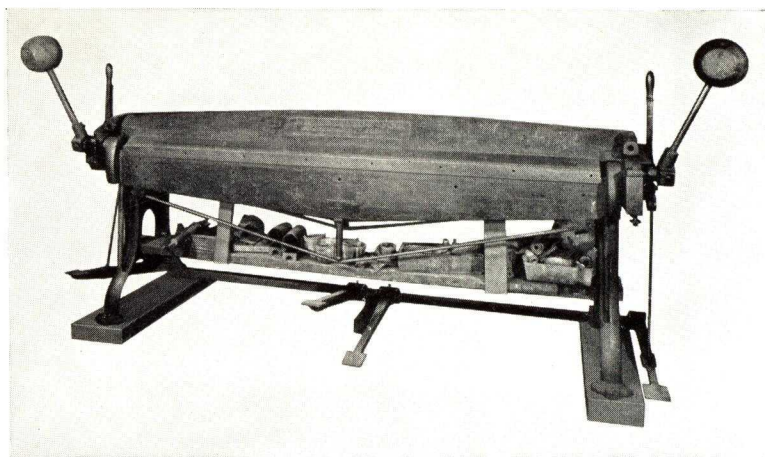
POMEROY

ARCHITECTS' HANDBOOK OF DOUBLE-HUNG METAL WINDOWS

S. H. POMEROY CO., INC., NEW YORK

Since 1897

... the days of manual hand brakes and foot presses, Pomeroy has pioneered and specialized in the manufacture of double hung metal windows . . . constantly developing and improving the essentials of good construction . . . and adopting, as rapidly as introduced, modern machines, equipment and processes.

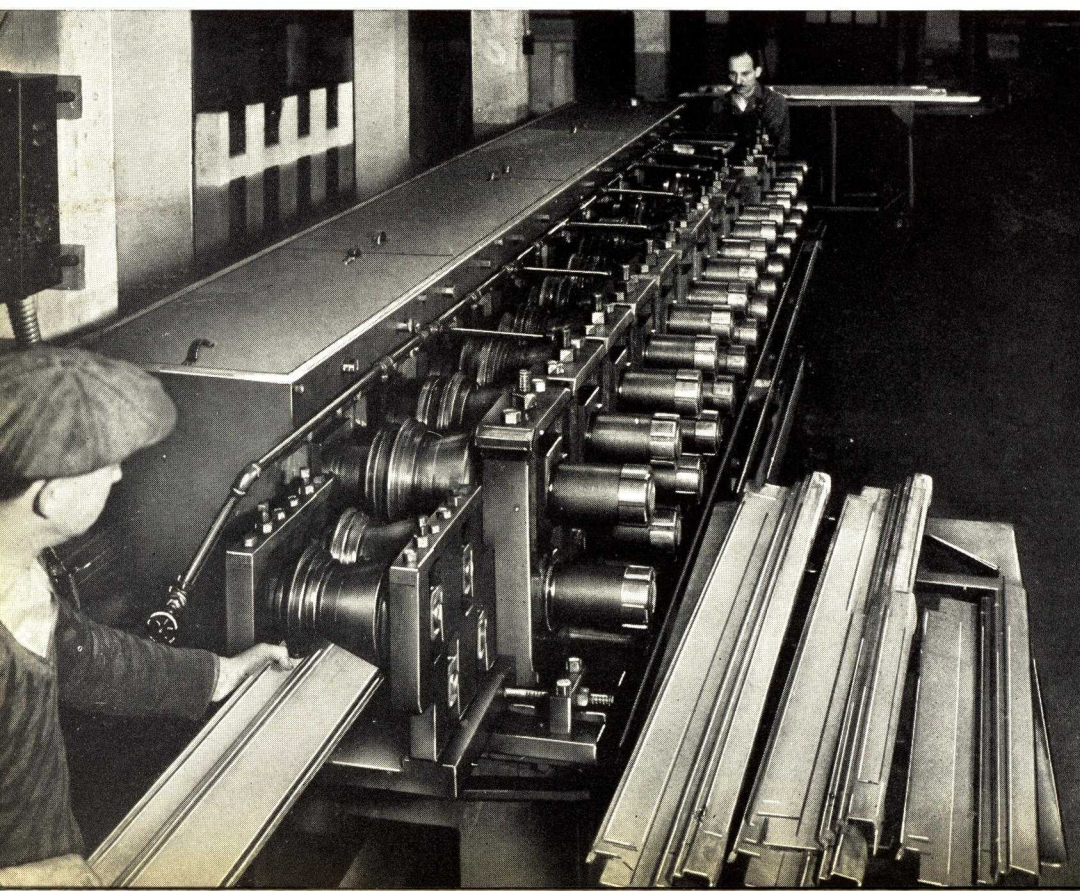


OLD FASHIONED HAND BRAKE

Today . . . in the midst of a machine era . . . Pomeroy has developed a matchless equipment of great rolling machines and automatic processes of every description . . . and now, with its forty-two years of experience, offers

PRECISION BUILT, HEAVY METAL WINDOWS

... embodying, as permanent integral parts, all essentials of good construction.



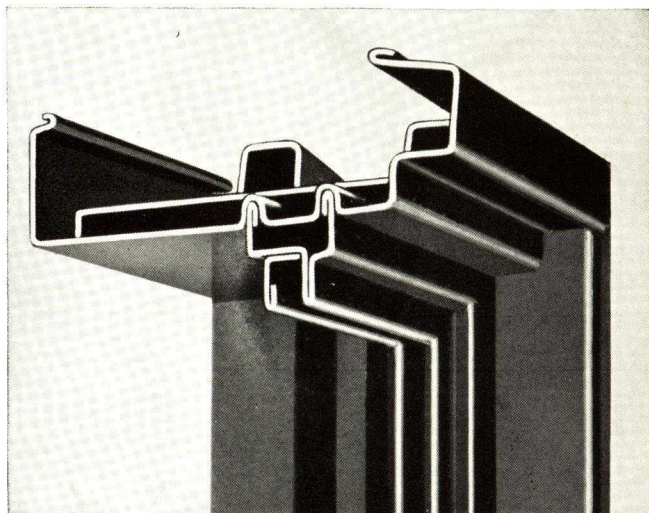
EACH CONTACT MEMBER
OF FRAME AND SASH IS
ROLLED INTO FORMATION
ON ITS OWN INDIVIDUAL
MACHINE . . . TO ASSURE
UNVARYING ACCURACY.



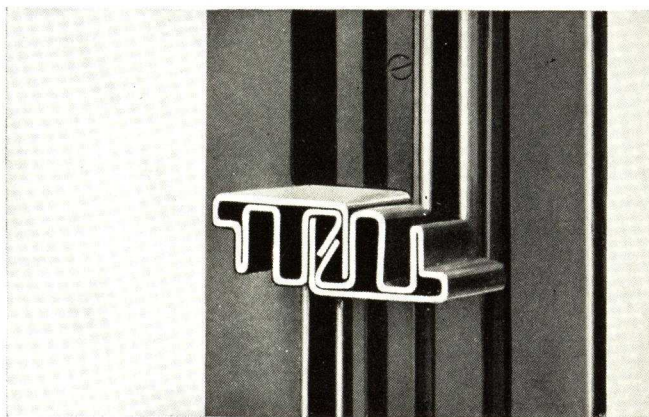
PICTURED HERE IS A ROLLING
MACHINE FOR FORMING 12-
GAUGE SILL.

IN *Pomerooy Windows* EVERY ESSENTIAL IS EMBODIED AS A PERMANENT INTEGRAL PART

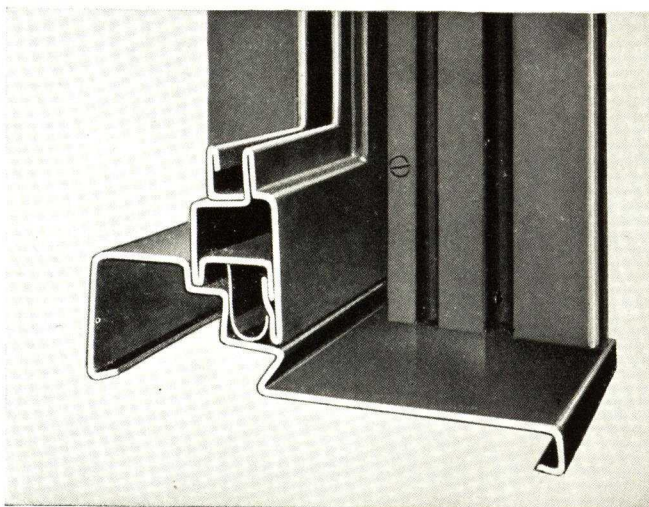
... Including EASE OF OPERATION • WEATHERTIGHTNESS • DESIGN REFINEMENT OF FINISH • DURABILITY



HEAD



MEETING RAILS



SILL

Outstanding Features

DOUBLE PERMANENT INTEGRAL WEATHERING

Test by Pittsburgh Testing Laboratory:

Less than one-half cubic foot of air infiltration per foot of sash perimeter when subjected to static air pressure equivalent to air pressure exerted by a wind twenty-five miles per hour.

PERMANENT EASE OF OPERATION

Precision of rolling machines assures true and straight contact lines of unchanging, smooth rounded travelling surfaces.

HEAVY TUBULAR SASH OF NARROW MOULDED LINES

The heavy metal tubular sections of sash—having slender lines and being flush welded at corners—present a slenderness and refinement of finish not hitherto obtainable.

HOT DIPPED GALVANIZED COPPER-BEARING STEEL

Through the years we have had developed for our use a copper-bearing steel sheet, annealed especially soft and coated in the hot dipped manner in which the zinc does not become simply an outside coating, but is forced into the heat-opened pores of the metal itself. This produces a finish susceptible both to forming without cracking and to the ready adhesion of paint.

Thorough research has convinced us that for window work these sheets provide far greater rust resistance than the usual spangled galvanized sheet, or uncoated sheets electro-galvanized after fabrication . . . and that they possess paint adhesion qualities superior to coated or uncoated steel with chemically treated surfaces.

As for copper-bearing steel, Committee A-5 of the American Society for Testing Materials states: "We have now reached a point where we may definitely conclude that copper-bearing metal shows marked superiority in rust-resisting properties as compared to non-copper-bearing metal of substantially the same general composition — under atmospheric conditions."

POMEROY "Superior Type" WINDOWS • Models "H", "I" and "L"

THE "Superior Type", designed by Pomeroy to meet recent architectural trends toward narrow lines, is the latest development in window construction and marks a tremendous advance in the double hung metal window industry. It is available in three models: "H", "I" and "L". All models are identical in design and construction, varying only in gauges of metal used. Gauges of members are shown in the chart.

ADAPTABILITY

The design is adaptable to all types of buildings. The frame imposes no limitation on the design or treatment of interiors. Interiors may be either plain or moulded as desired. Venetian blinds, shades, rolling screens, special types of hardware, fastenings, etc. may be readily installed. The exterior face of the frame provides convenient surfaces to which screens, awnings and safety bolts may be attached. Special moulded staff beads may be supplied if desired.

MULLIONS

Mullions are furnished in three widths, $7\frac{3}{4}$ " , 5" and $2\frac{1}{2}$ ". The exterior faces of the $7\frac{3}{4}$ " and 5" mullions are recessed, whereas the $2\frac{1}{2}$ " mullion is of flush design as are the interior faces of all three types. The $2\frac{1}{2}$ " mullion which is of weightless design is available only for twin openings. The other two may be furnished for multiple openings of two or more units.

MUNTINS

Sash may be single light or sub-divided by muntins. Arrangement of muntins may be as desired. Muntins for Underwriters labeled windows are $1\frac{3}{4}$ " in width; for non-labeled windows 1" in width. Both types are of moulded design.

GLAZING

Stiles and rails have inside glazing beads secured in place with concealed spring clips, eliminating the use of screws. Where muntins are used the interior muntin caps are removable—being held in place by oval head machine screws.

TRANSOMS

Transoms may be fixed, hinged either at top or bottom or projected either in or out. Transom sections are similar to the double hung sections, carrying out the same architectural appearance.

CURVED HEAD AND CIRCULAR WINDOWS

These architectural effects are obtainable in standard sections which blend with the design of the double hung window sections.

DOUBLE GLAZING

The "Superior Type" Window may be adapted for double glazing. For further information see pages 8 and 9.

SPRING BALANCED WINDOWS

The "Superior Type" is also available in our Models "U" and "B", the sash of which are operated with Unique Sash Balances. See pages 6 and 7 for further data.

Specifications

Double Hung Windows shall be Model "H" (or Model "I" or Model "L") as manufactured by S. H. Pomeroy Co., Inc.

The window manufacturer shall furnish and erect complete all double hung windows including the installation of hardware and weights and final adjustment of sash.

Windows to be constructed throughout of tight coat hot dipped galvanized copper-bearing steel with members of frame and sash formed of the following gauges: (see gauge chart below).

Frame members shall be accurately formed, firmly interlocked and then welded.

Sash members shall be tubular in shape, of moulded design, flush welded at corners and ground smooth. The sash stiles shall have double flanges entering into and operating in deep weathering grooves of pulley stiles with integral weathering feature incorporated.

Sash shall be designed for inside glazing with metal glazing angles and muntin caps removable for glazing.

Pulleys shall be solid machined steel with special groove to keep chain in true line of travel. Sash shall be hung on American No. 130 sherardized steel sash chain and counter-weighted with cast iron weights.

Finished hardware shall be of solid bronze and consist of two lifts, one pole socket, one sash lock and one outside pulldown. (Special finished hardware shall be furnished where indicated.)

All members of frame and sash shall receive one shop coat of approved metallic priming paint before delivery to site.

Underwriters labeled windows shall be furnished where specified.

Accessories, such as stools, window cleaner bolts, shade brackets, interior or exterior trim, etc. should be specifically mentioned if required to be furnished by window manufacturer.

GAUGES OF COMPONENT PARTS

Part	Heavy Steel Model "H"	Intermediate Steel Model "I"	Light Steel Model "L"
Head	16 gauge	16 gauge	18 gauge
Sill	12 gauge	14 gauge	14 gauge
Hanging Stile	12 gauge	12 gauge	18 gauge
Weight Box	16 gauge	20 gauge	18 gauge
Cross Rails	14 gauge	14 gauge	14 gauge
Sash Stiles	14 gauge	14 gauge	14 gauge

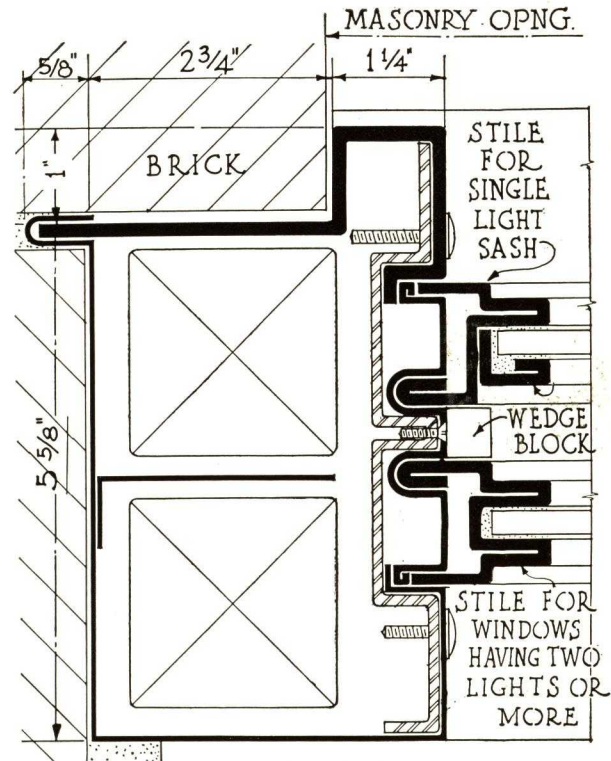
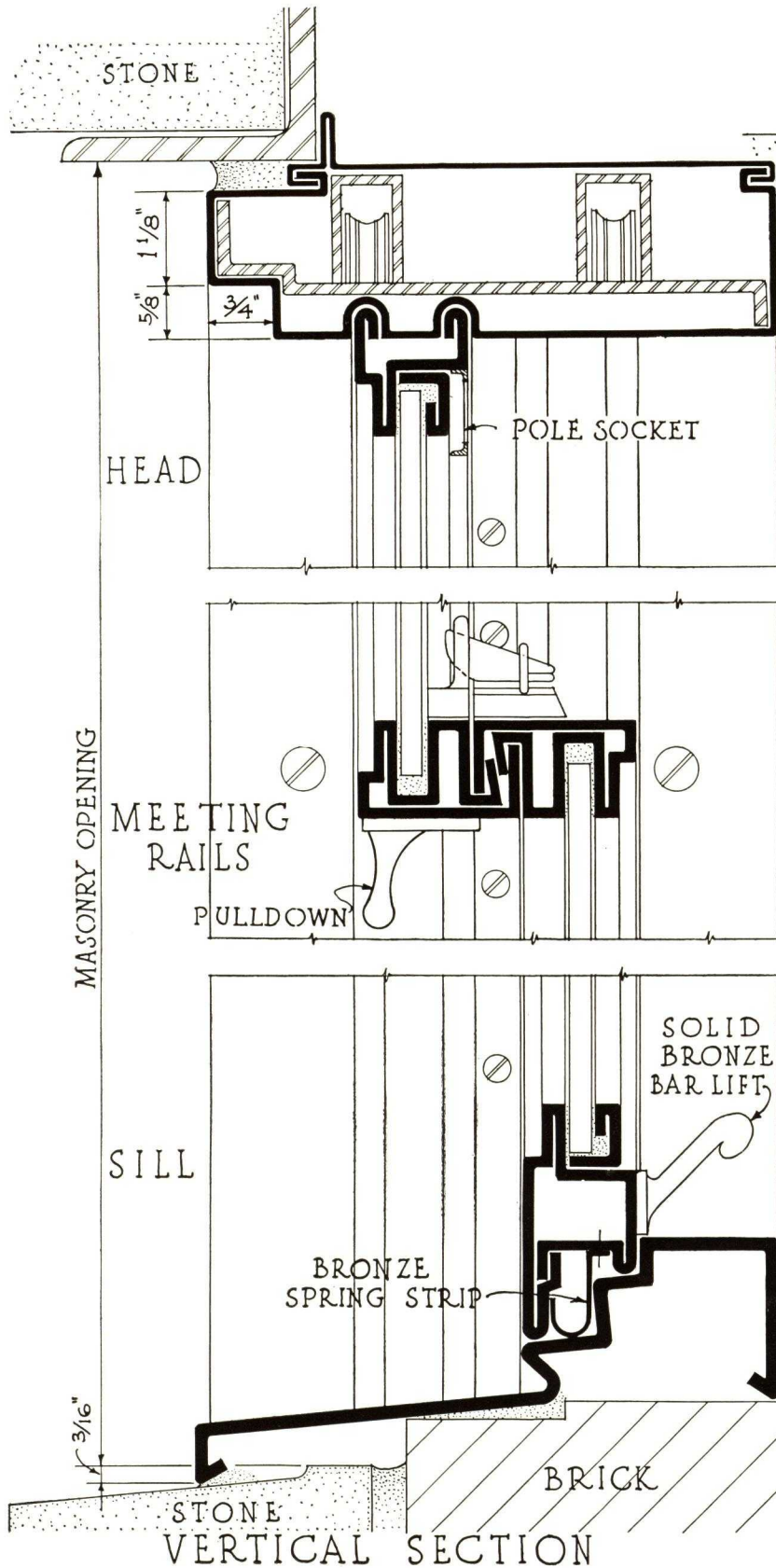
THESE MODELS MAY BE FURNISHED IN BRONZE, COPPER OR ALUMINUM • Specifications and information will be furnished upon request.



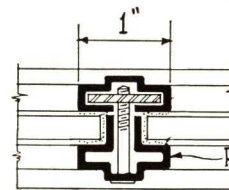
At right: UNITED STATES GOVERNMENT PRINTING OFFICE, Building Number 3, Washington, D. C.

DETAILS OF POMEROY "Superior Type" WINDOWS

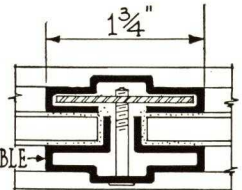
Models "H," "I" and "L" (For gauges, see chart on opposite page)



JAMB



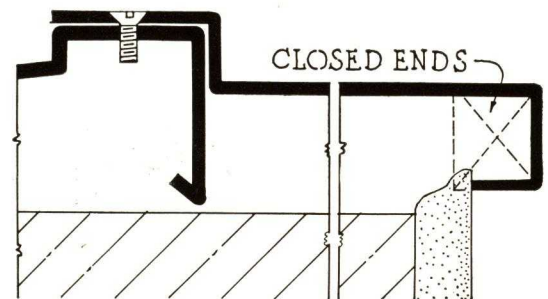
STANDARD



UNDERWRITERS

MUNTINS

HORIZONTAL SECTION



STOOL
TYPE B

DETAILS SHOWN AT ONE HALF FULL SIZE

POMEROY "Superior Type" WINDOWS • Models "U" and "B"

OPERATED BY UNIQUE SASH BALANCES

THE Models "U" and "B" are of the "Superior Type" constructed throughout of hot-dipped galvanized copper-bearing steel with sash designed for inside angle glazing and containing all other characteristics described on page 4.

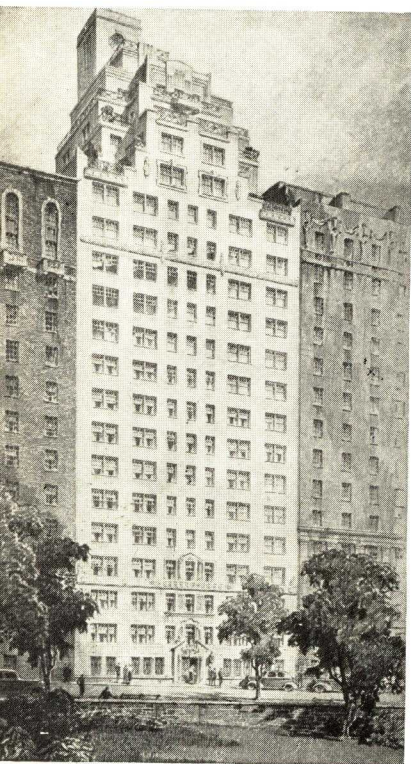
In these two models the sash are operated by Unique Sash Balances. The balances requiring less space than sash weights and pulleys permit reduction in the size of frame

sections and simplify the frame construction and assembly. **This reflects itself in a substantial saving in material and labor costs without sacrifice of quality.**

Narrow mullions are furnished at no additional cost. The mullion width is $2\frac{7}{8}$ " for multiple unit openings not exceeding 8'0" x 7'0" mason opening size and 4" for openings in excess of this size.

Both Models can readily be adapted for detention purposes with the standard requirements of the detention type of window. (Complete detailed data on this subject will be sent upon request.)

At left: APARTMENT, 965 Fifth Ave., New York City.
Associated Architects: Russell M. Book and Irving Margon
Builder: Kensington Estates, Inc.



Specifications

Double Hung windows shall be Model "U" (or Model "B") as manufactured by S. H. Pomeroy Co., Inc.

The window manufacturer shall furnish and erect complete all double hung windows, including the installation of hardware and final adjustment of sash balances and sash.

Windows to be constructed throughout of tight coat hot-dipped galvanized copper-bearing steel, with members of frame and sash formed of the following gauges: (see gauge chart below).

Frame members shall be accurately formed, firmly interlocked and bolted to their respective intersecting parts.

Sash members shall be tubular in shape, of moulded design, flush welded at corners and ground smooth. Sash stiles shall have double flanges entering into and operating in deep weathering grooves of pulley stiles, with integral weathering feature incorporated.

Sash shall be designed for inside glazing with metal glazing angles and muntin caps removable for glazing.

The sash shall be operated by Unique Sash Balances concealed within jamb boxes.

Finished hardware shall be of solid bronze and consist of two lifts, one sash lock, one pole socket and one outside pulldown. (Special finished hardware where indicated.)

All members of frame and sash shall receive one shop coat of approved metallic priming paint before delivery to site.

Accessories such as stools, window cleaner bolts, shade brackets, interior or exterior trim, etc. should be specifically mentioned if required to be furnished by window manufacturer.

GAUGES OF COMPONENT PARTS

Part	Model "B"	Model "U"
Head	16 gauge	18 gauge
Sill	12 gauge	14 gauge
Hanging Stile	12 gauge	18 gauge
Weight Box	18 gauge	18 gauge
Cross Rails	14 gauge	14 gauge
Sash Stiles	14 gauge	14 gauge
Muntins	18 gauge	18 gauge

THE UNIQUE SASH BALANCE functions as a perfect balancing device, complete within itself and maintains a true balance at any point in the run of the sash. It is not a holding or friction device. It utilizes a basic mechanical principle which assures the constant and everlasting flow of power back and forth between the balance and the sash just as surely as the ebb and flow of tide.

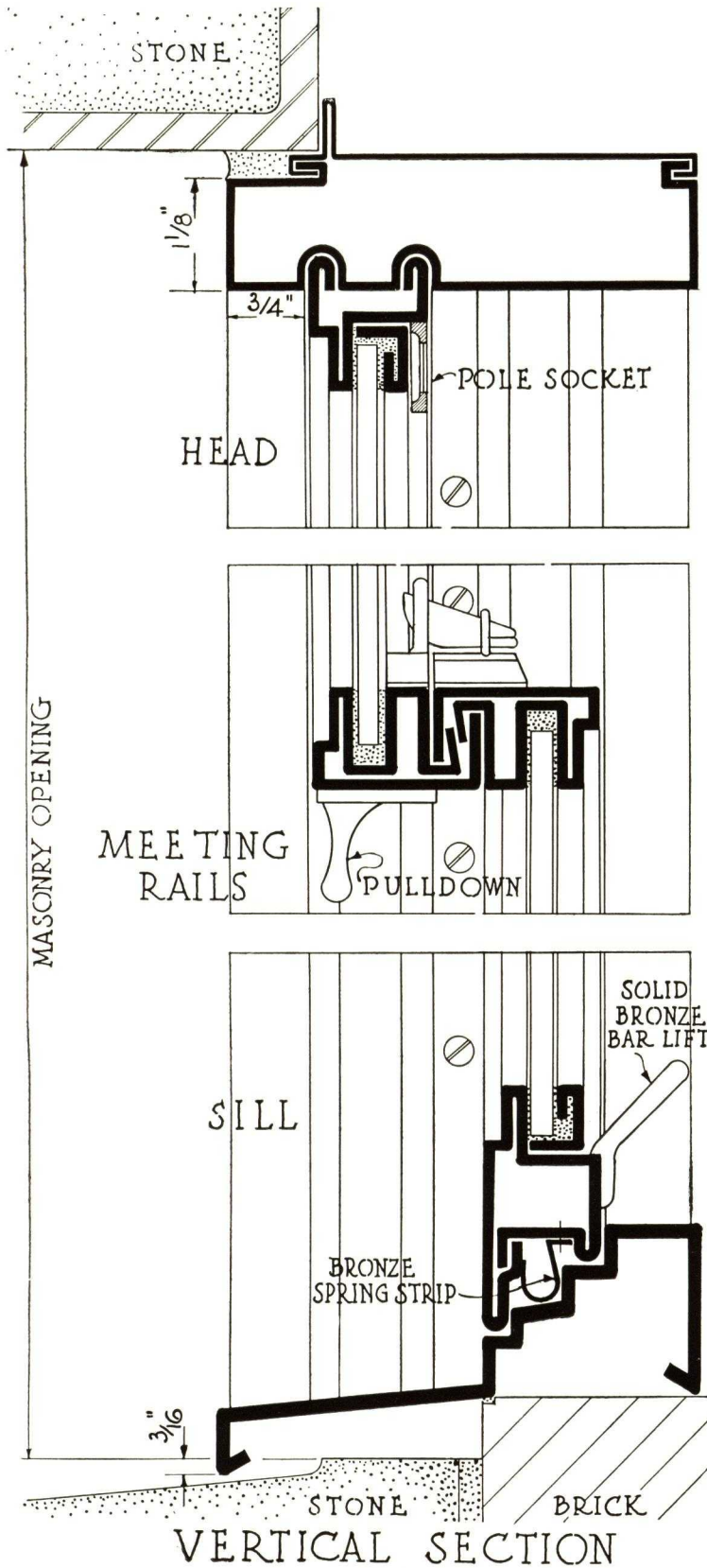
This basic principle is two-fold — CREATION AND CONTROL OF POWER. The power is created in the spring by the revolving of the bushing at its lower end around the spiral rod and the power thus created is controlled by the changing pitch of the turns of the spiral rod.

In other words, as additional lifting power is created in the spring by the revolving of the bushing, this additional lifting power is absorbed in the added work required of the spring to lift the sash up the steeper pitch of the rod. The power created in the spring is synchronized with the pitch of the twisted accelerated rod with the result that A PERFECT BALANCE of power is created between the two at any point. A glance at the photographs at the bottom of page will illustrate the principles involved and described above. **The tremendous lifting power of Heavy Duty Unique Sash Balances — equal to one hundred pounds each sash or two hundred pounds per window — makes the window size range practically unlimited.**

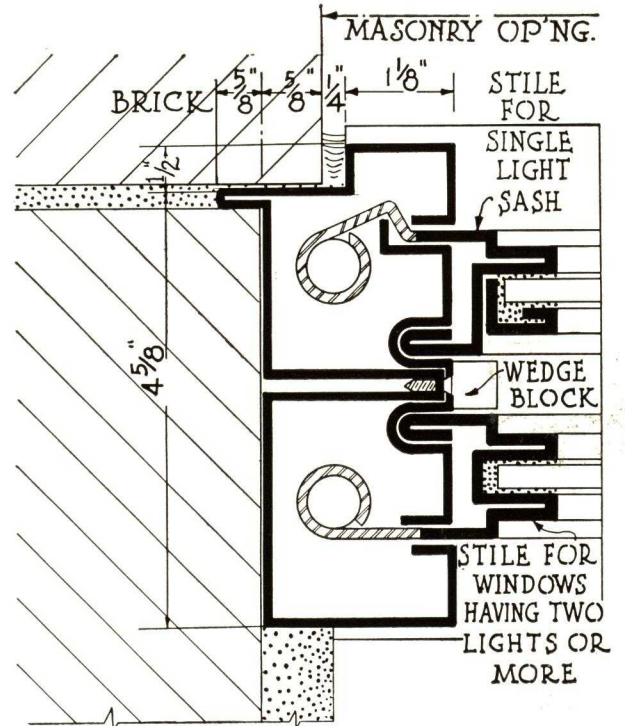


DETAILS OF POMEROY "Superior Type" WINDOWS

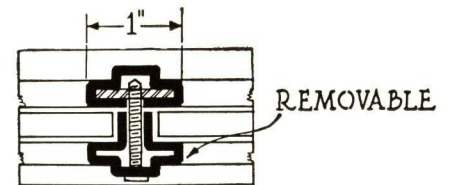
Models "U" and "B" (For gauges, see chart on opposite page)



DETAILS SHOWN AT ONE HALF FULL SIZE

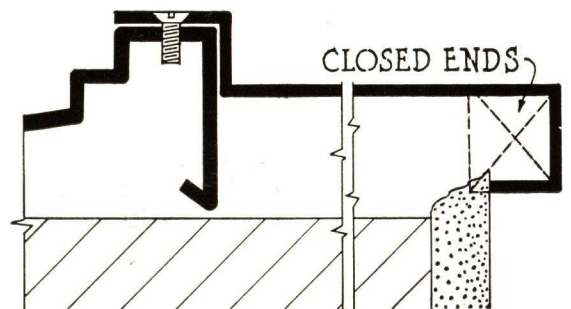


JAMB



MUNTIN

HORIZONTAL SECTION



TYPE B
STOOL

POMEROY "Superior Type" WINDOWS • Double Glazed

Models "H," "I" and "L"

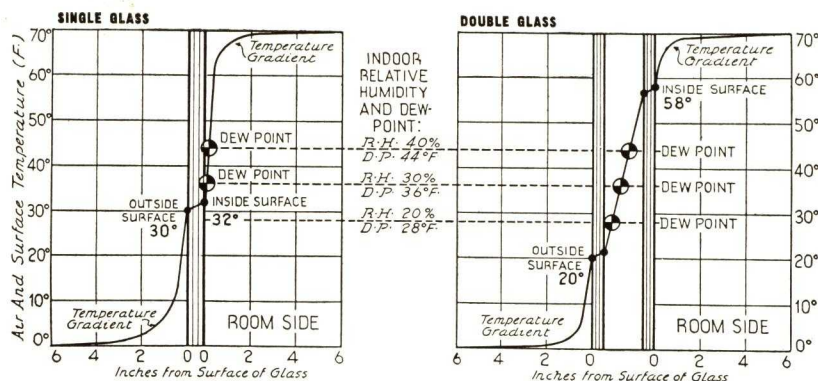
THE double glazing feature is available in Models "H," "I" and "L"—and, in adapting this feature to these models, we have maintained all of the characteristics described on page 4.

Tests have shown that at design temperatures (0° F. outside and 70° F. inside) the inside of a sheet of window glass has about the same effect on a heated room as would a piece of ice of the same area. As the outdoor temperature approaches zero, the inside surface of exposed glass goes down to freezing. With double glass separated by an air space, the temperature of the inner glass is raised to about 60° F.

The saving in fuel costs by double glazing is further enhanced by the saving in the initial cost of the heating plant which can be designed for the reduced load resulting from glass insulation.

AIR SPACE THICKNESS

Heat is transmitted through an air space by radiation, conduction and convection. The amount transmitted by radiation depends on the nature and temperatures of the bounding surfaces, is independent of the thickness of the space. With "dead" air, the amount transmitted by conduction goes down as the thickness of the space is increased. The amount of heat transmitted by convection, on the other hand, increases as the thickness of the space is increased—owing to the increased tendency of the air to circulate. As an air space is increased in thickness, the decrease in the amount of heat transmitted by conduction is greater than the increase in the amount transmitted by convection but in decreasing proportion—so that the insulating effect of a vertical air space increases sharply between 0 and .25 inches, gradually between .25 and .7 inches, and thereafter only very slightly.



The above graphs show temperature gradients for single and double glazing—based on tests by A.S.H.V.E. Research Laboratory. Curves show that double glass raises inside surface temperature to 58° F., well above room dewpoint, thus preventing condensation.

Glass insulation data by Courtesy of The Architectural Forum.

Specifications • DOUBLE GLAZED

Double hung windows shall be Model "H" (or "I" or "L") as manufactured by S. H. Pomeroy Co., Inc., with sash designed for double glazing.

The window manufacturer shall furnish and erect complete all double hung windows including the installation of hardware and weights and final adjustment of sash.

Windows to be constructed throughout of tight coat hot-dipped galvanized copper-bearing steel, with members of frame and sash formed of the following gauges:

Head	} See gauge chart on page 4.
Sill	
Hanging Stile	
Weight Boxes	
Cross Rails	
Sash Stiles	

Frame members shall be accurately formed, firmly interlocked and then welded.

Sash members shall be tubular in shape, of moulded design, flush welded at corners and ground smooth.

Sash stiles shall have double flanges entering into and operating in deep weathering grooves of pulley stiles, with integral weathering feature incorporated.

Each inside glass frame shall be made removable and shall ride on a formed section attached to the bottom rail of sash so that it may be tilted inward at the top to approximately 25° to give access for cleaning of glass. When closed the inside glass frame shall be sealed by a felt gasket for its entire perimeter and shall be held in place by two small key locks located at upper corners of sash stiles.

Pulleys shall be solid machined steel with special groove to keep chain in true line of travel. Sash shall be hung on American No. 130 sherardized steel sash chain and counterweighted with cast iron weights.

Finished hardware shall be of solid bronze and consist of two lifts and one sash lock. (Special finished hardware shall be furnished where indicated).

Muntins may be furnished for outer glass lights if desired.

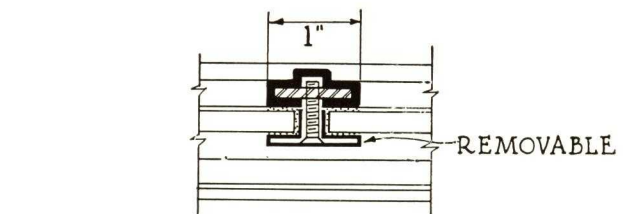
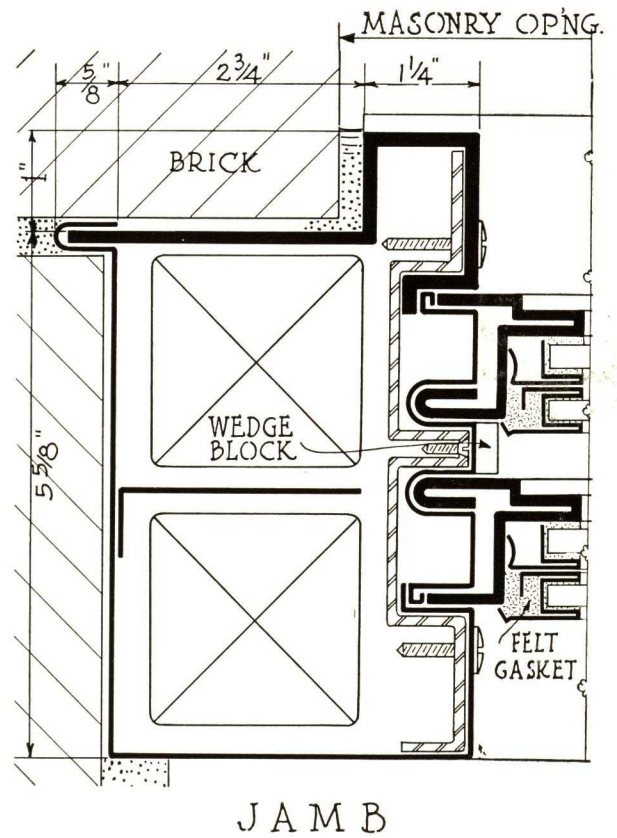
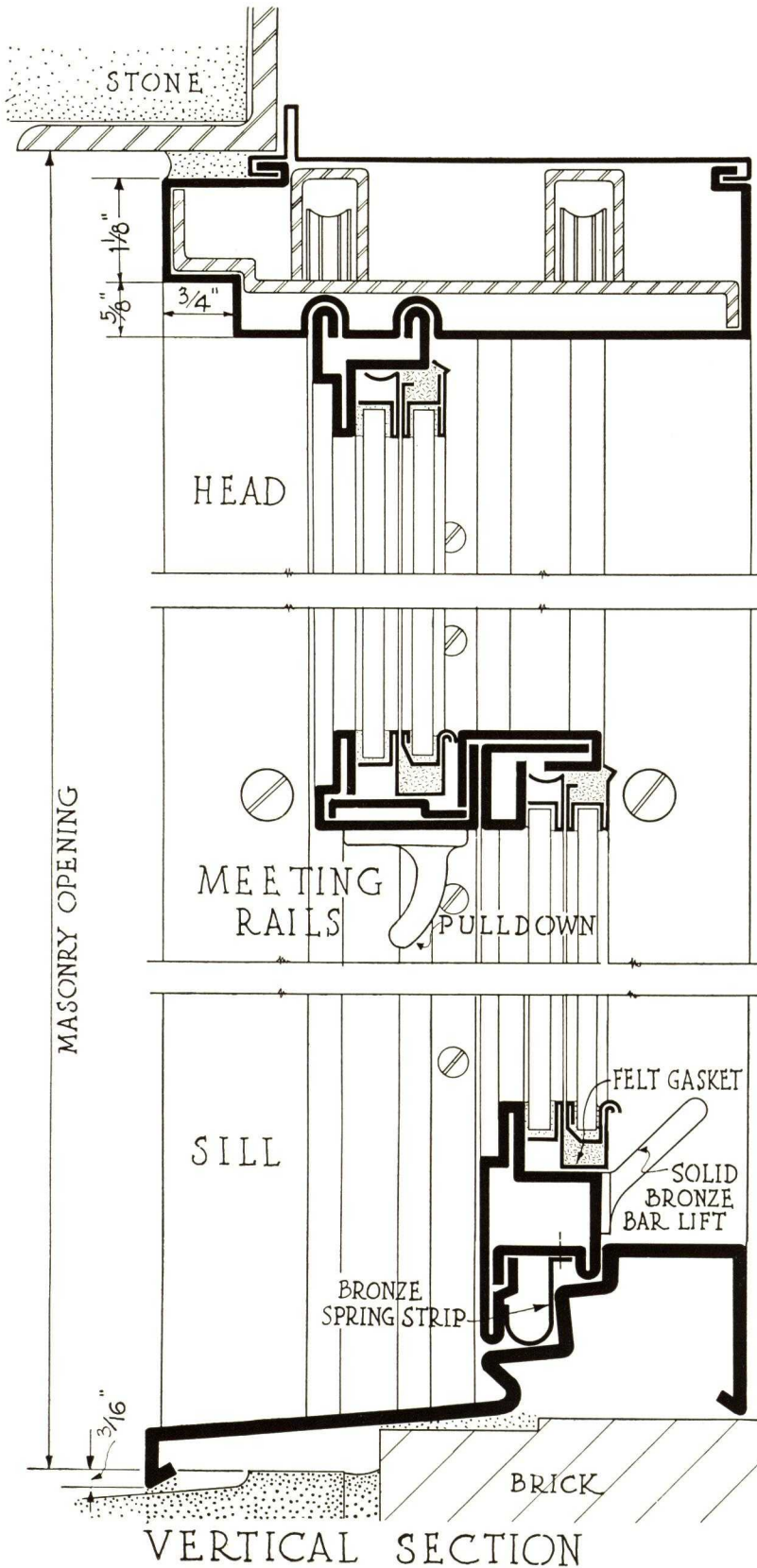
Accessories, such as stools, window cleaner bolts, shade brackets, interior or exterior trim, etc. should be specifically mentioned if required to be furnished by window manufacturer.

ADMINISTRATION BUILDING,
Quabbin Reservoir, Belchertown, Mass.

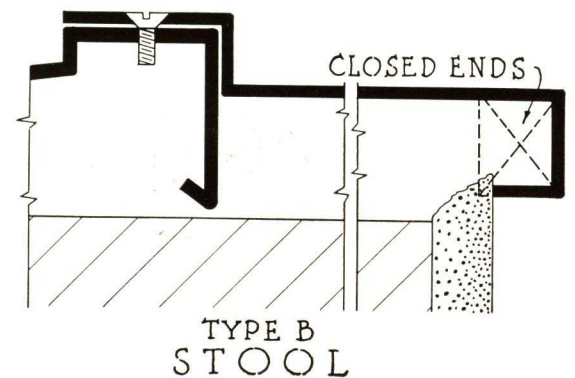


DETAILS OF POMEROY "Superior Type" WINDOWS • DOUBLE GLAZED

Models "H," "I" and "L" (For gauges, see chart on page 4)



MUNTIN HORIZONTAL SECTION



DETAILS SHOWN AT ONE HALF FULL SIZE

POMEROY "Standard Type" WINDOWS

THE "Standard Type" Window embodies those basic essentials of window construction distinctive of Pomeroy Windows and is designed to meet certain architectural requirements. The broad, deeply moulded members of sash closely resemble in appearance the lines of a moulded wood sash.

The rails and stiles of sash are constructed of one piece of metal, forming tubular moulded sections, which are rigidly assembled by a specially devised lapping and interlocking procedure, supplemented by a welding process.

The members of the frame, exclusive of parting and closure strips, likewise are formed of one piece of metal and assembled in the same manner as the sash members.

In designing the members of frame and sash and the method of assembling, careful thought was given to the Pomeroy features of Integral Weathering and ease of operation. It is interesting to note from the details on opposite page how effectively these two outstanding Pomeroy features have been built into this window construction.



Specifications

Double Hung windows shall be Model "M" as manufactured by S. H. Pomeroy Co., Inc.

The window manufacturer shall furnish and erect complete all double hung metal windows including the installation of hardware and weights and final adjustment of sash.

Windows shall be constructed throughout of tight-coat hot-dipped galvanized copper-bearing steel with members of frame and sash formed of the following gauges:

Head: 18 gauge
Sill: 14 gauge
Jamb: Box 20 gauge
Cross Rails: 20 gauge
Sash Stiles: 18 gauge

Frame members shall be accurately formed, firmly interlocked and then welded. Sash members shall be of moulded design, the sash stiles and rails constructed of one piece of metal neatly mitered, lapped and interlocked. Sash stiles shall have double flanges entering into and operating in deep weathering grooves of pulley stiles with integral weathering feature incorporated.

Sash shall be designed for inside glazing with metal glazing angles and muntin caps removable for glazing.

Pulleys shall be solid machined steel with special groove to keep chain in true line of travel. Sash shall be hung on American No. 130 sherardized steel sash chain and counterweighted with cast iron weights.

Finished hardware shall be of solid bronze and consist of two lifts, one pole socket, one sash lock and one outside pulldown. (Special finished hardware shall be furnished where indicated.)

All members of frame and sash shall receive one shop coat of approved metallic priming paint before delivery to site.

Underwriter's labeled windows shall be furnished where specified.

Accessories, such as stools, window cleaner bolts, shade brackets, interior or exterior trim, etc. should be specifically mentioned if required to be furnished by window manufacturer.

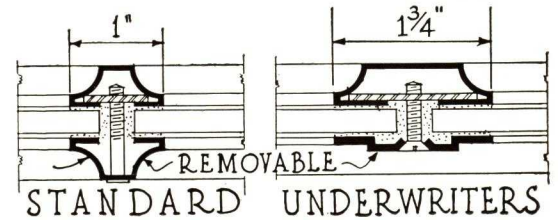
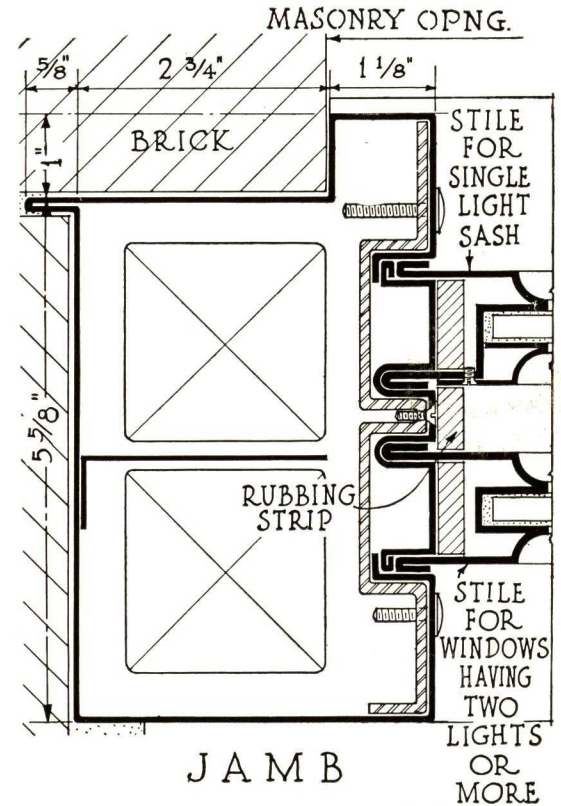
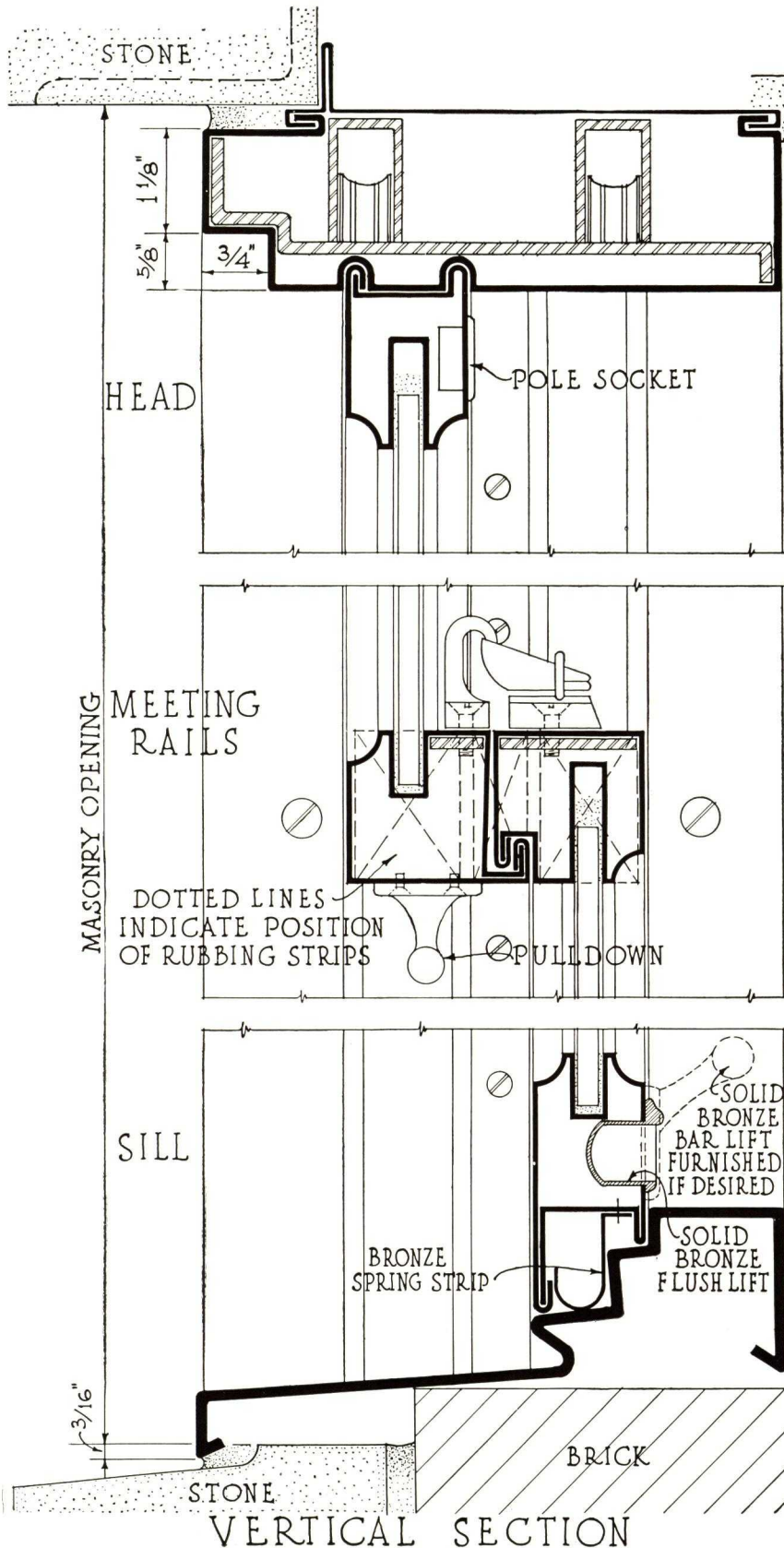


At left:

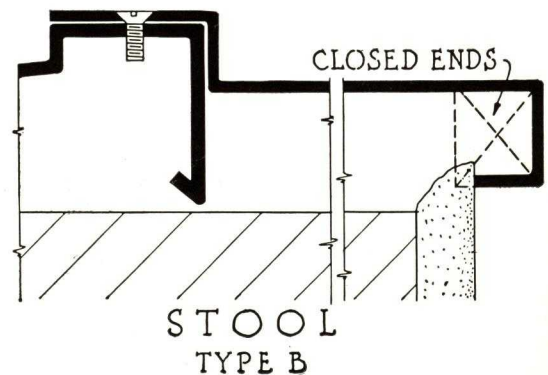
RIVER HOUSE, 52nd Street and East River, New York City
Bottomley, Wagner & White, Architects
James Stewart & Co., Inc., Builders

DETAILS OF POMEROY "Standard Type" WINDOWS

(For gauges, see opposite page)



MUNTINS HORIZONTAL SECTION



DETAILS SHOWN AT ONE HALF FULL SIZE.

POMEROY *Representatives*

ALABAMA

BIRMINGHAM, Builders Supply Co., 3025 6th Ave., So.

ARKANSAS

LITTLE ROCK, Wherry & Co., 711 Rector St.

CALIFORNIA

LOS ANGELES, Felix Krueper & Co., 535 S. Clarence St.
SAN FRANCISCO, Forderer Cornice Works, 269 Potrero St.

COLORADO

DENVER, E. E. Sarchet, 2025 York St.

CONNECTICUT

NEW HAVEN, E. M. Stephens, 40 Wall St.

DELAWARE

WILMINGTON, Savery & Cooke, Inc., 410 N. DuPont St.

DISTRICT OF COLUMBIA

WASHINGTON, William S. Graham, 1612 K St., N. W.

FLORIDA

JACKSONVILLE, Builders Products Co., 204 E. 8th St.
MIAMI, Paul E. Shipe, 1750 N. Miami Ave.
SARASOTA, W. L. Van Dame.
TAMPA, Builders Service Co., 420 Stovall Professional Bldg.
WEST PALM BEACH, Southern Metal Products, Inc.,
Roseland Drive and Henry Ave.

GEORGIA

ATLANTA, L. E. Murray, 161 Spring St., N. W.

ILLINOIS

CHICAGO, W. L. Van Dame Co., 820 N. Michigan Ave.

INDIANA

INDIANAPOLIS, Hugh J. Baker, 602 W. McCarty St.

IOWA

DES MOINES, Perkins Supply Co., 10th and Vine Sts.
WATERLOO, C. M. Berkley Co., 302 W. 4th St.

KENTUCKY

LEXINGTON, Milton Young, P. O. Box 932
LOUISVILLE, Clarence H. Stinson, 318 Tyler Bldg.

LOUISIANA

NEW ORLEANS, J. T. Mann & Co., 937 Gravier St.

MASSACHUSETTS

BOSTON, Skillman & Sunderland Co., 1042 Little Bldg.

MICHIGAN

DETROIT, Robbie Robinson Co., 226 Murphy Bldg.

MINNESOTA

MINNEAPOLIS, Hauenstein & Burmeister, Inc., 614 Third Ave.
ST. PAUL, Hauenstein & Burmeister, Inc., 707 Minnesota Mutual Bldg.
DULUTH, Duluth Builders Supply Co., 304 Builders Exchange Bldg.

MISSOURI

KANSAS CITY, S. W. B. Howard, 5012 Grand Ave.
ST. LOUIS, W. E. Way, 825 Chemical Bldg.

NEW JERSEY

ATLANTIC CITY, Desney & Co., 3540 Atlantic Ave.
TRENTON, R. W. Davis, 21 Muirhead Ave.

NEW YORK

ALBANY, Harding Building Specialties Co., 271 Washington Ave.
ROCHESTER, S. A. Spencer, 135 Spring St.
SYRACUSE, B. R. Johnson, 145 Harding Place
UTICA, American Hard Wall Plaster Co.

NORTH CAROLINA

CHARLOTTE, W. Fred Casey & Co., 510 W. 4th St.

OHIO

CANTON, O. J. Weigand, 611 Ingram Ave., S. W.
CINCINNATI, Al Levinson Co., 802 Times Star Tower Bldg.
DAYTON, G. H. Condit, 712 Gas & Electric Bldg.

OKLAHOMA

OKLAHOMA CITY, Town-Sco Equip. Co., 211 W. 10th St.
TULSA, Murray R. Womble Co., 316 Atco Bldg.

OREGON

PORTLAND, McCracken-Ripley Co., 2221 N. Albina Ave.

PENNSYLVANIA

ALLENTOWN, Morris Black, 3rd and Union Sts.
BETHLEHEM, Morris Black, 215 Vineyard St.
ERIE, George H. Kraft & Son, 602 Shenley Drive
HARRISBURG, R. S. Baumgardner, 201 N. 30th St.
PHILADELPHIA, Eberle & White, Inc., 1108 Franklin Trust Bldg.
PITTSBURGH, Scott & Haigh, Grant Bldg.
READING, J. H. Cooper, P. O. Box 415
SCRANTON, Harvey R. Allen, 711 Linden St.
WILKES-BARRE, William H. Pierce, 402 Bennett Bldg.

RHODE ISLAND

PROVIDENCE, Stel-Wod Engineering Co., 66 Orange St.

SOUTH CAROLINA

GREENVILLE, J. Mac Rabb, P. O. Box 144

TENNESSEE

NASHVILLE, John Williams Co., 1207 Warner Bldg.

TEXAS

AMARILLO, Forrest R. Barnes, P. O. Box 1704
DALLAS, Carter Harrison, 2200 Cedar Spring Ave.
HOUSTON, Buie-Lunsford Co., 704 M & M Bldg.
SAN ANTONIO, John A. Williamson, 804 Avenue A
WICHITA FALLS, West Texas Eng. & Supply Co.

UTAH

SALT LAKE CITY, Associated Specialties Co.,
204 Interurban Depot Bldg.

VIRGINIA

NORFOLK, Hall Hodges Co., 813 Citizens Bank Bldg.
RICHMOND, Virginia Equip. & Supply Co., 210 E. Franklin St.
ROANOKE, G. Eric Sachers, P. O. Box 1885

WASHINGTON

SEATTLE, Teurtellotte-Bradley Co., White Bldg.

WEST VIRGINIA

CHARLESTON, Fireproof Products Co., Professional Bldg.

WISCONSIN

MILWAUKEE, C. C. Banholzer, 728 N. Jefferson St.

PHILIPPINE ISLANDS

MANILA, Norton & Harrison Co., P. O. Box 782

S. H. POMEROY CO., INC.

FACTORY AND MAIN OFFICE

280-94 East 134th Street, NEW YORK

Cresswell-Pomeroy, Ltd., 604 Decourcelles Street, Montreal, Quebec

THE F. C. RUSSELL INSULATION COMPANY

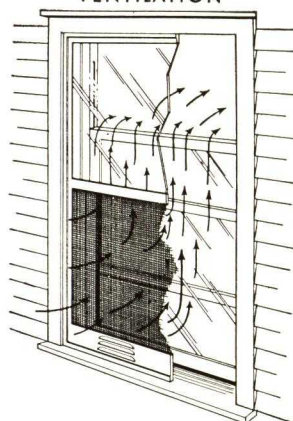
Manufacturers of the Phoenix Combination Screen and Storm Window

(Patented)

235 East 131st Street, CLEVELAND, OHIO

BRANCH OFFICE: 3925 So. Hanover Street, BALTIMORE, MD.

SUMMER VENTILATION



With Screen in lower sash of Phoenix frame perfect ventilation without damage from rain is provided.

ECONOMY — COMFORT — CONVENIENCE THE YEAR AROUND

The Phoenix Window is an indestructible, rust-resisting metal frame, permanently affixed to window frame, into which are locked sturdy, metal-bound panels of glass or screen, so quickly interchangeable that it takes less than one minute to convert each window from one that is "insect-proof" to one that is "winter-proof." It is a *Screen*—it is a *Storm Window*—it is *Weatherstripping*—permanent in each function.

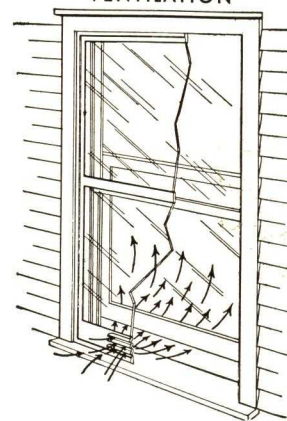
Phoenix Windows are custom made to fit any size window, standard or otherwise.

Comfort—Phoenix Windows insulate and weatherstrip the entire window area—the source of greatest heat loss. By reducing conduction and infiltration of cold air, temperatures are kept more uniform—hard-to-heat rooms become comfortable.

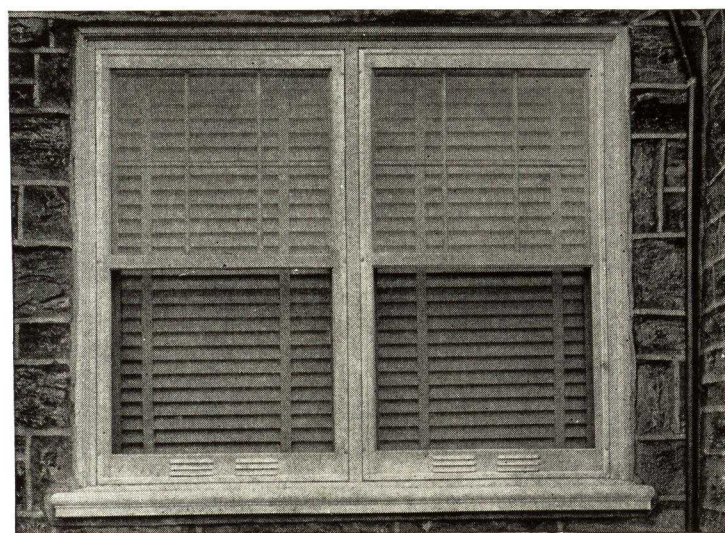
Convenience—Each unit includes a metal-bound screen that is interchangeable with lower window in less than one minute. Just lift out the glass and slip in the screen.

Economy—Phoenix Windows save up to 30% of annual fuel bills. Less radiation is needed, allowing installation of smaller heating plant, smaller radiators. Add to these savings the money saved by elimination of weatherstripping and screens and Phoenix Windows become a profitable investment not an expense.

WINTER VENTILATION



Draft-free ventilation is possible through ventilators on lower panel of Phoenix frame.



PHOENIX WINDOWS MATERIALLY AID WINTER AIR CONDITIONING

The installation of Phoenix Windows throughout any building, provide approximately the same insulating value as the insulation of all walls and ceiling areas. The data below will enable architects and engineers to check on the heat loss through conduction and infiltration through the usual type of windows as contrasted with the loss through the use of Phoenix Windows

Loss of Heat—Double Hung Windows

Conduction	{ Without Phoenix Windows	1.13 BTU/sq. ft./hr./Deg.T.D.
	{ With Phoenix Windows...	.45 BTU/sq. ft./hr./Deg.T.D.
Saving—60%		
Infiltration	{ Without Phoenix Windows....	50 to 200 CFH/lin. ft. crack
	{ With Phoenix Windows.....	25 to 100 CFH/lin. ft. crack
(Wind 20 m.p.h.) (1/32" to 1/8" crack) Saving—50%		

PHOENIX WINDOWS ACTUALLY BEAUTIFY THE HOME

The illustration at the left shows an installation of Phoenix Windows with screens in lower sash. The completed job is attractive in appearance and eliminates repairing of storm sash, painting of sash, changing storm sash, storing, painting and repairing of screens, all of which are expensive and bothersome. In the long run, Phoenix Windows will pay dividends on their cost—they are permanent.

ADVANTAGES

- (1) Phoenix Windows' patented construction allows ventilation the year 'round without danger of rain or snow entering and damaging hangings, furniture, etc.
- (2) Beautify the home.
- (3) Keep insects out.
- (4) Solve screen and storm window storage problems.
- (5) Made to fit any size window for new or old homes.



Each unit includes two metal bound glass inserts and one metal bound bronze screen insert. Metal frame is of bonderized Armco ingot iron. Libby-Owens-Ford glass. Cleaning and changing is done from the inside.

RICHEY, BROWNE & DONALD, INC.

Manufacturers of Steel, Bronze and Aluminum Windows
52-15 Flushing Avenue, MASPETH, CITY OF NEW YORK

REPRESENTATIVES IN PRINCIPAL CITIES

Browne Folding Type Windows are custom built of steel, bronze, or aluminum to fit masonry openings. They are made in various models and sizes for office buildings, hospitals, schools and universities, public buildings, department stores, industrial buildings, hotels, apartments, homes, etc. They may be in groups of one or more units, or in combination with transoms and side panels.

Browne Folding Type Fire Windows bear the label of Underwriters' Laboratories, Inc.

Browne Psychiatric Safety Windows are built with tee-bar muntins and stops which eliminate need of restraint bars or detention guards.

Browne Prowler-Proof are safety windows for the home or apartment.

Browne Folding Type Heavy Weight Windows for Large Vent Units

Metal Glazed—Models Nos. 6 and 61 of steel for general use; No. 6U Underwriters' Window of Steel; No. 6A of extruded aluminum; No. 6B of extruded bronze.

Putty Glazed—Models Nos. 7 and 71 of steel for general use; No. 7A of extruded aluminum; No. 7B of extruded bronze; No. 7P Psychiatric and Prowler-Proof Type of steel.

Description and Advantages of Browne Folding Type Windows

Operation—Sashes are firmly hinged together to open (outwardly) and close under symmetrical control of hinged arms attached to stationary vertical bar. These arms afford absolutely rigid support. A simple catch fastens sash when window is closed. Mechanical operators may be furnished when desired.

Weatherstripping—Heavy resilient felt weatherstripping is an integral part of the construction.

Weather Protection—The airtight and dustproof qualities have been established in laboratory tests.

Noiseproof—The felt weather cushions practically shut out street noises when windows are closed.

Ventilation—Ideal changing of air without drafts. A pleasant quality of ventilation is obtained by bowing sashes open to a maximum of 7 or 8 in. giving fresh air intake at bottom, exhaust at top, and no opening at sides. Vertical flanges at sill and head act as draft deflectors and obviate need of hopper vents.

Safety—All exterior surfaces of sashes and frame are accessible from the inside. The expense and danger of outside window cleaning and painting are eliminated.

Contact—No metal to metal weathering contact. The contact in all cases is metal to felt.

Service—Continuous and lasting, with no danger of sagging, warping, racking, or wearing off paint.

Hardware—All necessary hardware furnished by us.

Glass—Should be furnished and set by glazing contractor.

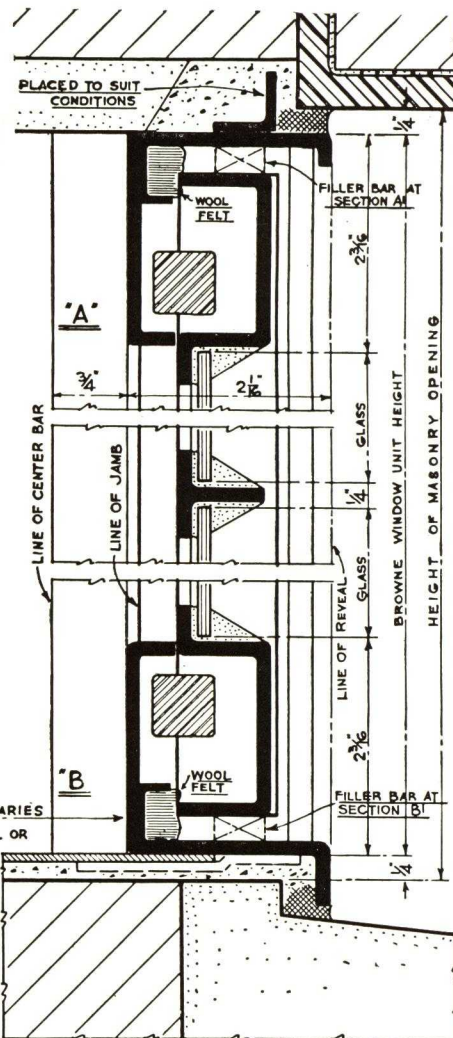
Painting—All steel parts receive one shop coat of paint before shipment and all finishing coats should be applied by the painting contractor.

Browne Folding Type Medium Weight Windows for Smaller Vent Units

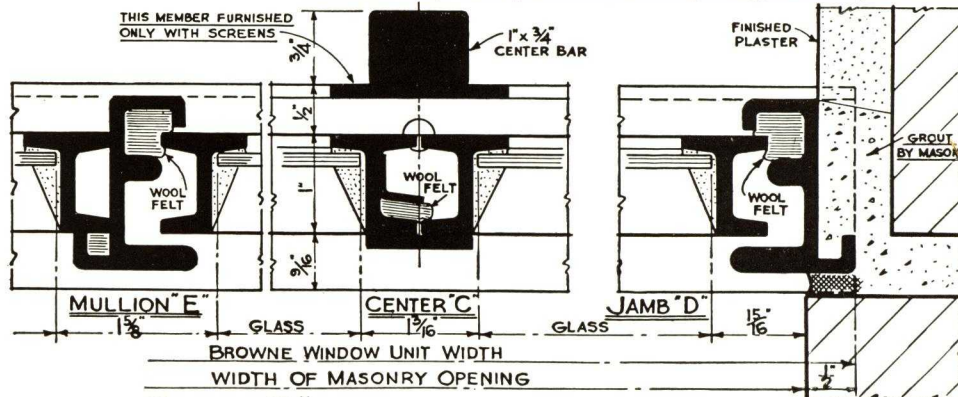
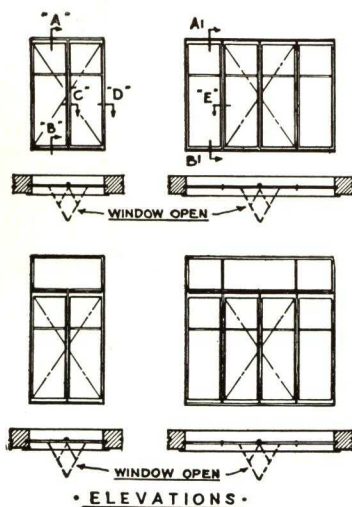
Putty Glazed—Model No. 8 of steel for general use; No. 8A of extruded aluminum; No. 8B of extruded bronze; No. 8P Psychiatric and Prowler-Proof Type of steel.

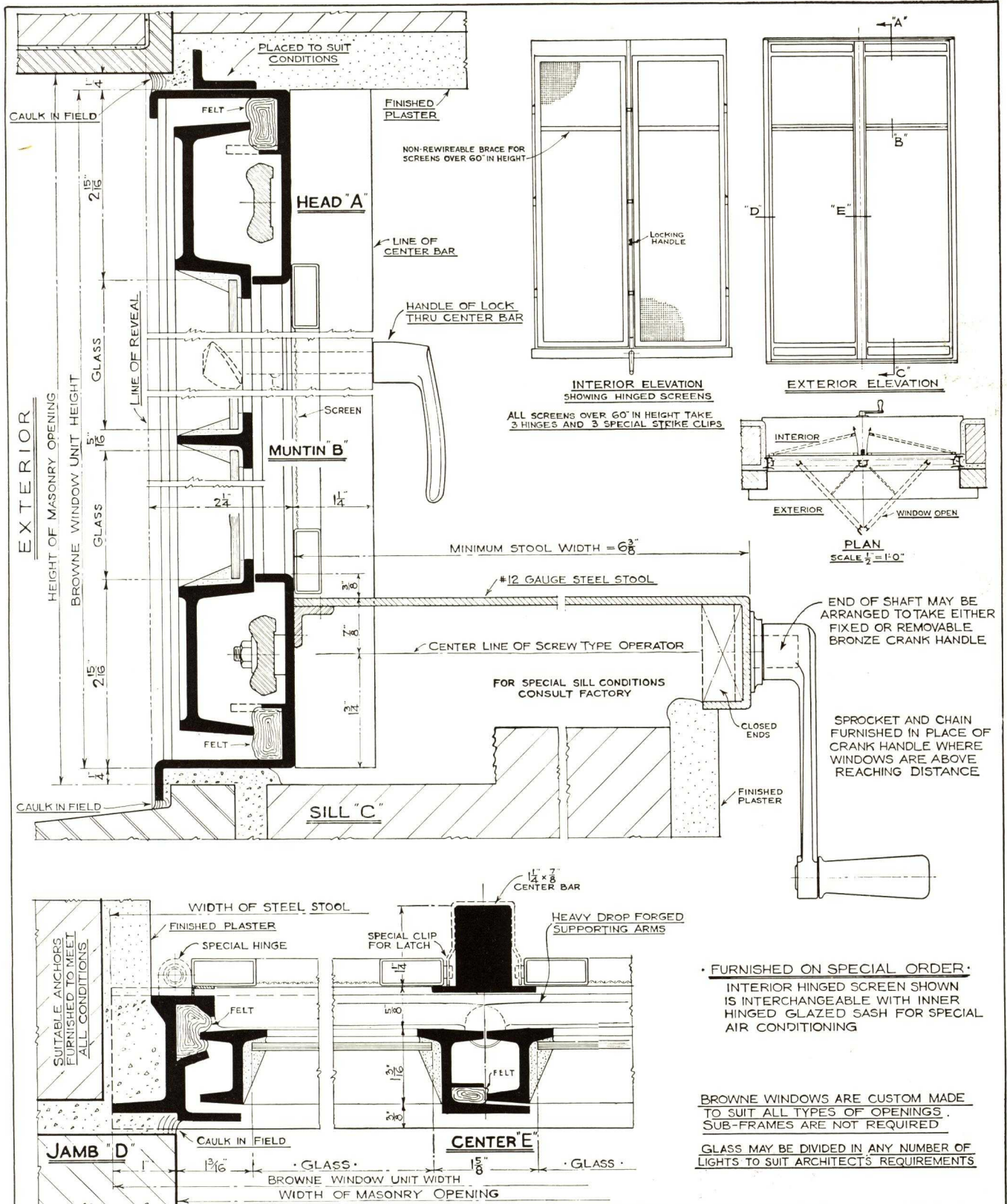
Metal Glazed—Model No. 9 of steel for general use; No. 9A of extruded aluminum; No. 9B of extruded bronze.

Note: Typical details of Model No. 8 are shown on this page and of No. 71 on next page. Hardware similar to that shown on No. 71 is applicable to all models; other types of hardware can be supplied to meet any requirements. Interior screens interchangeable with inner-glazed sash will be furnished on special order. Plates showing details and specifications of any Browne Window models will be furnished on request.



DETAILS SHOWN
ARE FOR
BROWNE WINDOW MODEL NO. 8





DRAWING No. 5978

DATE: SEPTEMBER 2, 1936
Revised Dec. 24, 1936

THIS OPERATOR MAY BE USED
ON ANY TYPE OF BROWNE WINDOW

RICHEY, BROWNE & DONALD, INC.

Manufacturers of the Browne Window
52-15 Flushing Avenue
MASPETH, CITY OF NEW YORK

• BROWNE WINDOW •
MODEL No. 71 • PUTTY GLAZED •

ARRANGED WITH
UNDERSCREEN TYPE OPERATOR

SECURITY PRODUCTS COMPANY

MAIN OFFICE AND FACTORY
2225 De Kalb St., ST. LOUIS, MISSOURI

VENTROLITE

The modern window, especially adapted for Hospitals, Auditoriums, Office Buildings, Hotels and all types of public, residential and institutional buildings.

The "Ventrolite" window provides such features as:

Ventilation—Approximately 100% of glass area with no direct drafts.

Safety—Window accidents and hazards of cleaning eliminated.

Protection—Danger of intrusion reduced to minimum with sash in either opened or closed position.

Weatherproof—All vertical and horizontal edges weather-stripped.

Screens—Quickly and easily installed, having no connection with operating mechanism.



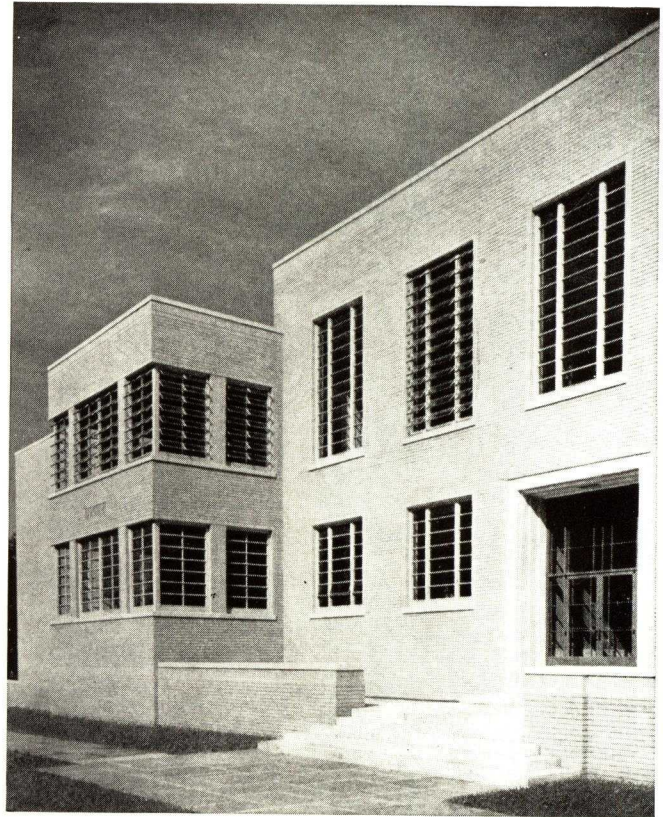
"Library" Science Building—Bryn Mawr College

INVISIGARD

The "Invisigard" window is especially adapted for Penitentiaries, Prisons, Jails, and all types of Detention and Penal institutions, being a combination of window and guard.

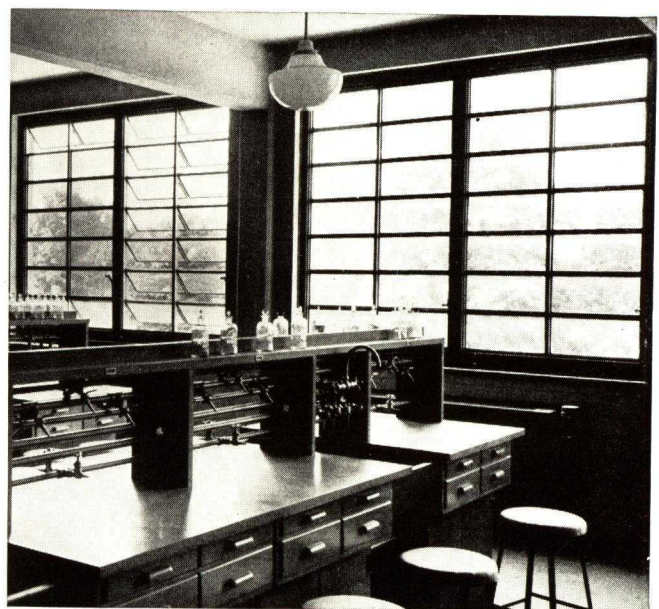
It has all the features of the "Ventrolite" and, in addition, the horizontal and vertical muntin bars are of tool and heat resisting steel, spaced so as to provide protection against escapes.

The operating mechanism is properly enclosed to prevent mutilation by the prisoners.



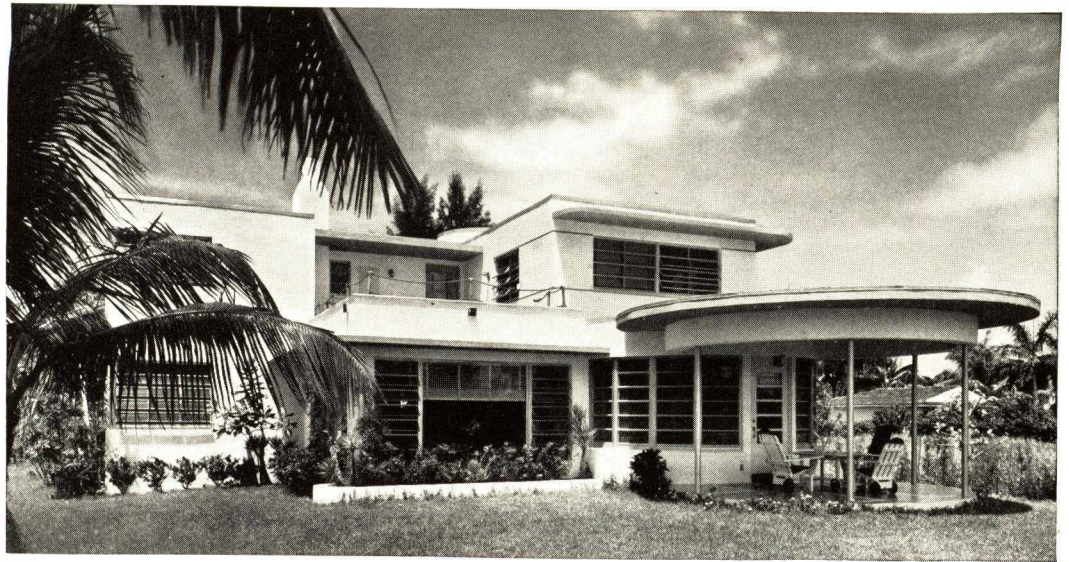
Science Building—Bryn Mawr College—Bryn Mawr, Pa.
THOMAS & MARTIN, Architects. BARCLAY WHITE Co., General Contractors

FOR DETAILS SEE PAGE 3



"Chemistry Laboratory" Science Building—Bryn Mawr College

"Futura"
Florida Exhibition House
VLADIMIR E. VIRRICK,
Architect
Miami Beach, Fla.



Living Room
"Futura"
Florida Exhibition House

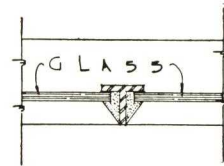
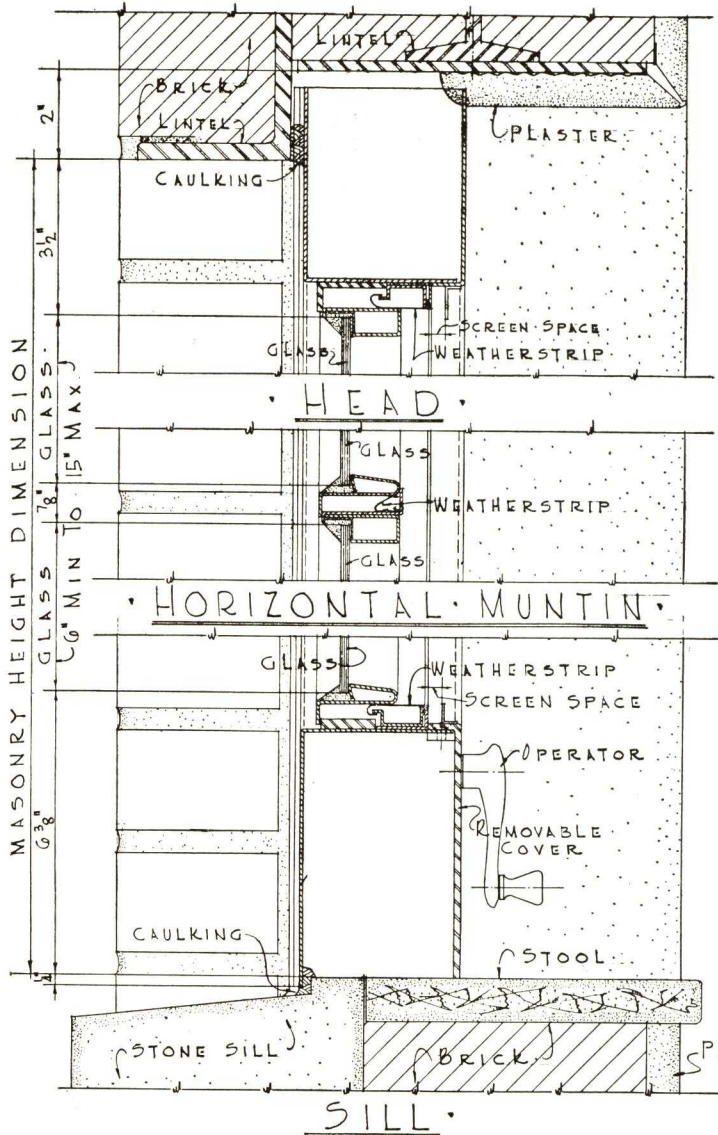


Dining Room
"Futura"
Florida Exhibition House

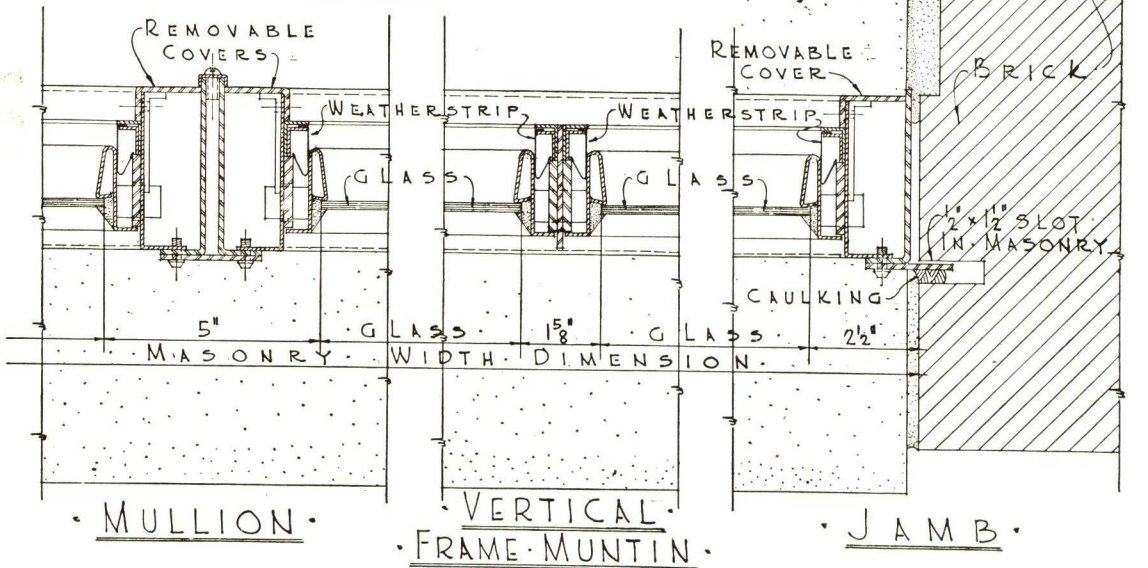
STANDARD DETAILS OF VENTROLITE WINDOWS

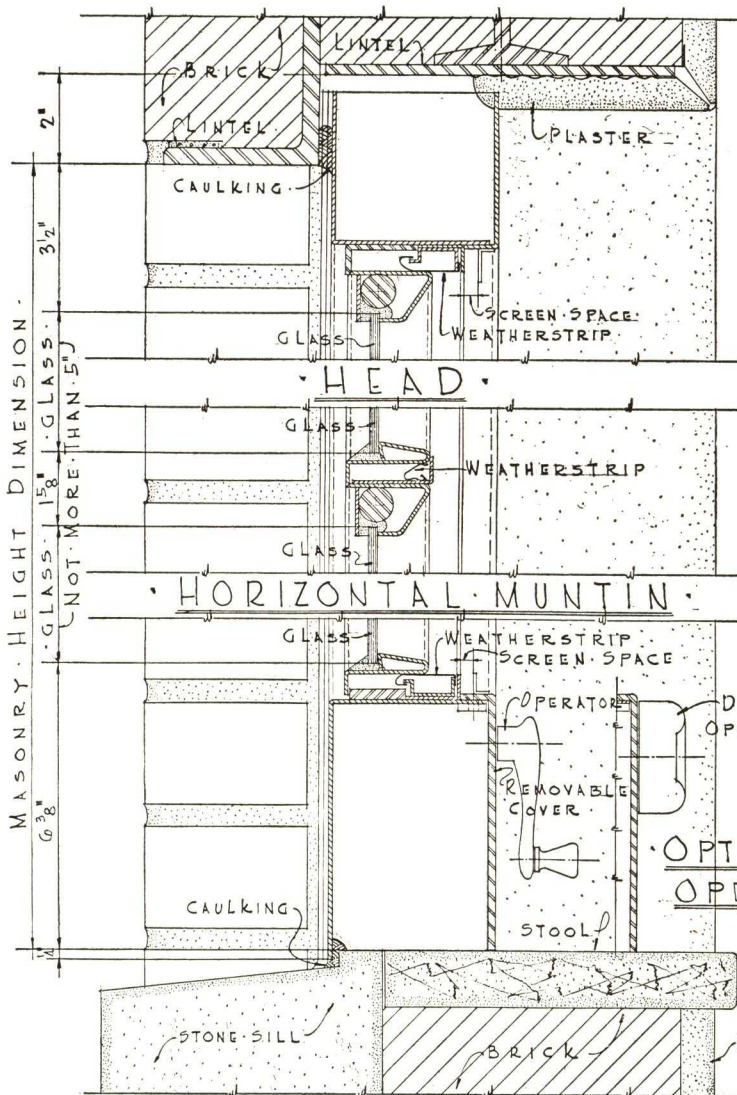
0 1 2 3
SCALE IN INCHES

SKETCHES AND DATA FOR
SPECIAL CONDITIONS FURNISHED
BY OUR ENGINEERING DIVISION
UPON REQUEST.



VERTICAL SASH
MUNTIN
WHERE DESIRED

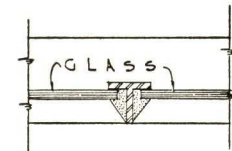




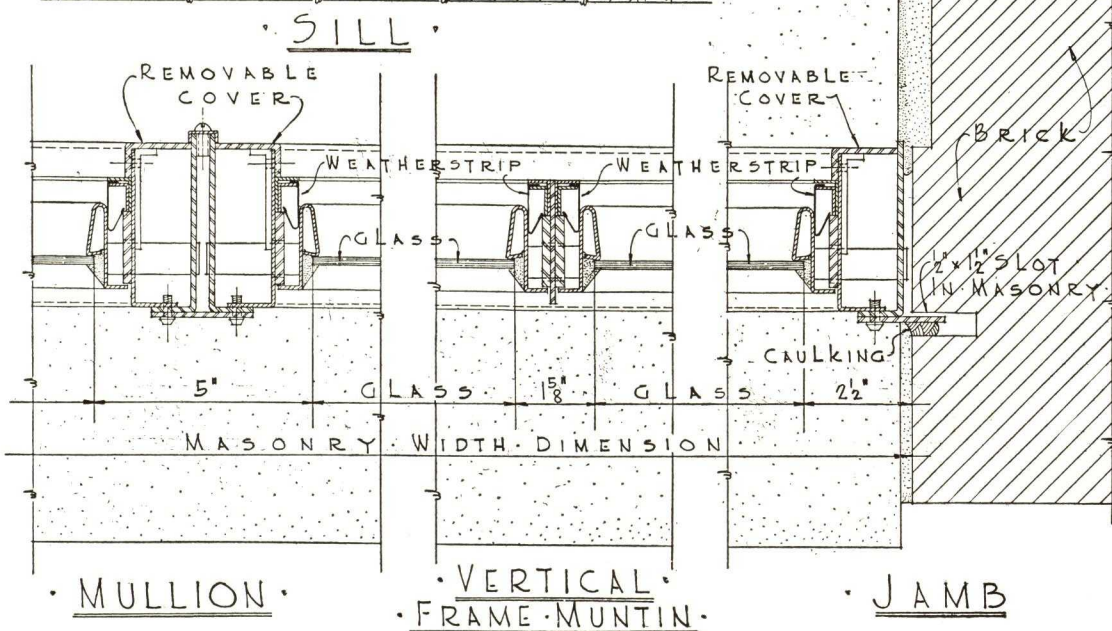
STANDARD DETAILS
OF
INVISIGARD WINDOWS

0 1 2 3
SCALE IN INCHES

SKETCHES AND DATA FOR
SPECIAL CONDITIONS FURNISHED
BY OUR ENGINEERING DIVISION
UPON REQUEST



VERTICAL SASH
MUNTIN
WHERE DESIRED



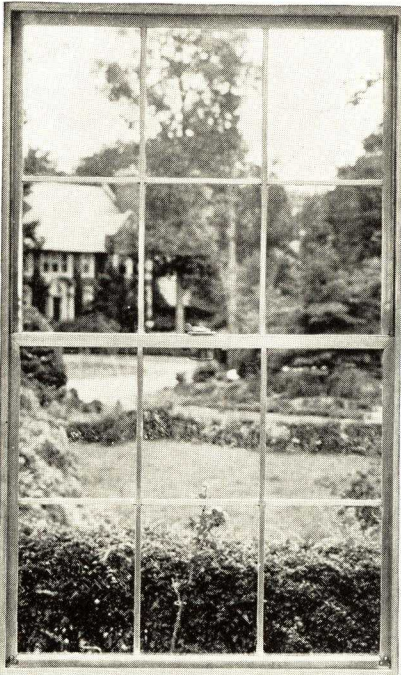
STERLING WINDOWS, INC.

SUCCESSORS TO CRITTALL DOUBLE HUNG WINDOW CO.

GENERAL OFFICES

1224 24th Street, N. W., WASHINGTON, D. C.

SALES CONNECTIONS CONVENIENTLY LOCATED THROUGHOUT THE UNITED STATES



ALUMINUM, BRONZE AND STEEL DOUBLE HUNG WINDOWS

Sterling Double Hung Windows are designed to meet the increasing demand of owners, architects, and builders for a metal double hung window that operates easily under all conditions, is compact, pleasing in appearance, weathertight, and moderately priced.

They incorporate a unique type of construction. The sash are hung on concealed spiral balances, eliminating cords and bulky weights, thus permitting narrow mullions and sight lines, which construction admits more effective daylight and ventilation than other types of wood or metal double hung windows.

The sash slide smoothly in jamb weatherstripped guides, and are air-sealed at head, sill, and meeting rail by a felt contact. This thoroughly weatherstripped feature makes Sterling Double Hung Windows ideal for air-conditioned buildings.

The non-ferrous metals eliminate deterioration and the necessity for periodic painting, resulting in a negligible maintenance cost.

SUGGESTED SPECIFICATIONS MODEL 100

*Specifications and Details of Model 200 (Heavy Section Aluminum)
Furnished on Request*

Double hung windows shall be standard (steel—steel frame with aluminum sash—aluminum, or bronze) construction, as manufactured by STERLING WINDOWS, INC., Washington, D. C., and shall be furnished in types and sizes shown on drawings.

Windows—Are to be furnished complete, including frames, fins, sash, metal weatherstripping at jambs, horizontal felt weatherstripping, stainless steel meeting rail rubbing strips, and hardware complete, consisting of spiral balance, sash pulls, and meeting rail locks.

Drilled holes for standard shade brackets will be provided in window frames *only when specified*.

Openings with transom units shall be assembled in the factory before shipment.

Screens—Shall be No. 16 mesh, half slide or full length as indicated, furnished complete with guides or hardware, ready for attaching to window frame.

Storm Sash (interchangeable with full length screens)—Shall be furnished with non-metallic gasket covering the entire outside face of the window frame, and factory-glazed with DSA glass. Storm sash can be placed on inside of window, if desired.

Finish—All steel window frames, sash, and steel screen frames shall be rust-proofed and finished with duPont Aluminum De Lux Enamel.

All aluminum or bronze window frames, sash, screen and storm sash frames shall have a smooth satin finish (special finishes furnished at an additional cost).

Screen cloth aluminum or bronze shall have an oxidized finish.



Walker Building, Washington, D. C.
PORTER & LOCKIE, Architects



K. W. Simpson Residence, Kensington, Md.
W. A. WATHEN, Builder

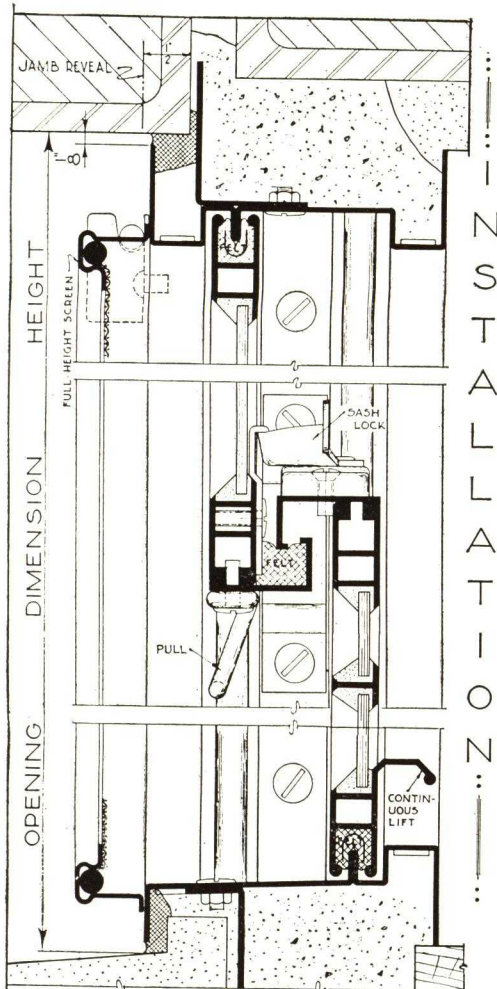
Installation—Double hung window frames shall be set plumb and level as the construction advances, using all anchorage provided at jambs, head, and sill. Wood bracing must not be removed until frames are ready to be painted. Provided temporary wood protecting pieces over sill of window frame during course of construction. Grout or fill with insulating materials all voids under sill around jamb and over head. Remove any cement or plaster that may accumulate in the sill or jamb grooves. After plastering (and steel window frames are painted), apply weatherstripping and hang and adjust sash in accordance with manufacturer's instructions. Where group windows are assembled on the job, seal mullion lap with mastic.

Glazing—All sash shall be factory-glazed before shipment

and must not be handled for at least ten days after glazing, to allow putty to set and thoroughly harden. All glass lights shall be cut to the proper dimension, thoroughly back-puttied, held in place by glazing clips, and face-puttied. The best grade of steel sash putty shall be used. When glass thicker than $\frac{1}{8}$ in. is specified, glazing angles shall be furnished (at an additional cost).

Painting—Paint jamb grooves of steel window frames before weatherstripping is applied. Do not paint zinc weatherstripping at jambs or zinc guides for half slide screens. When painting window frames with final coat, do not close sash until paint has sufficiently dried.

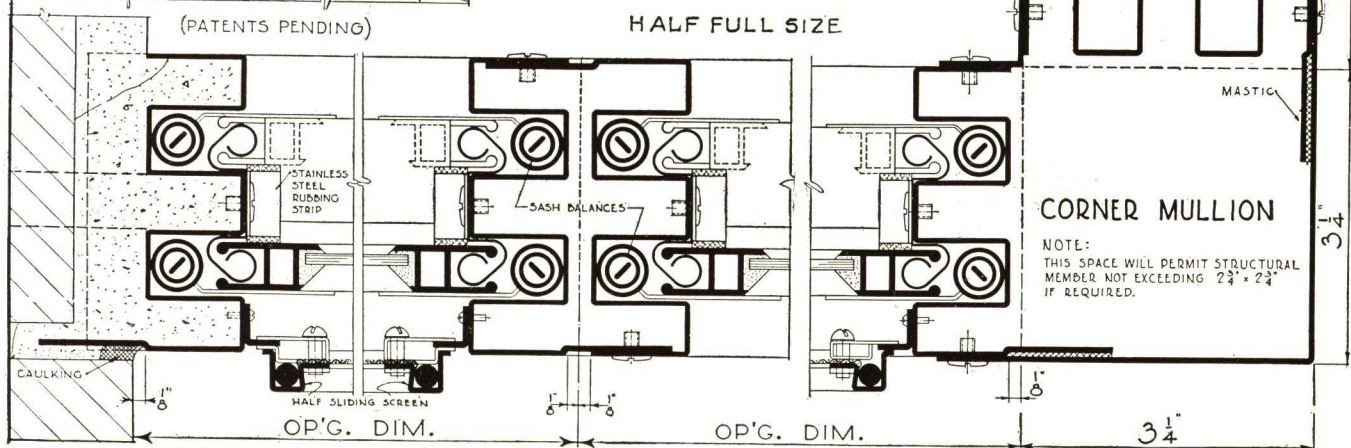
Standard Types and Sizes



CONVENTIONAL MUNTIN TYPE C				HORIZONTAL MUNTIN TYPE H			
2'-0"	2'-6"	3'-0"	3'-6"	2'-0"	2'-6"	3'-0"	3'-6"
3'-6"	2036	2636	3036	3636	3'-6"	2036	2636
4'-0"	2040	2640	3040	3640	4'-0"	2040	2640
4'-6"	2046	2646	3046	3646	4'-6"	2046	2646
5'-0"	2050	2650	3050	3650	5'-0"	2050	2650
5'-6"	2056	2656	3056	3656	5'-6"	2056	2656
6'-0"	2060	2660	3060	3660	6'-0"	2060	2660
CONVENTIONAL MUNTIN (UPPER SASH ONLY) TYPE C				OPEN SASH TYPE O			
2'-0"	2'-6"	3'-0"	3'-6"	2'-0"	2'-6"	3'-0"	3'-6"
3'-6"	2036	2636	3036	3636	3'-6"	2036	2636
TYPES C AND O STANDARD IN ALL SIZES LISTED FOR TYPES C AND H							
TYPE TC				FIXED TRANSOMS TYPE TO			
1'-3"	2'-0"	2'-6"	3'-0"	1'-6"	2'-0"	2'-6"	3'-0"
2016	2616	3016	3616	2016	2616	3016	3616
2'-0"	2020	2620	3020	3620	2'-0"	2020	2620

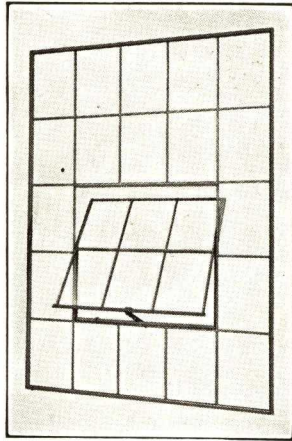
DETAILS

HALF FULL SIZE

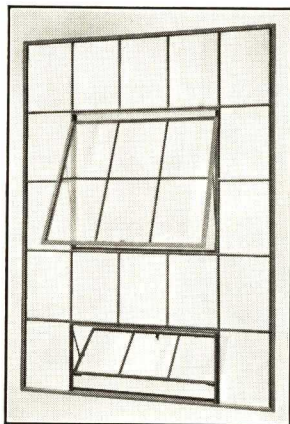


J. S. THORN COMPANY

Manufacturers of All Types of Steel Windows and Doors
PHILADELPHIA, PA.



Pivoted Window



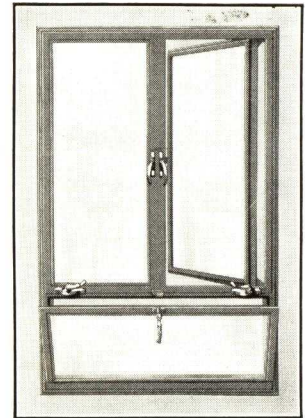
Projected Window

J. S. THORN COMPANY have served the building industry with metal windows and allied products for over a half century.

Our windows and accessories in every classification contain a "full measure" of the best materials, are of heavy, sturdy construction and are built to withstand unusual conditions.

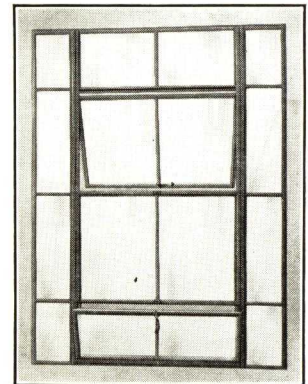


Lewis Tower, Philadelphia, Pa.
ARTHUR W. HALL, Architect



Standard Combination Casement Window Fitted with "Screen Type" Hardware

Worm and gear operator originated and patented by Thorn, No. 1941432



Standard Casement Projected Window

Worm gear controls for metal screen type casements is a Thorn development and is protected by a U. S. Patent.

All of our windows are made in standard types and sizes as recognized and listed by the U. S. Department of Commerce, National Bureau of Standards in Simplified Practice Recommendations R72.



Ford Motor Co. Assembly Plant, Edgewater, N. J.

ALBERT KAHN, INC., Architect



TRUSCON

Building Products of Steel

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The BONDERIZING Process

What It Is and What It Accomplishes

TO specifiers and users of steel building products, fine appearance is often a vital problem. Paint alone, regardless of its method of application or the manner in which it is dried, is inadequate for products that will be subjected to severe exposure. The inherent nature of the underlying metal to corrode has caused premature paint failure through chipping and peeling.

The difficulty of maintaining paint finishes is due to two main causes—corrosion of the underlying metal and lack of adhesion of the paint film to the metal. It was to overcome these difficulties in finish maintenance that Truscon installed Bonderizing equipment.

The Bonderizing Process is a method of chemically producing a phosphate coating on iron and steel that is composed of millions of microscopic crystals, integral with the metal itself and, as such, has greater adherence than any other known protective covering. Being insoluble in water, this coating effectively retards corrosion resulting from moisture that may penetrate the paint film and provides a foothold for the paint, which prevents flaking or peeling. The finishing material flows into the interstices between the fine crystals and, when dry, is securely anchored to the metal. The Bonderizing chemical is a concentrated compound which, when dissolved in hot water, forms a solution that reacts quickly to form a phosphate coating on properly cleaned iron and steel. Due to Truscon's modern Bonderizing equipment, process time is rapid.

The Bonderite coating is velvety in texture, opaque and neutral gray in color. It is softer than the base metal and is adherently etched into the metal surface. It is especially well adapted to obtaining uniform color effects in final finishes.

The Bonderite Process offers the most satisfactory surface for painting. It not only provides for increased adhesion and durability of finishes applied over it, but provides a check on the cleaning operations as well. It removes the last traces of grease and drawing compounds, neutralizes any residual alkali or surface rust remaining on the work and eliminates hand marks that may have occurred prior to processing.

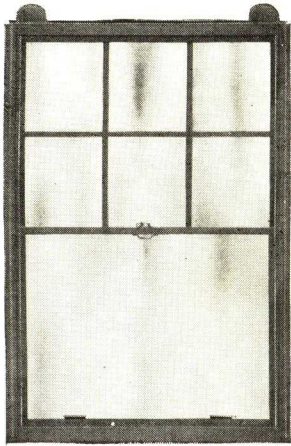
Naturally, not all of Truscon's line of building products will be Bonderized. The application of this process will be confined to products that, under conditions of their final installation, will be exposed to those factors known to be detrimental to continued efficient and economical service.

You can now specify Truscon Bonderized Steel Windows and such other products which, by reason of their size, can be accommodated with existing equipment. You are assured that the baked-on priming coat of paint as well as the steel itself is given the greatest practical protection for long life and low maintenance cost.

Note: Steel Window and other building products Bonderized and with baked-on priming coat of paint, available only from factory in Youngstown, Ohio.

RESIDENTIAL DOUBLE-HUNG WINDOWS

SERIES 138



MANY outstanding features point out the superiority of the Truscon Residential Double-Hung Steel Window, Series 138. Those listed below are recognized as being of paramount importance to architects, contractors, builders, dealers and owners.

Four Types of Muntin Bar Arrangements and Twenty-four Sizes meet practically every standard requirement.

Tubular Construction of Sash adds greatly to the appearance, strength and durability of the windows.

Spring-Balanced Construction. Operation is controlled by spring balances equipped with tapes of Enduro Stainless Steel. There are no sash cords, weights or pulleys.

Spring Bronze Weatherstripping. This factory-installed feature assures enduring weather-tight windows.

Attractive Hardware. Standard hardware is steel, cadmium plated, brushed finish. Enduro Stainless Steel or solid bronze, medium statuary finish, hardware available at slight extra cost.

Bonderized Steel . . . Baked-On Priming Coat of Paint resists the formation and progress of rust. The gray baked-on priming coat of paint lasts from three to five times longer.

Flush Installation of Truscon Screens and Tempyte Insulating Windows. Assured by the rebate on the exterior of the frame. Three types of screens available.

Assembled and Packaged at Factory. Windows are packaged in strong, durable cartons for maximum protection right up to the time of installation. Standard hardware attached at factory. No field assembly is required.

DETAILS OF CONSTRUCTION

Head

Head and jamb members are telescoped at corners and welded to provide an extremely rigid frame. Section is designed to include plaster stop on interior and screen and Tempyte Window rebate on the exterior. Note spring bronze weatherstripping which is attached to top rail of sash, assuring perfect weathering.

Spring Balances

Two spring balances, located at each corner of the head section, completely enclosed in a protective metal housing, provide continuous, trouble-free operation. Tapes of Enduro Stainless Steel are attached to sash. Spring balances are easily removable.

Meeting Rail

Showing interlocking contact for the upper and lower sash rails and spring bronze weatherstripping. The design of cold rolled tubular sash rails develops maximum strength and rigidity and provides water tightness.

Glazing Clip

Windows are glazed from the outside. Glass must be embedded in putty to avoid direct contact with steel. The copper clad, spring steel wire glazing clips are put in place, as shown, and the sash putty applied. Steel window putty must be used.

Jamb

Note spring bronze weatherstripping which is continuous from head to sill in both sash guides. In addition to acting as an efficient weatherstripping with double contact for both sash, the spring bronze forms a guide for the sash which results in ease of operation. In this section the interior plaster stop and exterior rebate for screen and Tempyte Insulating window are readily apparent.

Sweep Lock

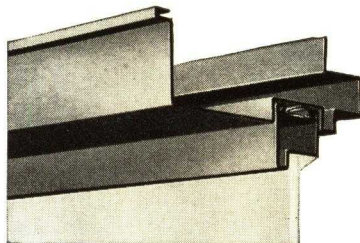
Sweep lock is attached to meeting rail with metal screws. Lock is furnished in steel, cadmium plated, brushed finish, Enduro Stainless Steel, satin finish; or solid bronze, medium statuary finish, available at slight extra cost. Strike is always rust-proofed and painted to match window coat.

Sill

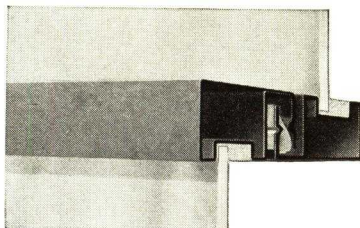
The outside of this section is rolled with double step which provides two-point contact weathering with sash rail. This feature, with the spring bronze weatherstripping, offers added resistance to air infiltration.

Lift Handle

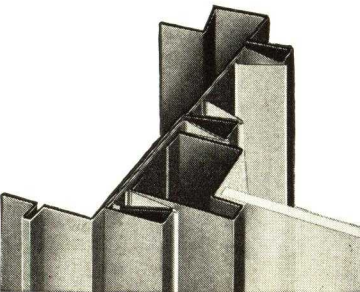
Two lift handles are attached to bottom rail with metal screws. Furnished in steel, cadmium plated, brushed finish. Enduro Stainless Steel, satin finish; or solid bronze, medium statuary finish, lift handles, are available at slight extra cost.



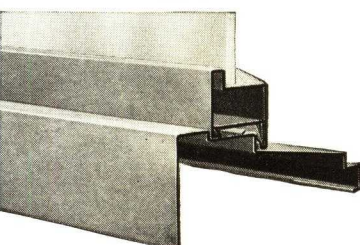
Head



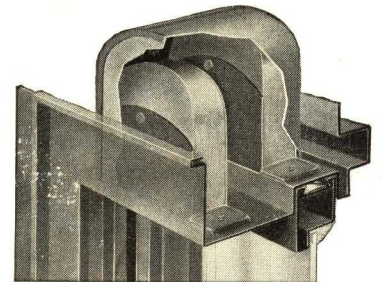
Meeting Rail



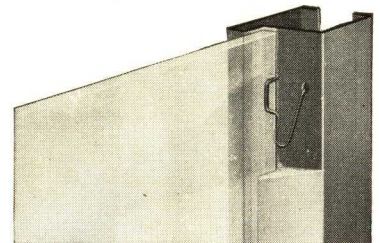
Jamb



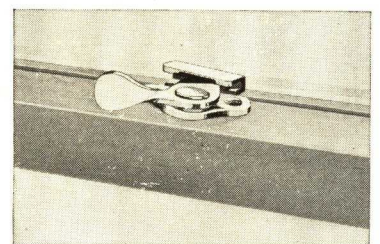
Sill



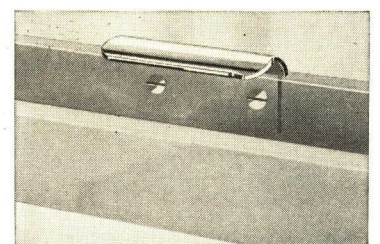
Spring Balances



Glazing Clip



Sweep Lock



Lift Handle

SPECIFICATIONS (SERIES 138 WINDOWS)**1 General**

All windows so indicated on the plans and elevations and called for in these specifications shall be Truscon Residential Double-Hung Steel Windows, Series 138, as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without written approval of the architect.

2 Scope of Work

The window manufacturer shall include in his work all frames and sash, spring balances, weatherstripping, meeting rail locks, sash lifts and pull down handle completely assembled and packaged in accordance with manufacturer's standards. Glazing, field painting and caulking are not included under these specifications.

Note: (When erection by the window manufacturer is desired, which is recommended for large operations, substitute the following paragraph:)

The window manufacturer shall include in his work all frames and sash, spring balances, weatherstripping, meeting rail locks, sash lifts and pull down handle completely assembled and packaged in accordance with manufacturer's standards; all erected and adjusted. Glazing, field painting and caulking are not included under these specifications.

3 Materials

All windows shall be constructed throughout from Truscon specification new billet strip steel.

Gauges of material shall be as follows:

Frame—Head, sill and jamb members—	18 gauge
Sash —Rails and stiles	—22 gauge
Parting strip	—22 gauge

4 Construction

(a) Frame: Head, sill and jamb members shall each be of one piece, cold rolled, straight and true to form. Corners shall be telescoped and welded to develop maximum strength. The design of frame shall be such to provide a continuous staff bead $\frac{1}{8}$ in. wide; screen and Tempyte insulating window rebate on the exterior, and a plaster stop on interior.

(b) The wind break flange at the head shall be set back $\frac{1}{4}$ in. beyond the jamb wind break flange to provide clearance for the installation of the lintel angle without chipping of bricks.

(c) Sash members shall each be of one piece not less than $\frac{7}{8}$ in. deep, cold rolled in tubular shape to develop maximum strength and rigidity. Corners shall be telescoped and welded.

(d) Muntin bars when required, shall be hot rolled tees, welded to sash members with all intersections mitered and welded flush with each other without removing any part of the web of either member.

(e) Mullions, when required, shall be furnished in accordance with manufacturer's standards.

(f) All windows shall be provided with open drilled holes ($1\frac{1}{4}$ in. on centers) on inside to receive No. 8 self-tapping screws for attachment of standard shade brackets to be provided by others.

(g) All windows shall be provided for standard arrangement of screens (see screen specifications) and Tempyte Insulating Windows.

5 Weatherstripping

Weatherstripping shall be spring bronze and applied to sash members at head, sill and meeting rail, and to frame at jambs, running the full height of the window to act as a sash guide. A weathering block shall be attached to the parting strips at the ends of the meeting rail.

6 Hardware

(a) Each sliding sash shall be suspended by two completely enclosed spring balances, so designed to properly balance sash glazed with glass no heavier than double strength or equivalent in weight. Spring balances shall be enclosed in metal housing in such manner as to be removable and securely attached to frame at head. Spring balances shall have tapes of Enduro stainless steel properly attached to sash.

(b) Lower sash shall be equipped with sash lifts and meeting rail lock of Truscon standard design of steel cadmium plated brushed finish. (Enduro stainless steel, satin finish or solid bronze, medium statuary finish will be furnished at slight extra cost.)

(c) The lower rail of upper sash shall be provided with a pull down handle shaped for easy grip, and strike for meeting rail lock. Handle and strike shall be rust-proofed and painted to match priming coat of the window.

(d) Underside of head frame to be provided with rubber bumper to stop travel of lower sash.

7 Bonderizing and Shop Painting

(a) After fabrication, the windows shall be thoroughly spray washed in a hot alkali solution to remove all oil, grease and foreign matter, spray-rinsed in hot water to assure a clean, grease-free surface for chemical treatment. They shall then be dip-rinsed in hot water, processed by dip bonderizing, rinsed in cold water and dipped in a dilute solution of chromic acid.

(b) Windows shall be immediately air dried to insure uniform temperature for painting. Paint shall be particularly adapted to application by dipping at a uniform, controlled temperature. Paint is to be gray in color and of a character especially adapted to materials coated with phosphates. Painting shall be a part of the continuous process.

(c) Windows shall be oven-baked for at least 60 minutes, at a temperature of not less than 300 degrees. Painting and oven-baking must be done at the plant of the processor.

8 Packaging

All Double-hung windows shall be delivered to building site in packages.

9 Screens

(a) Screens shall be one of the following types as indicated on plans:

1. Top Hung Full Screens.
2. Fixed Half Screens.
3. Vertical Slide Screens.

(b) Screens shall be attached in rebate on exterior of window.

(c) Screens shall have rewirable electro-galvanized steel frames and solid bronze 16 mesh (.0113 in. diameter) screen cloth. Frames shall be given one standard coat of baked enamel. (18 mesh cloth can be supplied at slight extra cost.)

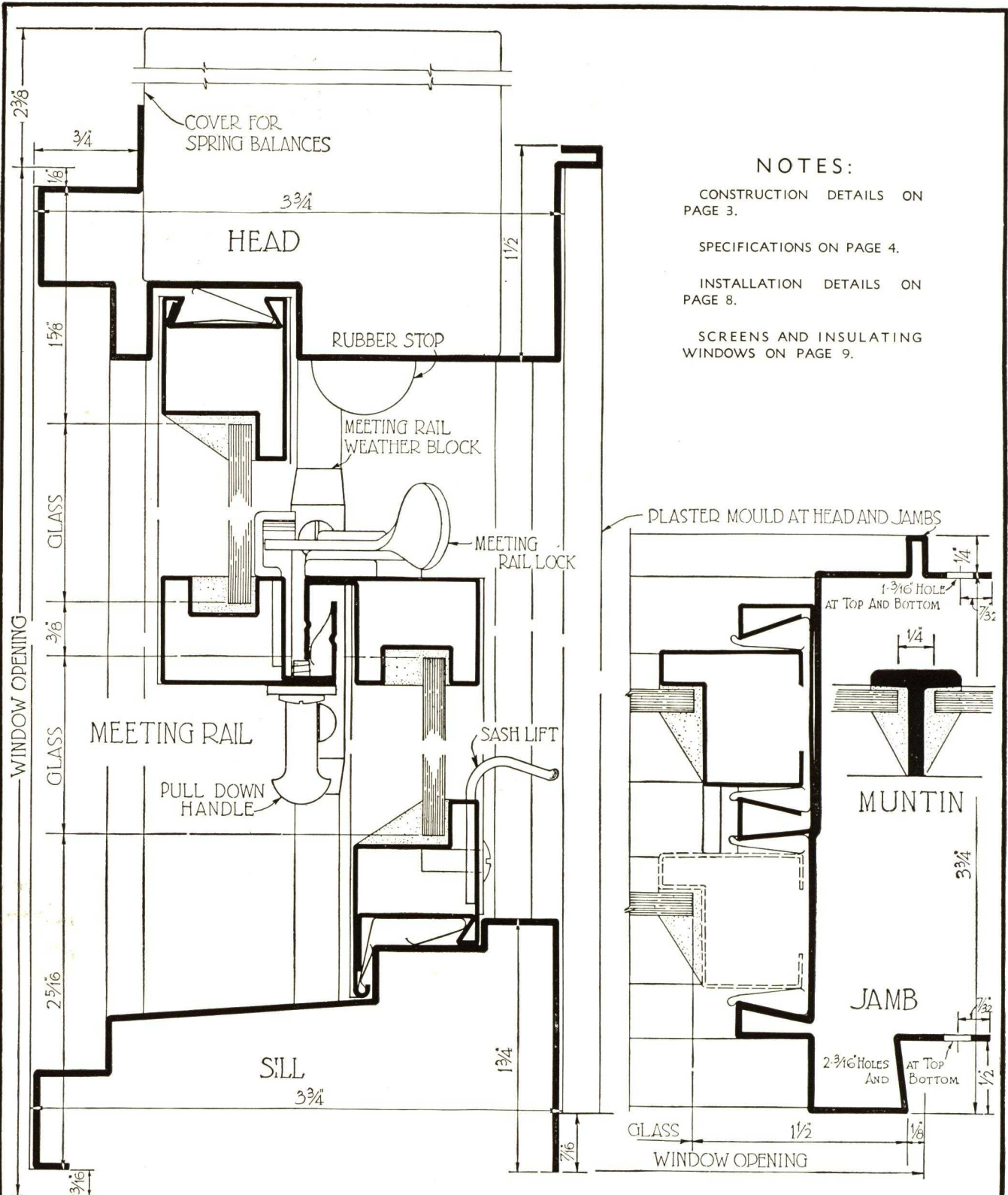
(d) On Top Hung Full screens horizontal braces shall be furnished at center, for windows 4 ft. 8 $\frac{3}{8}$ in. and 5 ft. 4 $\frac{5}{8}$ in. in height.

10 Erection

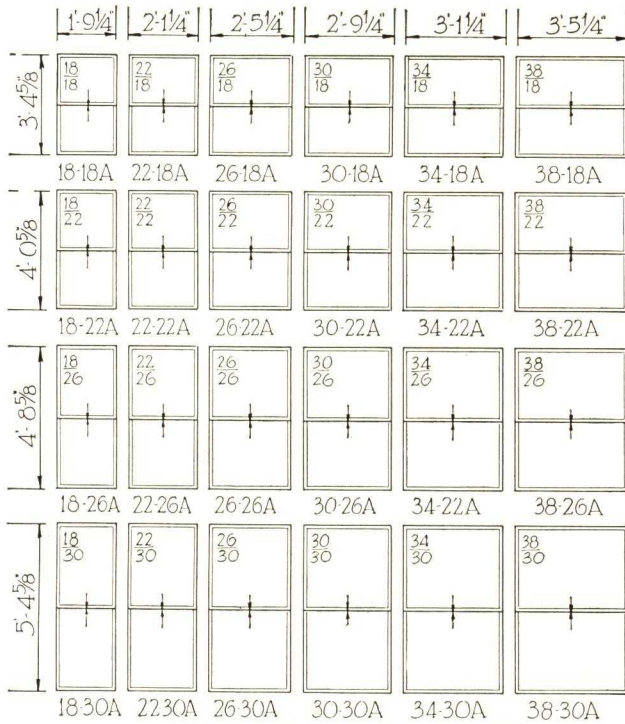
Window frames shall be trued in all directions and set plumb without distortion. (Special care shall be exercised to see that window jambs are not crowded at meeting rail during erection. A special clip is provided to hold the sash closed in shipment and is not to be removed until window is installed thus allowing the sash rails to act as a spreader bar to keep the jamb frame members in alignment.) Joints between frame and wall and at mullions shall be carefully caulked as specified under Caulking.

11 Glazing (To be done by glazing contractor.)

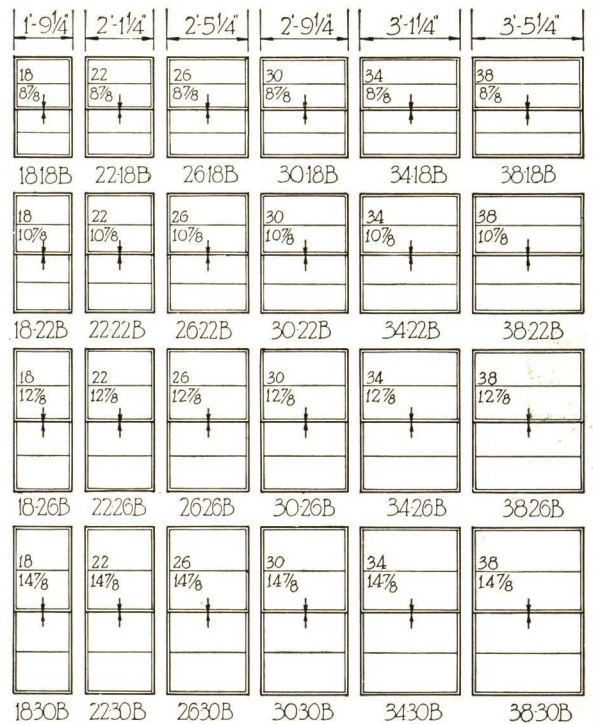
All windows shall be glazed on the outside. Glass shall be held in place by Truscon copper clad, spring steel, wire glazing clips. All glass shall be bed and face puttied with steel sash putty especially prepared for outside use. Glass shall not be heavier than double strength.



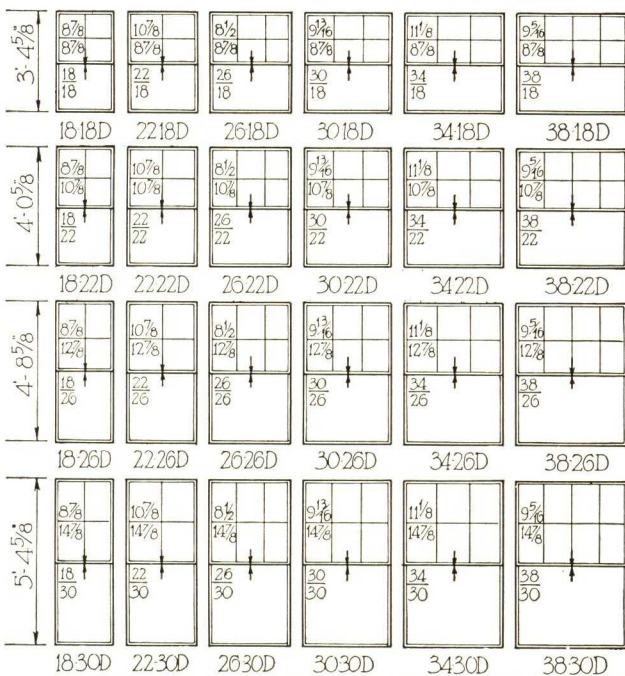
TRUSCON STEEL COMPANY Youngstown, Ohio	FULL SIZE SECTIONS — TYPES AND SIZES RESIDENTIAL DOUBLE-HUNG STEEL WINDOWS Series 138	PLATE No. M-1 SEPTEMBER, 1938
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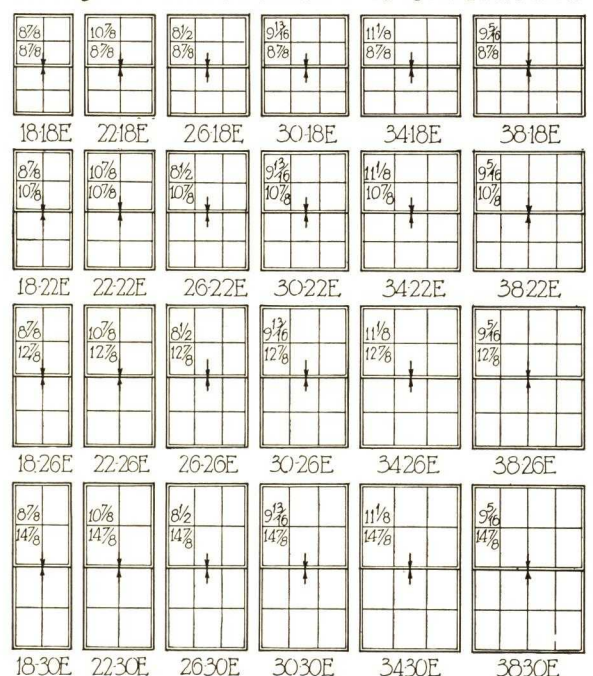
A TYPES WITHOUT MUNTINS



B-TYPES HORIZONTAL MUNTINS IN TOP & BOTTOM SASH



D-TYPES HORIZONTAL & VERTICAL MUNTINS IN TOP SASH ONLY



E-TYPES HORIZONTAL & VERTICAL MUNTINS IN TOP & BOTTOM SASH

FOR FULL SIZE SECTIONS SEE PLATE M-1

GLASS SIZES SHOWN ARE, ACTUAL

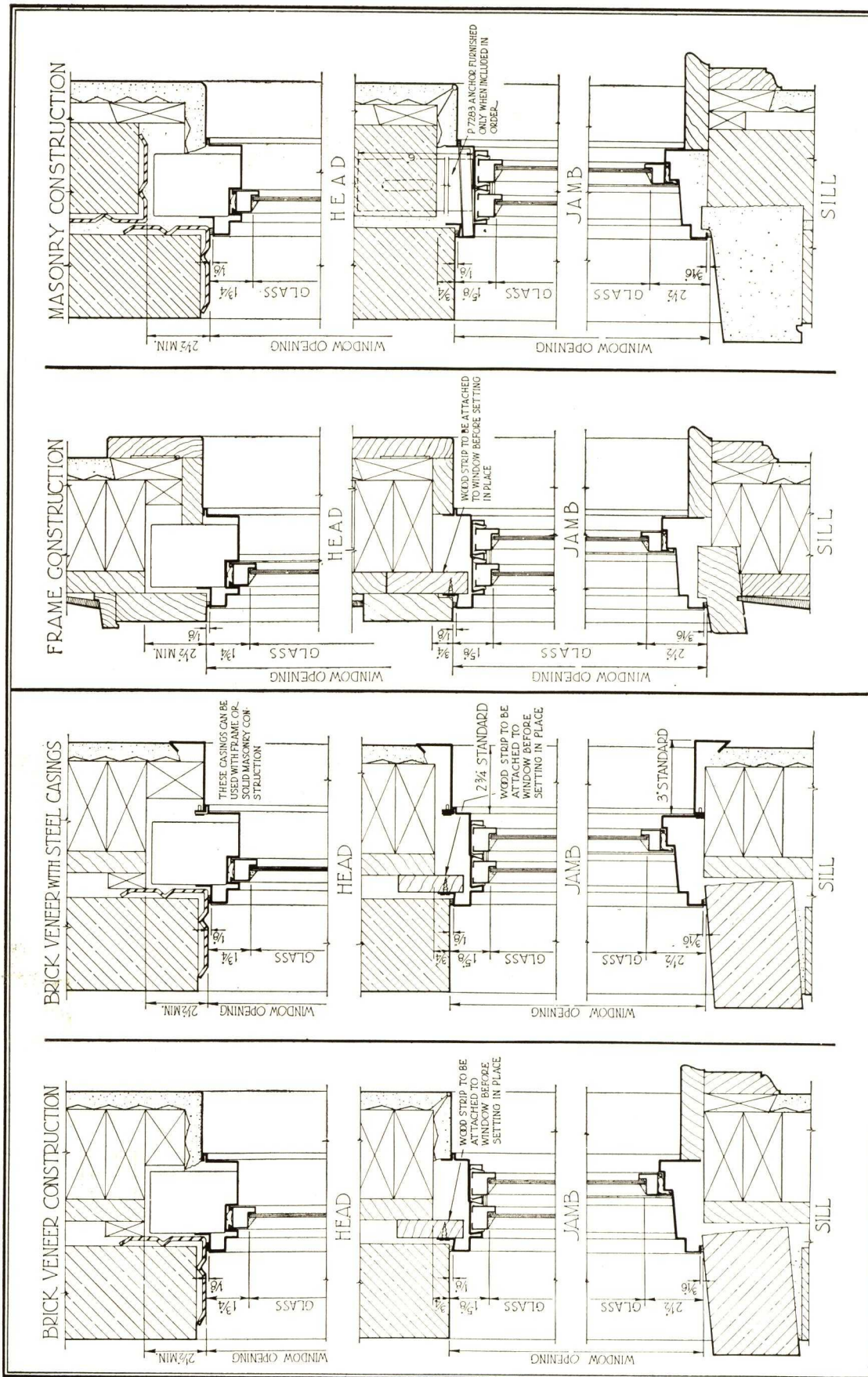
OPENING DIMENSIONS ARE, SHOWN

TRUSCON
STEEL COMPANY
Youngstown, Ohio

STANDARD MUNTIN BAR—TYPES AND SIZES
RESIDENTIAL DOUBLE-HUNG STEEL WINDOWS

Series 138

PLATE No.
M-2
SEPTEMBER, 1938



CONSTRUCTION DETAILS

RESIDENTIAL DOUBLE-HUNG STEEL WINDOWS

SERIES 138

PLATE Nos.

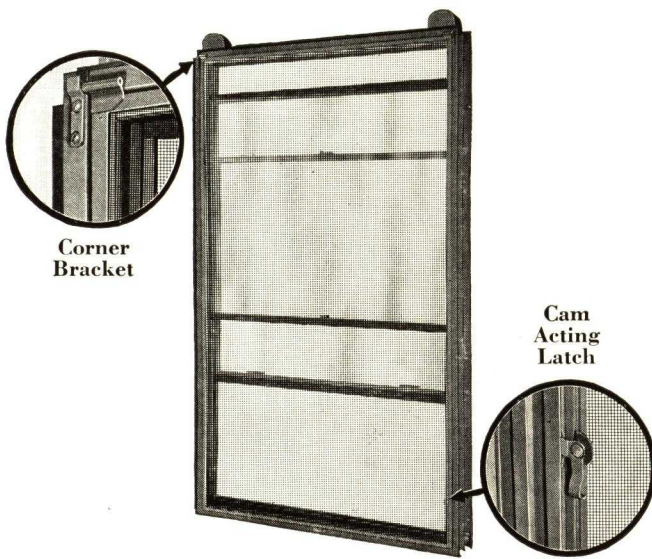
M-3 & M-4

OCTOBER, 1938

TRUSCON
STEEL COMPANY
Youngstown, Ohio

SCREENS AND INSULATING WINDOWS

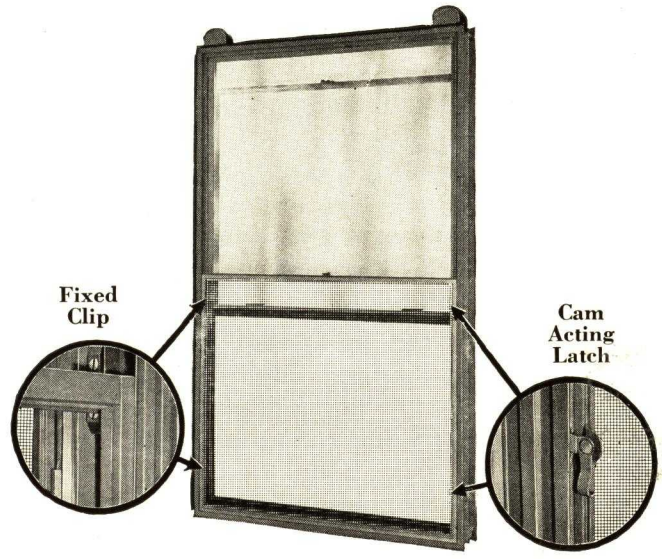
FOR SERIES 138 RESIDENTIAL DOUBLE-HUNG STEEL WINDOWS



TOP HUNG FULL SCREEN

This screen, installed on the outside, covers the full window opening, permitting freedom of operation of both sash to any desired position. The screen is hung at each top corner on a bracket and secured at each jamb with cam acting latches. Horizontal braces are placed at center of screen for windows 4 ft. 8 $\frac{3}{8}$ in. and 5 ft. 4 $\frac{5}{8}$ in. high.

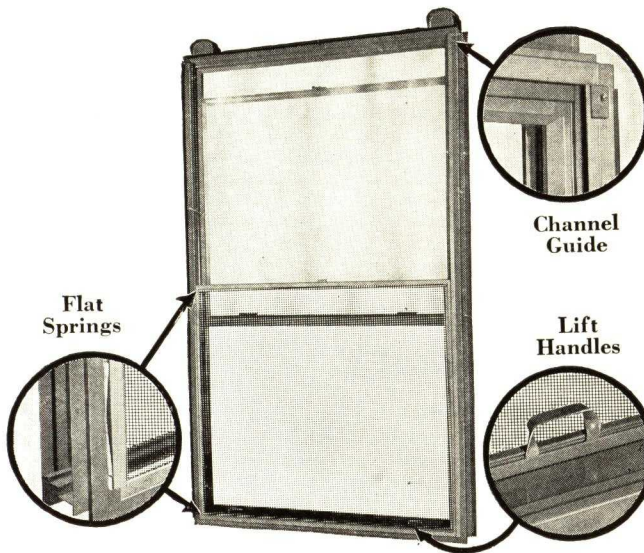
Screen frames are of tubular steel construction, $\frac{7}{8}$ in. x $\frac{3}{4}$ in., electro-galvanized and finished with one coat of baked enamel. Bronze screen cloth is 16 mesh (.0113 in. diameter) and is replaceable. 18 mesh cloth is available at a slight extra cost.



FIXED HALF SCREEN

This is the most economical of the three types of screens available. This screen covers the lower sash only, permitting unobstructed light through the top sash. This type screen can be removed easily and rapidly. The screen is attached to the window on one side with two fixed clips and on the other side with two cam acting latches, as illustrated above.

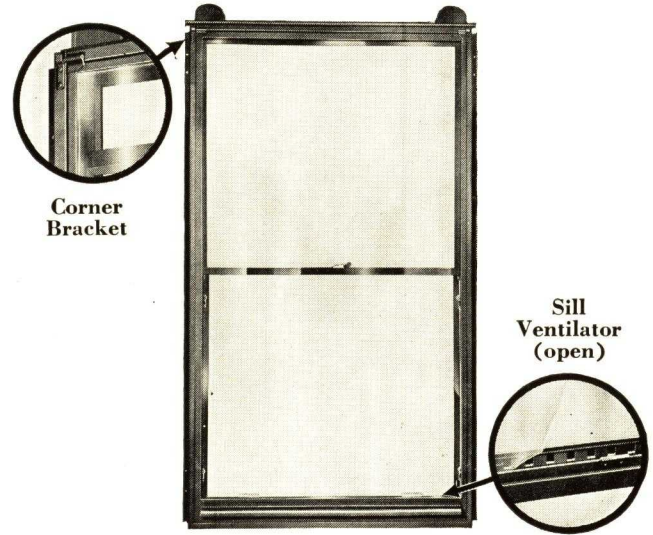
Screen frames are of tubular steel construction, $\frac{7}{8}$ in. x $\frac{3}{4}$ in., electro-galvanized and finished with one coat of baked enamel. Bronze screen cloth is 16 mesh (.0113 in. diameter) and is replaceable. 18 mesh cloth is available at a slight extra cost.



VERTICAL SLIDE SCREEN

Sliding guides attached to the sides of the window, this type screen is provided with two flat springs which assure a tight fit, easy operation and quick removal when desired. Two lifting handles are provided at the bottom of the screen frame. Screens must be ordered with the windows in order that holes for attaching channel guides may be provided in the shop.

Screen frames are of tubular steel construction, $\frac{7}{8}$ in. x $\frac{3}{4}$ in., electro-galvanized and finished with one coat of baked enamel. Bronze screen cloth is 16 mesh (.0113 in. diameter) and is replaceable. 18 mesh cloth is available at a slight extra cost.



TEMPRYTE INSULATING WINDOW

The Tempryte Insulating Window is attached to the outside of the Truscon Residential Double-Hung Steel Window using same provisions as for screens. It is hung at each top corner on a bracket and secured at each jamb with two cam acting latches. Ventilation is provided by sill ventilator as shown or by another design in which the Tempryte window is held open 6 in. by corner brackets. In homes equipped with air conditioning equipment, Tempryte windows may be used throughout the year. However, when screens are used, Tempryte Insulating Windows are easily removed and stored.

DOUBLE HUNG WINDOWS

SERIES 27 AND 28

INNUMERABLE installations of Truscon Double-Hung Windows in monumental buildings have testified for many years the wisdom of their selection because of their weathertightness, ease of operation, adaptability to all types of building construction and low cost maintenance.

Two types are available in plate type construction, Series 27 and Series 28, both identical in design, with the Series 27 slightly lighter in certain members than the Series 28 and therefore, for certain types of construction, more economical.

Both the Series 27 and Series 28 Double-Hung Windows are galvanized and bronze weatherstripped and meet U. S. Government specifications for salt spray test and air infiltration as specified below.

SPECIFICATIONS

1 General

All windows so indicated on the plans and elevations and called for in these specifications shall be the solid steel, plate type (galvanized and weather stripped) double-hung windows as manufactured by Truscon Steel Company of Youngstown, Ohio. No substitution shall be made without the written approval of the architect. (Specify herein whether Series 27 or 28 is required.)

2 Scope of Work

The steel window manufacturer shall include in his work all Double-Hung Steel Windows erected complete, and shall furnish and apply hardware and weights and make a final adjustment of these windows.

3 Material

All windows throughout shall be constructed of Truscon special hot-rolled new billet steel, galvanized. The gauges of the various sections will be as shown in table:

	Heavy Type Series 28	Intermediate Type Series 27
Sill	12 gauge	14 gauge
Weight box	16 gauge	18 gauge
Cover plates and parting strip.....	16 gauge	16 gauge
Staff bead	12 gauge	12 gauge
Head and head covers.....	16 gauge	16 gauge
Rails and stiles of sash.....	12 gauge	14 gauge
Glazing Strips—Jambs and Meeting Rail	14 gauge	14 gauge
Glazing Strips—Top and Bottom Rail	12 gauge	14 gauge

4 Construction

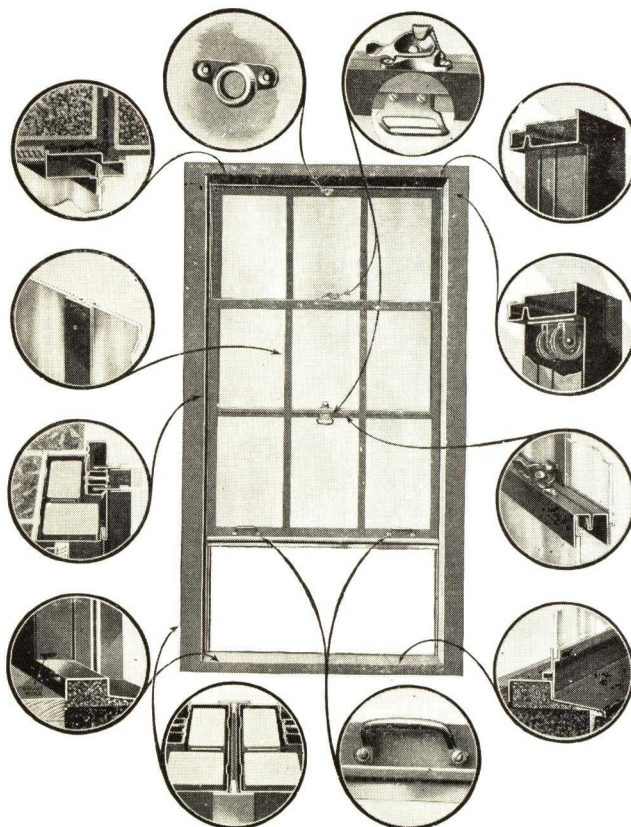
(a) *Frame Members:* head, sill and jamb construction, each one piece of metal exclusive of parting strip, weight box cover and head cover; all members formed straight and true with welded joints ground smooth; staff bead formed on exterior of frame.

(b) *Pulley Stiles* shall be formed with deep weathering and the pulley stile and weight box cover held in place with one line of oval head screws passing through a heavy reinforcing piece on inside of jamb. Adjustment of sash and frame shall be secured by these screws which hold the parting strip and weight box cover. The weight box cover shall run the full height of the jamb from sill to head, and shall be removable.

(c) A *Brass Check Plate* shall be attached at meeting rails to insure proper weathering.

(d) *Sash Members* shall be so designed that the distance from masonry opening to glass line at jambs and head will be 2½ in.

(e) *Glazing Strips* shall be secured with oval head screws to permit inside glazing.



5 Weather Stripping

Weather stripping shall be provided of spring bronze and applied to sash members at sill, jambs, meeting rails and head. A spring bronze closure shall be applied to lower half of outer sashway.

6 Hardware

(a) *Frames* shall be equipped with pressed steel pulleys, bronze bushed and pressed steel housings with hard steel pulley axles. Sash shall be hung on zinc coated steel sash chains, having a tensile strength of at least 600 pounds, concealed behind pulley stiles and properly balanced with cast iron weights.

(b) *Sash* shall be equipped with one pair of lift handles, one combination adjustable sweep lock, one pull-down handle and one pole socket for upper sash, all of solid bronze.

(Cadmium plated malleable iron hardware can be substituted at slight reduction in price.)

7 Shop Painting

All windows shall be given one coat of protective paint after assembly and before shipment.

8 Air Infiltration

On double-hung windows shall be guaranteed less than 1.00 cubic foot per foot of sash perimeter per minute when subjected to a static air pressure equivalent to the pressure exerted by wind at a velocity of 25 miles per hour.

9 Galvanizing

Galvanized materials shall show no rust after 50 hours continuous exposure at a temperature of 90 to 95 degrees Fahr. to the spray of 20 per cent salt (sodium chloride) solution.

10 Erection

Window frame shall be set plumb and true in opening. After glazing, hang weights, attach hardware and adjust sash. The joint between window frame and masonry shall be carefully caulked by caulking contractor.

11 Glazing

(To be done by glazing contractor.)

Glass shall be bedded in steel window putty and held in place with continuous glazing strips.

GENERAL INFORMATION—DOUBLE-HUNG WINDOWS

SERIES 27-28

MUNTIN BARS

Muntin bars can be furnished in accord with individual specifications.

WINDOW UNIT WITH TRANSOMS

Transoms are incorporated in the main frame of the standard size Double-Hung Window. They are not a separate unit. All hardware is of standard design.

COUNTERBALANCED WINDOWS

Counterbalanced windows are of the same design as standard Windows, except that counterweights are omitted and the sash counterbalance each other.

SEGMENTAL OR CURVED HEAD UNITS

Segmental or Curved Head Units can be provided in almost any radii or design. The inside of this win-

dow is finished square to facilitate the use of shades and draperies.

ERECTION AND ADJUSTMENT

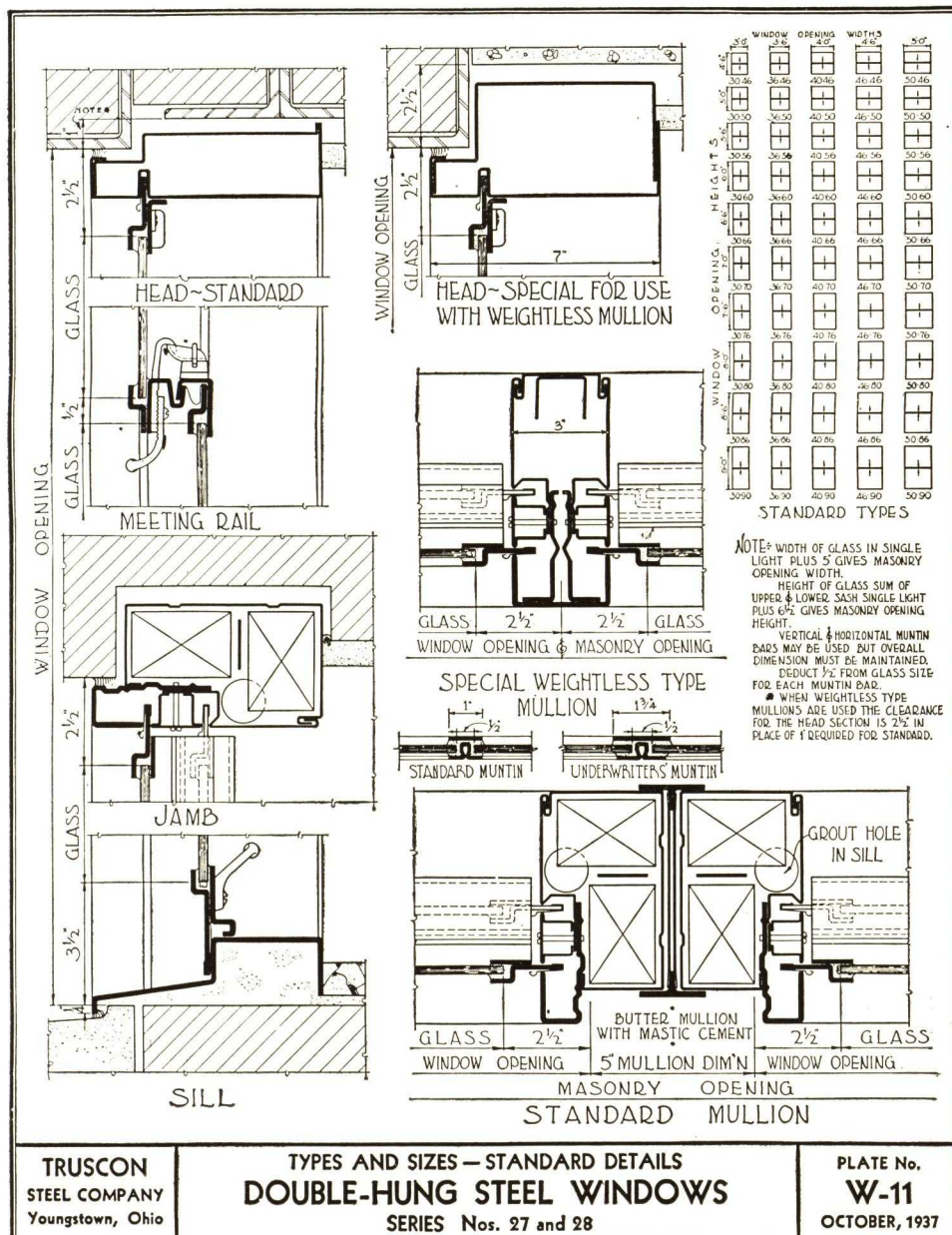
Most architects and contractors specify and award all contracts for double-hung windows erected and adjusted. This service means that Truscon takes full responsibility for the windows from the start of manufacture up to and including their incorporation in the finished structure.

UNDERWRITERS' WINDOWS

All Truscon Standard Double-Hung Steel Windows meet Underwriters' specifications except for limiting unit sizes and glass sizes, and for wide glazing strips which are not required for ordinary use.

Underwriters' prescribed limits are:

1. Units without Transoms are limited to 6 ft. 0 in. in width and 10 ft. 0 in. in height and to 60 sq. ft. in area.
2. Units with Transoms are limited to 6 ft. 0 in. in width and 12 ft. 0 in. in height, including Transom height, and to 60 sq. ft. in area. Transoms in such units limited to 3 ft. 0 in. in height.
3. Multiple unit openings consisting of single units conforming to limits shown in paragraphs 1 and 2 and Vertical Mullions are not limited in width.
4. Twin Windows (Weightless Mullion types) without Transoms are limited to 10 ft. 0 in. in width and 10 ft. 0 in. in height and to 100 sq. ft. in area.
5. Twin Windows (Weightless Mullion types) with Transoms are limited to 10 ft. 0 in. in width and 12 ft. 0 in. in height, including Transom Height, and to 100 sq. ft. in area. Transoms in such units are limited to 3 ft. 0 in. in height.
6. Glass sizes for Series 27 and 28 individual lights are limited to 48 in. in width and 54 in. in height and to 720 sq. in. exposed glass area.



Peerless DOUBLE-HUNG WINDOWS SERIES 33

Tubular Sash Sections

THE Peerless Double-Hung Steel Window, Series 33, combines a pleasing architectural design with maximum utility, durability, simplicity and economy. The tubular construction of the sash frame members and combination jamb and weight well, develops remarkable strength in the sections and at the same time imparts a proportion to them that makes the window thoroughly in harmony with requirements for monumental buildings.

The Series 33 window is galvanized and bronze weatherstripped and meets U. S. Government specifications for salt spray test and air infiltration as specified below.

SPECIFICATIONS

1 General

All windows so indicated on the plans and elevations and called for in these specifications shall be the Peerless Double-Hung Steel Windows, Series 33 (galvanized and weatherstripped) as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Scope of Work

The steel window manufacturer shall include in his work all Double-Hung Steel Windows, erected complete, and shall furnish and apply hardware and weights and make a final adjustment of these windows.

3 Material

All windows throughout shall be constructed of Truscon special hot-rolled, new billet steel, copper-bearing and galvanized.

Gauges of the various sections will be as shown in table:

Sill	14 gauge
Weight box	18 gauge
Cover plates and parting strip	18 gauge
Head	16 gauge
Head cover	24 gauge
Rails and stiles of sash.....	18 gauge
Inside glazing strips	13 gauge

4 Construction

(a) *Frame Members:* The head frame shall be made up of two parts—the frame proper and the cover. The jamb frame and the weight box shall be made of one piece and shall have attached to it the jamb stop which shall also serve as an access panel to the weights. All members formed straight and true with welded joints.

(b) *The Jamb Stop* shall be removable to afford an exceptionally large opening for access to weights.

(c) *Sash Members:* Sash members shall be not less than $1\frac{1}{8}$ in. deep, front to back, and shall be so designed that the distance from masonry opening to glass lines at head will be $2\frac{3}{8}$ in. and at jambs $2\frac{1}{8}$ in. Corners of sash shall be welded.

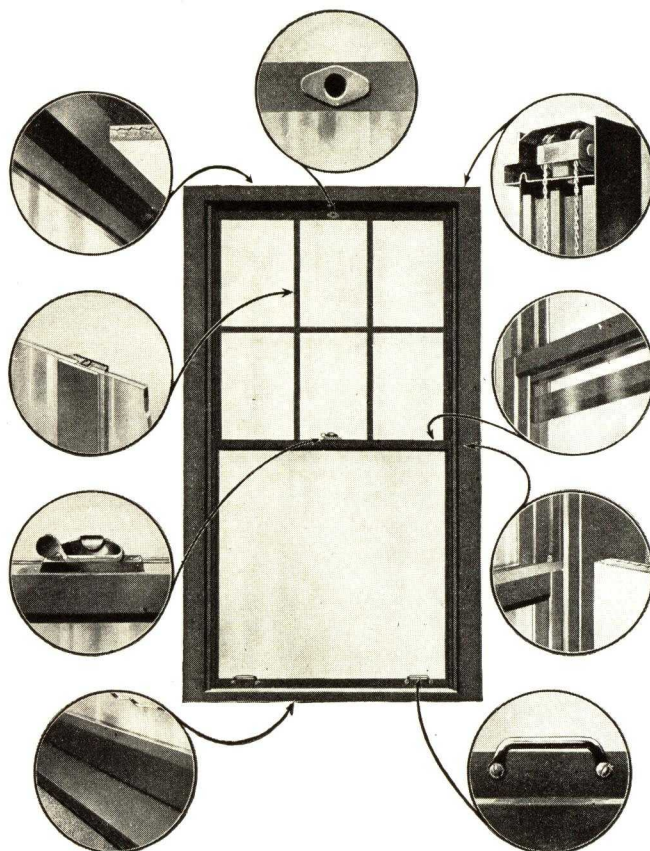
(d) *The Meeting Rail* between upper and lower sash shall be formed so as to interlock.

(e) Where *Muntin Bars* are required, they shall butt against sash members and be so welded that wherever possible a flush surface is secured at intersections. A smooth outside and inside surface shall be maintained on all muntin bars.

(f) Convenient *Inside Glazing* shall be assured by the use of removable inside glazing strips at sides only. These glazing strips shall be secured with oval-head screws.

5 Weather Stripping

Weather stripping shall be provided of spring bronze and applied to sash members at sill, jambs, meeting rail and head.



6 Hardware

(a) Frames shall be equipped with grey iron pulleys having hard white maple bearings saturated in paraffin under steam pressure and running on $\frac{1}{8}$ -in. round, cold-rolled axles mounted in pressed steel housings. Sash shall be hung on zinc coated steel sash chain, having a tensile strength of at least 600 pounds, exposed and properly balanced with cast iron weights.

(b) Sash shall be equipped with one pair of solid bronze lift handles, solid bronze sweep lock, cadmium plated steel sweep lock strike, and one cadmium plated steel pole socket.

(Cadmium plated malleable iron hardware can be substituted at slight reduction in price.)

7 Shop Painting

All windows shall be given one coat of protective paint after assembly and before shipment.

8 Air Infiltration

On double-hung windows shall be guaranteed less than 1.00 cubic foot per foot of sash perimeter per minute when subjected to a static air pressure equivalent to the pressure exerted by wind at a velocity of 25 miles per hour.

9 Galvanizing

Galvanized materials shall show no rust after 50 hours continuous exposure at a temperature of 90 to 95 degrees Fahr. to the spray of 20 per cent salt (sodium chloride) solution.

10 Erection

Window frame shall be set plumb and true in opening. After glazing, hang weights, attach hardware and adjust sash. The joint between window frame and masonry shall be carefully caulked by caulking contractor.

11 Glazing

(To be done by glazing contractor.) Glass shall be bedded in steel window putty and held in place with continuous glazing strips.

GENERAL INFORMATION—PEERLESS DOUBLE-HUNG WINDOWS SERIES 33

MUNTIN BARS

Muntin bars can be furnished in accord with individual specifications.

WINDOW UNITS WITH TRANSOMS

Transoms are incorporated in the main frame of the standard size Double-Hung Window. They are not a separate unit. All hardware is of standard design.

COUNTERBALANCED WINDOWS

Counterbalanced windows are of the same design as standard Windows, except that counterweights are omitted and the sash counterbalance each other.

SEGMENTAL OR CURVED HEAD UNITS

Segmental or Curved Head Units can be provided

in almost any radii or design. The inside of this window is finished square to facilitate the use of shades and draperies.

ERECTION AND ADJUSTMENT

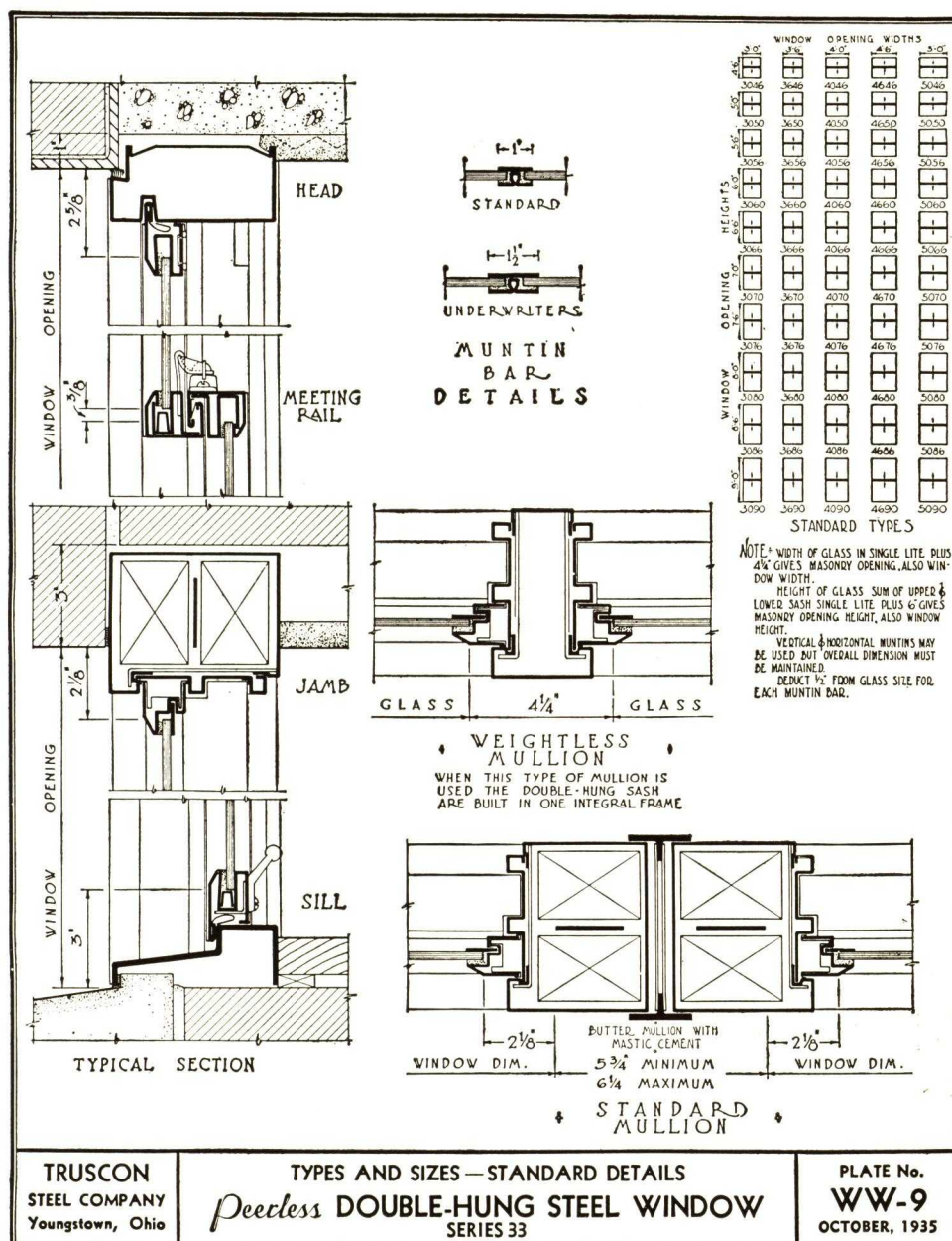
Most architects and contractors realize the value of Truscon Erection and specify and award all contracts for double-hung windows erected and adjusted. This service means that Truscon takes full responsibility for the windows from the start of manufacture up to and including their incorporation in the finished structure.

UNDERWRITERS' WINDOWS

All Truscon Standard Double-Hung Steel Windows meet Underwriters' specifications except for limiting unit sizes and glass sizes, and for wide glazing strips which are not required for ordinary use.

Underwriters' prescribed limits are:

1. Units without Transoms are limited to 6 ft. 0 in. in width and 10 ft. 0 in. in height and to 60 sq. ft. in area.
2. Units with Transoms are limited to 6 ft. 0 in. in width and 12 ft. 0 in. in height, including Transom height, and to 60 sq. ft. in area. Transoms are limited to 3 ft. 0 in. in height.
3. Multiple unit openings consisting of single units conforming to limits shown above are not limited in width.
4. Twin Windows (Weightless Mullion types) without Transoms are limited to 10 ft. 0 in. in width or height and to 100 sq. ft. in area.
5. Twin Windows (Weightless Mullion types) with Transoms are limited to 10 ft. 0 in. in width and 12 ft. 0 in. in height, including Transom Height, and to 100 sq. ft. in area. Transoms in such units are limited to 3 ft. 0 in. in height.
6. Glass sizes for Series 33 individual lights are limited to 48 in. in width and 54 in. in height and to 505 sq. in. exposed glass area.



DONOVAN AWNING TYPE WINDOWS

SERIES 38

DAYLIGHT illumination without sun glare, and natural ventilation without draughts are provided for schools, hospitals, offices, and public buildings by Donovan Awning Type Windows. They are made of high quality steel and are superior in design, construction, workmanship and operation. Their moderate cost makes them practical for any building.

SPECIFICATIONS

1 General

All windows so indicated on the plans and elevations and called for in these specifications shall be Series 38 Donovan Awning Type steel windows as manufactured by the TRUSCON STEEL COMPANY, of Youngstown, Ohio. No substitutions shall be made without the written approval of the architect.

2 Scope of Work

The steel window manufacturer shall include all Series 38 Donovan Awning Type steel windows, erected complete and shall furnish and apply all hardware and make final adjustment of these windows.

3 Material

(a) All members shall be constructed from Truscon specifications, hot rolled new billet steel designed particularly for the construction of this window. Weathering contact surfaces shall be rolled integral with the sections to provide overlapping, parallel surface contacts of not less than $\frac{1}{4}$ in. at both outside and inside points of closure. Movable sash shall make both outside and inside contacts against one-piece hot rolled section at head, jambs and sill.

(b) The combined weight of frame and ventilator sections at head and jamb shall be not less than 5.3 lbs. per linear foot and at sill not less than 4.15 lbs. All outside frame sections shall be not less than $1\frac{3}{8}$ in. in depth and ventilator rails not less than $1\frac{1}{2}$ in.

4 Construction

(a) The lower ventilator shall be the manual of operation controlling the opening and closing of the upper ventilators.

(b) The construction of the component parts shall be such that all ventilators shall open and close simultaneously, and be so arranged that the upper ventilator or ventilators may be left open while the bottom ventilator is closed; or the bottom ventilator open with the upper ventilators closed.

(c) The ventilators in each window shall be connected by a $\frac{5}{8}$ in. x $\frac{1}{8}$ in. high carbon steel bar concealed in jamb frames when window is closed. All ventilators shall project out at bottom.

(d) Corners of frame and ventilator shall be mitered and electrically butt welded or mortised and tenoned, air hammer riveted and electrically welded. All welds shall be ground smooth on exposed surfaces. Outside frame section shall be of an unequal channel shape with the long leg extending $\frac{3}{4}$ in. beyond window dimension to form a continuous anchor flange.

(e) Muntins as shown shall be a specially designed "T" bar section and shall be continuous between ventilator rails. At intersections there shall be a mechanical joint rigidly interlocking the muntins FLUSH with each other. Intersection of muntins with ventilator rails shall be mortised and tenoned and air hammer riveted.

(f) All ventilators shall be supported on high carbon steel swing arms of not less than 1 in. x $\frac{3}{8}$ in., concealed in frame when ventilators are closed. Top end of supporting arms for upper ventilators shall have pivot point located beyond the outside face of side rails to obtain efficient leverage to hold the ventilators closed tight with minimum tension on bottom ventilator.

Each ventilator shall be hung by bronze guide shoes sliding in jamb frame, joined to connecting bars by hard steel pins supported by bronze brackets at top corners of each ventilator. The guide shoes are to serve as friction pivots to hold ventilator firmly in any position.

Lower or sill ventilator to be equipped with a concealed clutch releasing mechanism of cadmium plated steel in top rail for the purpose of disengaging the pivot pins from connecting bars to allow lower ventilator to be closed while upper ventilators are left open, or upper ventilators closed and sill ventilator open. The engaging or sill ventilator pivot pins with connecting bars to be automatic.

5 Unattached Hardware

(a) The bottom ventilator shall be equipped with water rolled specification solid bronze cam locking handle fitted to the lower rail and a clutch at the center of the upper rail. Base of cam handle to be designed to dowel with strike to prevent side motion of ventilator. (Polished bronze furnished at slight extra if required.)

(b) Each vent in the window shall be equipped with water rolled solid bronze shade brackets and cord rollers. The shade brackets shall be attached at the lower corners of each sash and the cord rollers at the center of the upper rail.

(c) Shade guides shall be furnished as required (slight added cost).

6 Shop Painting

(Architect to specify either paragraph 6 or 7)

All windows shall be given a coat of protective rust-resisting gray paint, oven baked for at least 60 minutes at a temperature of not less than 300 degrees.

7 Bonderizing and Shop Painting

(Architect to specify either paragraph 6 or 7)

After fabrication, the windows shall be thoroughly spray washed in a hot alkali solution to remove all oil, grease and foreign matter, spray-rinsed in hot water to assure a clean, grease-free surface for chemical treatment. They shall then be dip-rinsed in hot water, processed by dip-Bonderizing, rinsed in cold water and dipped in a diluted solution of chromic acid.

Window shall be immediately air-dried to insure uniform temperature for painting. Paint shall be particularly adapted to application by dipping at a uniform, controlled temperature. Paint to be of a character especially adapted to materials coated with phosphates. Painting shall be a part of the continuous process.

Windows shall be oven-baked for at least 60 minutes at a temperature of not less than 300 degrees.

Painting and oven-baking must be done at the plant of the processor.

8 Erection

Window units shall be trued in all directions and set plumb in the masonry.

In setting windows, wooden wedges to hold unit in place must be located so as not to cause bulging or distortion.

After windows have been set in opening and properly built in, the joint between the window frame and masonry shall be carefully pointed up by the mason contractor.

9 Glazing

(To be done by glazing contractor)

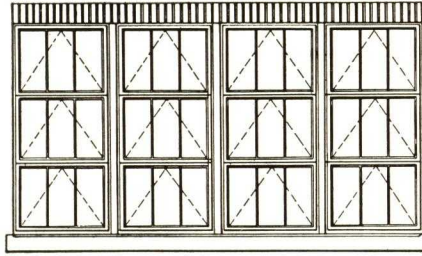
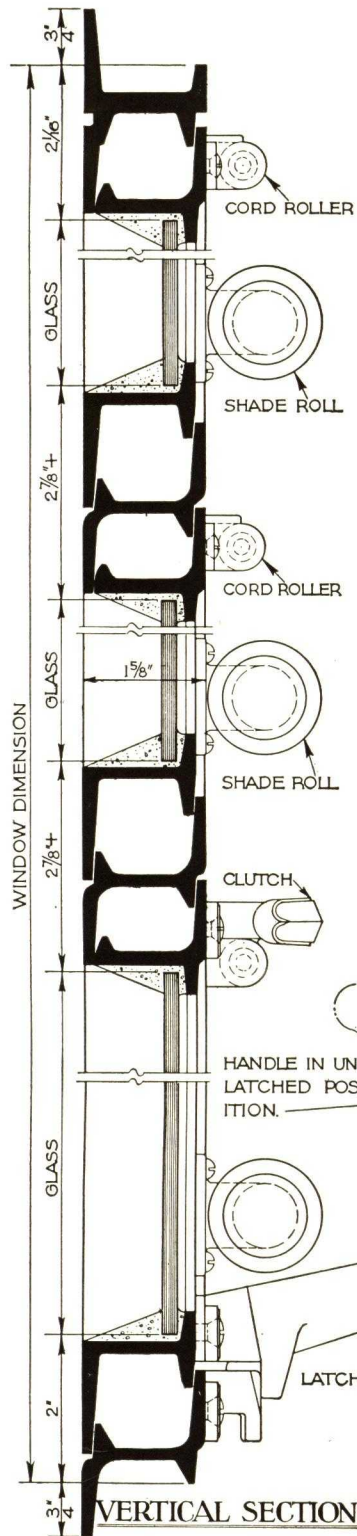
Architect to specify either one of the following methods of glazing:

Specifications for Spring Clip Glazing:

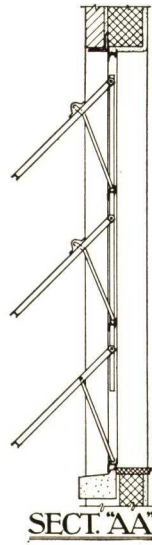
All windows shall be glazed on the OUTSIDE. Glass shall be bed and face puttied and held in place by Truscon copper clad wire glazing clips.

Specifications for Bead Glazing:

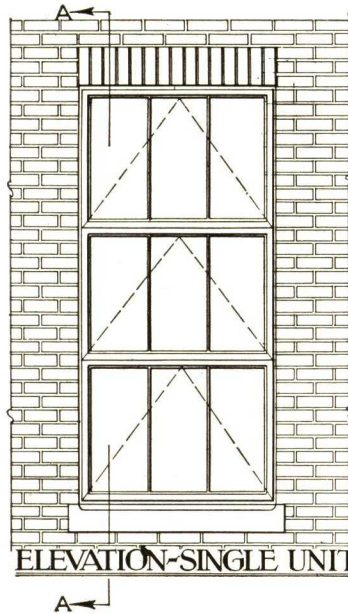
All windows shall be glazed on the INSIDE. Glass shall be bedded in steel window putty and held in place with continuous glazing beads attached to the window with brass screws.



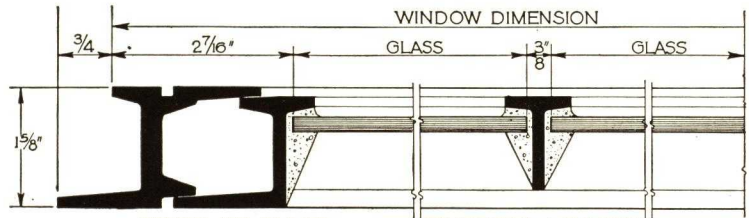
TYPICAL ELEVATION



SECT. "AA"

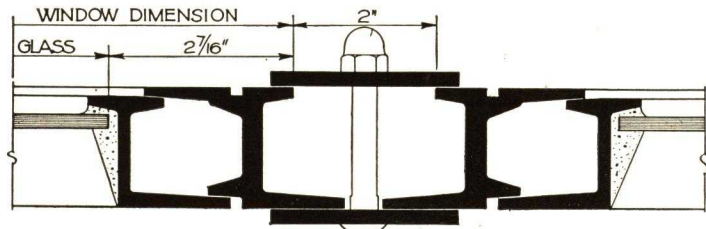


ELEVATION-SINGLE UNIT



SECT. AT JAMB

TYPICAL MUNTIN



SECTION THRU MULLION

TYPES & SIZES


WIDTHS	
WINDOW	GLASS
2'-6"	12 $\frac{3}{8}$ "
2'-9"	13 $\frac{7}{8}$ "
3'-0"	15 $\frac{3}{8}$ "

HEIGHTS		
WINDOW	GLASS	
5'-0"	26½"	
5'-6"	29½"	
6'-0"	32½"	
6'-6"	35½"	

	7'-5½"	26½"	
"C"	8'-2½"	29½"	
	8'-11½"	32½"	


"E" 7'-5½"
8'-2½"
8'-11½"

26½"
29½"
32½"



WIDTHS	
WINDOW	GLASS
3'-3"	11 1/8"
3'-6"	12 1/8"
3'-9"	13 1/8"
4'-0"	14 1/8"
4'-3"	15 1/8"
4'-6"	16 1/8"

HEIGHTS		
WINDOW	GLASS	
5'-0"	26 1/2"	
"B" 5'-6"	29 1/2"	
6'-0"	32 1/2"	
6'-6"	35 1/2"	

	7'-5½"	26½"	
"D"	8'-2½"	29½"	
	8'-11½"	32½"	

"F" 7'-5½"
8'-2½"
8'-11½"

26½"
29½"
32½"



TRUSCON
STEEL COMPANY
Youngstown, Ohio

TYPES AND SIZES—STANDARD DETAILS
DONOVAN AWNING TYPE STEEL WINDOWS
SERIES 38

PLATE No.
P-9
OCTOBER, 1937

DONOVAN AWNING TYPE WINDOWS

MECHANICALLY OPERATED

SERIES 38

WHEN specifying Series 38 Donovan Awning Type Steel Windows with mechanical operators add the following paragraphs immediately after paragraph 5 on hardware of specifications on page 14.

5a Mechanical Operators

Mechanical Operators shall be provided to operate all ventilators simultaneously in single or multiple window openings. The clutch releasing mechanism shall be omitted.

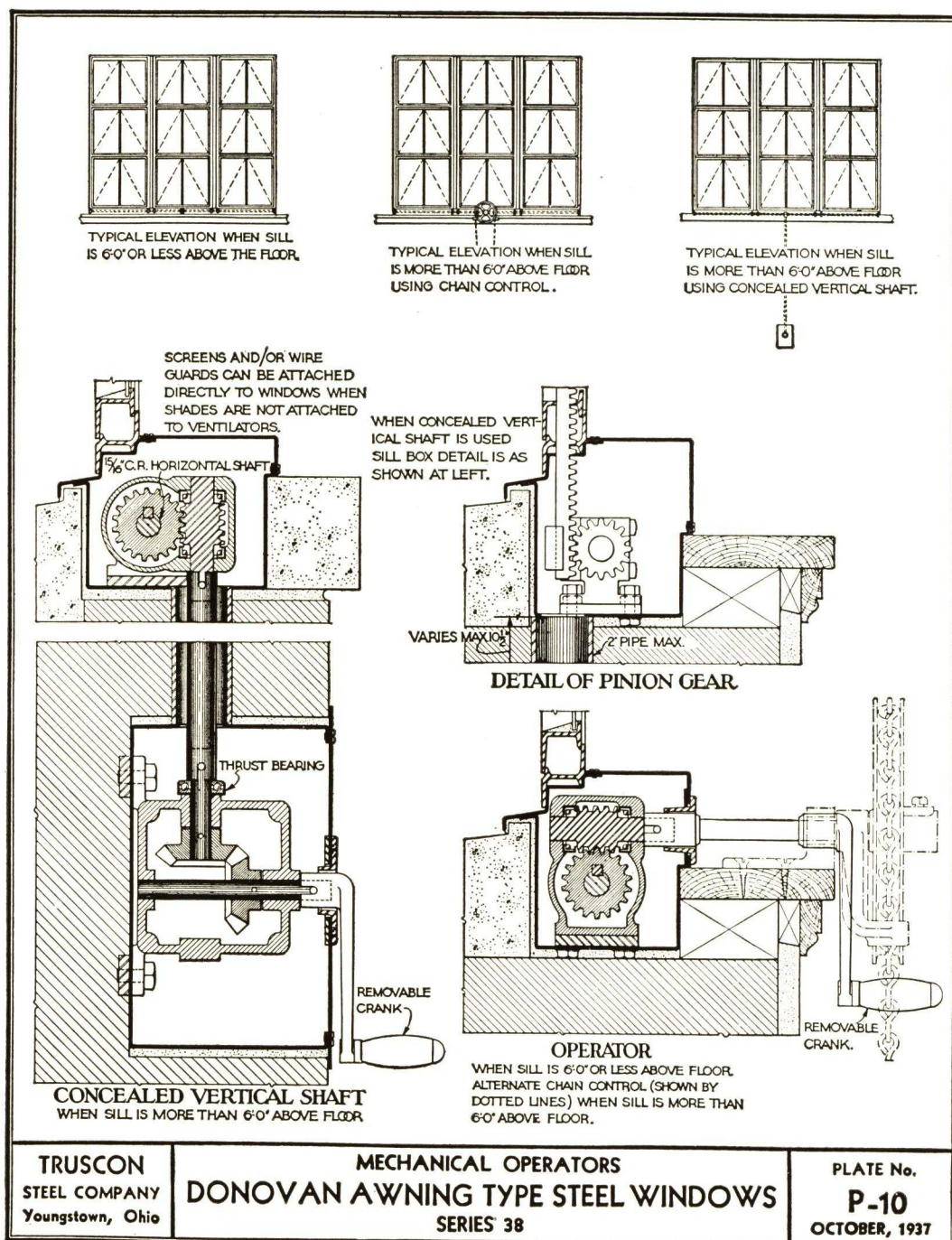
(a) Operating mechanism to consist of machined worm and gear grease packed power unit; $\frac{1}{8}$ in. cold rolled horizontal shaft, cut pinion gears meshing with a $\frac{5}{8}$ in. x $\frac{1}{16}$ in. cut rack attached to the concealed operating bars of the window.

(b) A specially constructed 12-gauge steel sill shall be furnished to completely enclose the mechanism with removable cover plates provided to afford easy access to all working parts.

*(c) All openings with sill 6 ft. 0 in. or less from floor shall be provided with a removable crank handle.

*(d) All openings with sill more than 6 ft. 0 in. from floor shall have (1) concealed vertical shaft and miter gear units concealed in chase in wall; (2) chain wheels, chain guard and endless chain extending to within easy reach of floor.

* All 2-in. pipe tubing furnished to protect the racks extending below the operator housing and metal chases furnished by the sash manufacturer for concealing the mechanism shall be installed in the masonry construction by the mason contractor with instructions furnished by the steel window manufacturer.



DONOVAN AWNING TYPE WINDOWS

SERIES 38-15

THE Series 38-15 Donovan Window is constructed of the same sections as the Series 38 Window. The principal difference is in the operation of the ventilators. In the Series 38-15 Window, the sill and transom operate in unison. The intermediate ventilator or ventilators operate independently of the sill and transom vents and of each other.

When specifying Series 38-15 Donovan Awning Type Steel Windows substitute the following paragraphs 4 and 5 for paragraphs 4 and 5 in specifications on page 14. Otherwise specifications on page 14 remain the same.

4 Construction

(a) The lower ventilator hinged to open IN at top shall be the manual of operation controlling the opening and closing of the upper ventilator, opening out at bottom. Construction

of the component parts shall be such that both top and bottom ventilators shall open and close simultaneously.

(b) Corners of frame and ventilator shall be mitered and electrically butt welded or mortised and tenoned air hammer riveted and electrically welded. All welds shall be ground smooth on exposed surfaces. Outside frame section shall be of an unequal channel shape with the long leg extending $\frac{3}{4}$ in. beyond window dimensions to form a continuous anchor flange.

(c) Muntins as shown shall be a specially designed "T" bar section and shall be continuous between ventilator rails. At intersections there shall be a mechanical joint rigidly interlocking the muntins FLUSH with each other. Intersection of muntins with ventilator rails shall be mortised and tenoned and air hammer riveted.

(d) The intermediate ventilators when used shall be projected type individually operated so as to project out.

(e) All ventilators shall be supported on high carbon steel

swing arms of not less than 1 in. x $\frac{1}{8}$ in. concealed in frame when ventilators are closed. Top end of supporting arms for upper ventilator shall have pivot point located beyond the outside face of side rails and the lower end of supporting arms for bottom ventilator shall have pivot point located beyond the inside face of side rails to obtain efficient leverage to hold the ventilators closed tight.

The top and bottom ventilators in each window shall be connected by a $\frac{5}{8}$ in. x $\frac{5}{8}$ in. high carbon steel bar concealed in jamb frame when window is closed.

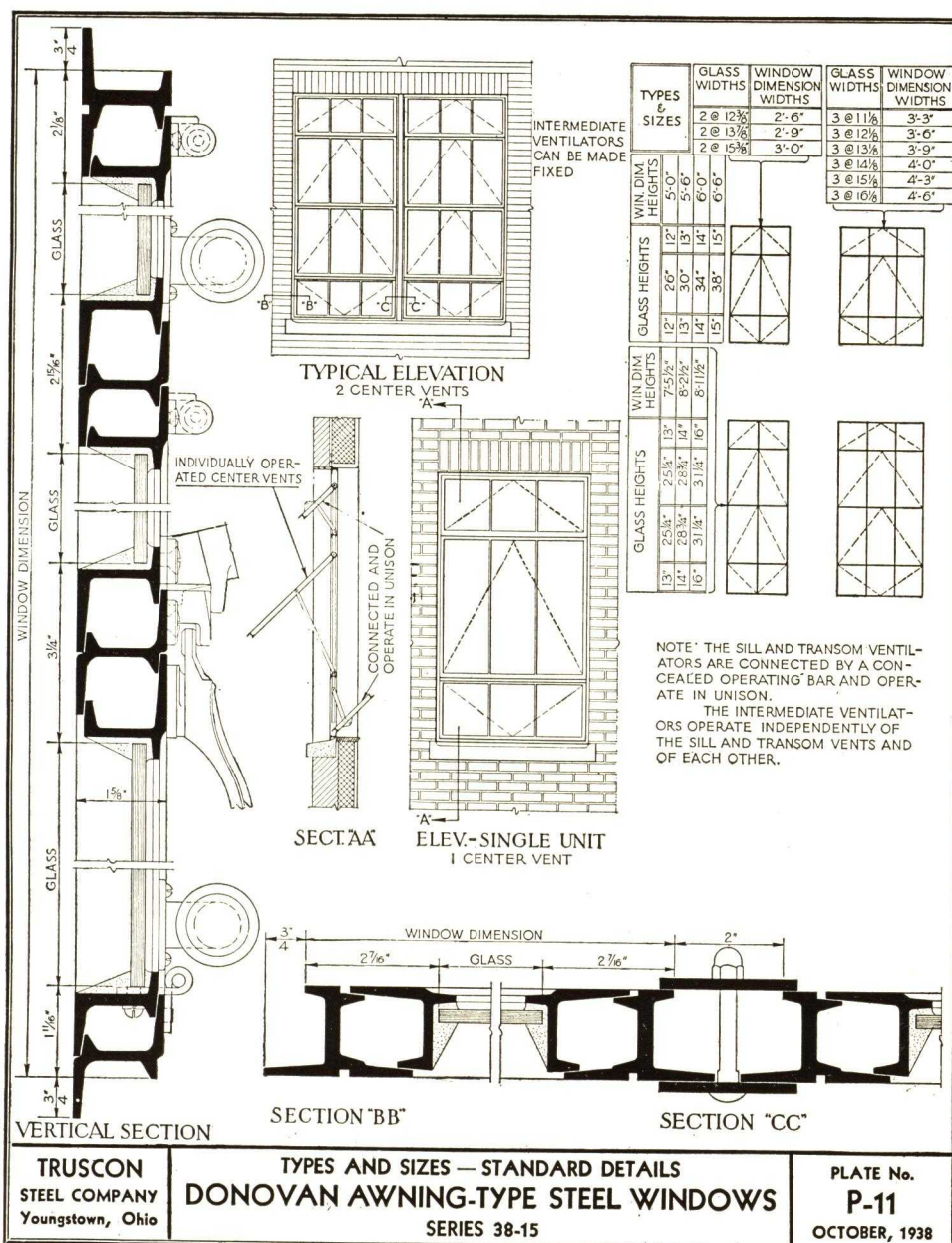
Upper and intermediate ventilators shall be hung by bronze guide shoes sliding in jamb frame. The guide shoes are to serve as friction pivots to hold the ventilator in any position.

5 Unattached Hardware

(a) The bottom ventilator and all independently operated ventilators shall be equipped with water rolled specification solid bronze cam locking handles fitted to the upper rail of the bottom sash and lower rail of the other ventilators (polished bronze furnished at slight extra cost if desired).

(b) Each ventilator shall be equipped with water rolled bronze shade brackets located at the lower corner of the vent with a cord roller located in center of upper rail.

(c) Shade guides shall be furnished as required (slight added cost).



TYPES & SIZES		GLASS WIDTHS		WINDOW DIMENSION WIDTHS	
		GLASS WIDTHS	WINDOW DIMENSION WIDTHS	GLASS WIDTHS	WINDOW DIMENSION WIDTHS
N IN DIM HEIGHTS	2'-0"	2 @ 12 1/2"	2'-6"	3 @ 11 1/2"	3'-3"
	5'-0"	2 @ 13 1/2"	2'-9"	3 @ 12 1/2"	3'-6"
	5'-6"	2 @ 15 1/2"	3'-0"	3 @ 13 1/2"	3'-9"
	6'-0"			3 @ 14 1/2"	4'-0"
	6'-6"			3 @ 15 1/2"	4'-3"
	6'-6"			3 @ 16 1/2"	4'-6"

GLASS HEIGHTS		WH
12"	26"	12"
13"	30"	13"
14"	34"	14"
15"	38"	15"

HEIGHTS	WIN DIM HEIGHTS
2 5/8"	13"
2 3/4"	14"
3 1/4"	16"
	7-5/8"
	8-2 1/2"
	8-1 1/2"

NOTE: THE SILL AND TRANSOM VENTILATORS ARE CONNECTED BY A CONCEALED OPERATING BAR AND OPERATE IN UNISON.

THE INTERMEDIATE VENTILATORS OPERATE INDEPENDENTLY OF THE SILL AND TRANSOM VENTS AND OF EACH OTHER.

RESIDENCE CASEMENTS

SERIES 5

[Frame Section 1" Deep]

TRUSCON Casements are modern windows of inherent beauty, architectural harmony, simplicity, fine quality and superior craftsmanship. They include the best time tested features in design, operation and serviceability. They are manufactured in numerous types and sizes to conform with any style of architecture. But regardless of the type, whether it be the Roto type with fixed screen and underscreen operator or the Simplex type with wicket screen and friction hinges, with or without vertical muntins, the basic construction elements are identical for each and every unit.

Tempryte Insulating windows for Roto type casements are available for use in rigorous climates or for air conditioning.

Casements in a large range of sizes, with or without sill ventilators, transoms, and mullions, permit a selection of the exact types to meet individual requirements.

SPECIFICATIONS

1 General—All windows so indicated on the plans and elevations and called for in these specifications shall be Residence Casements, Series 5, as manufactured by Truscon Steel Company, Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Scope of Work—This contractor shall include in his work the furnishing of all steel casements complete, the adjusting after erection but before glazing, and the attaching of hardware, all as called for on drawings and specified herein. This contractor shall also furnish the necessary mastic as called for in the manufacturer's standards.

3 Material—Truscon specification low carbon new billet, hot-rolled steel, shall be used in the manufacture of all members.

4 Construction—(a) All casements and standard combinations shall be manufactured in complete units at factory. The nominal glass size shall be 8x12 in.

(b) All frames, stiles and rail members of swing leaves shall be Zee bars. All corners shall be mitered and electrically butt welded. Exposed faces at welds shall be ground smooth.

(c) All muntins shall be Tee Bars with a $\frac{5}{8}$ in. face and a depth of $\frac{7}{8}$ in., and shall be continuous between rails and stiles. At intersections there shall be a mechanical joint rigidly interlocking the muntins flush with face on the inside.

(d) Joints of muntins with frames, stiles and rails shall be tenoned, mortised and air hammer riveted. Horizontal muntins shall be punched for glazing clips.

(e) Windows shall be hinged to swing right or left as indicated.

(f) Continuous double contact weathering between swing leaves and frame shall be provided.

(g) All side hung swing leaves shall open outward and be equipped with heavy extension (cleaning) hinges securely electrically welded to frames and swing leaves.

(h) Transom ventilators shall be hinged at the top to open out and shall be equipped with close-up hinges.

(i) Sill ventilators shall be bottom hinged to open in and shall be equipped with steel butt hinges and two friction adjusters. All sill ventilators shall be prepared to receive standard fixed type screens applied to the outside. No special screen hardware necessary.

(j) Where combinations of standard units are required for any single opening, vertical and horizontal mullions shall be used to join them.

(k) A continuous drip shall be provided on transom bars of all standard swing leaf combinations, or at the head when the ventilator extends full height of the opening.

(l) All units shall be drilled to receive standard shade bracket hardware.

5 Unattached Hardware—(a) All unattached hardware shall be packed and shipped separately to prevent damage and shall be applied after erection.

Hardware shall be Roto type or Simplex type. (Architect to specify which type is required.)

ROTO TYPE

(b) Roto type hardware shall control the ventilator independently of the screen. The underscreen operator shall securely hold the ventilator in open positions.

(c) For side hinged ventilators standard bronze finish concealed latch locking handle and worm drive underscreen operator shall be furnished. (Locking handle keeper and bronze channel guide for operator shall be attached in shop.)

(d) Concealed latch locking handles shall have both cam action and kick out action.

(e) Worm drive underscreen operators and locking handles shall have bronze lacquer finish. Operator arm is steel, cadmium plated.

(f) For transom ventilators standard bronze finish underscreen push arm shall be furnished.

(g) For sill ventilators standard concealed latch locking handle, conforming in design with side hinged ventilator locking handle shall be furnished.

SIMPLEX TYPE

(h) For side hinged ventilators, bronze lacquer finish cam action locking handle shall be furnished. (Beveled brass strike plate shall be attached in shop.)

(i) For transom ventilators, bronze lacquer finish push bar, notched to hold ventilator open in several positions, shall be furnished.

(j) For sill ventilators bronze lacquer finish cam action locking handle and keeper shall be furnished. The handle shall conform in design with the side hinged ventilator locking handle.

6 Bonderizing and Shop Painting—(a) After fabrication, the casements shall be thoroughly spray washed in a hot alkali solution to remove all oil, grease and foreign matter, spray-rinsed in hot water to assure a clean, grease-free surface for chemical treatment. They shall then be dip-rinsed in hot water, processed by dip bonderizing, rinsed in cold water and dipped in a dilute solution of chromic acid.

(b) Casements shall be immediately air dried to insure uniform temperature for painting. Paint shall be particularly adapted to application by dipping at a uniform, controlled temperature. Paint is to be of a character especially adapted to materials coated with phosphates. Painting shall be a part of the continuous process.

(c) Casements shall be oven-baked for at least 60 minutes, at a temperature of not less than 300 degrees. Painting and oven-baking must be done at the plant of the processor.

7 Erection—(a) Each casement unit shall be set plumb and true, aligned after installation and adjusted before glazing.

(b) Mastic in sufficient quantity shall be used in setting and bedding frames where they come in contact with mullions or wall construction.

(When so desired, the Erection Division of TRUSCON STEEL COMPANY will contract for the erection and adjusting of all casements in prepared openings.)

8 Glazing—(To be done by glazing contractor.) All casements shall be glazed on the outside. Glass shall be held in place by Truscon copper clad, spring steel wire glazing clips. All glass shall be bed and face puttied with special steel casement putty.

Notes: Glazing clips and mastic are furnished and shipped with casements without additional charge.

Cam locking handles and worm and gear operators can be furnished in solid bronze, Old English, Butler Nickel or Chromium finish at an additional cost, Architect to specify finish.

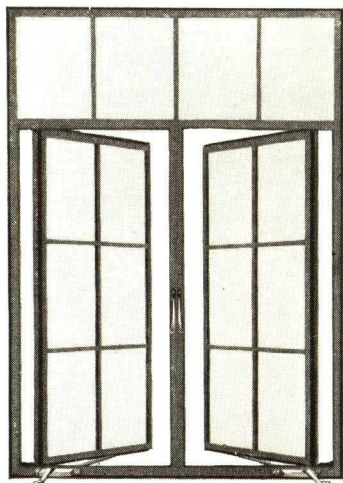
UNDERWRITERS' LABEL

Underwriters' label of approval may be specified for all standard sizes shown outside putty glazed, provided glass lights do not exceed 125 sq. in. exposed glass area.

RESIDENCE CASEMENTS SERIES 5

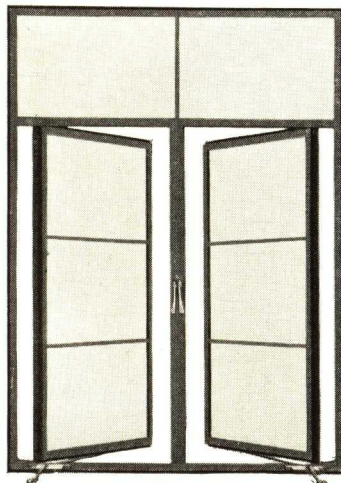
ROTO TYPE

Underscreen Operator and Fixed Screen



SERIES 5-A

Standard muntin arrangement and designed for worm drive operator control and concealed locking handle. Provisions are made for use of fixed type screens. A stool gauge is shipped attached to sill member to insure proper location of stool.

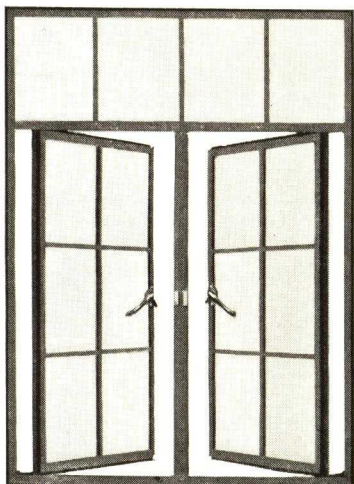


SERIES 5-B

Alternate vertical muntin bars omitted. This style of casement has been developed for use in building designs where the accentuation of horizontal lines is desired. All other construction features are identical with Series 5-A casements.

SIMPLEX TYPE

Friction Hinges and Wicket Screen



SERIES 5-C

Simplex type windows are provided with a cam acting locking handle and friction type hinges to hold window in any desired position. Provisions will be made on these windows for side hinged or wicket screens when so specified. Primarily intended for use where screening is not a prime factor.



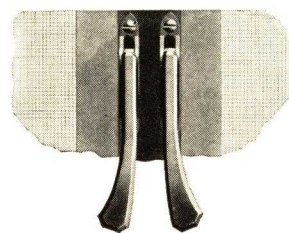
SERIES 5-D

Alternate vertical muntin bars omitted. Developed for use in building designs where the accentuation of horizontal lines is desired. Provisions will be made on these windows for side hinged or wicket screens when so specified. Primarily intended for use where screening is not a prime factor.

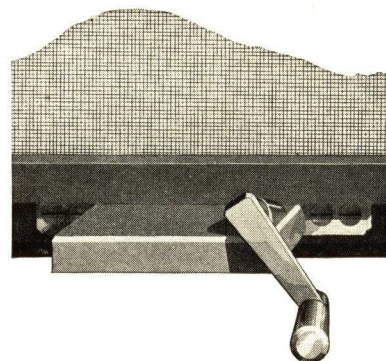
Note: Casement types indicated on pages 20 and 21 can be furnished in either 5-A, 5-B, 5-C or 5-D Series.

HARDWARE FOR TRUSCON RESIDENCE CASEMENTS

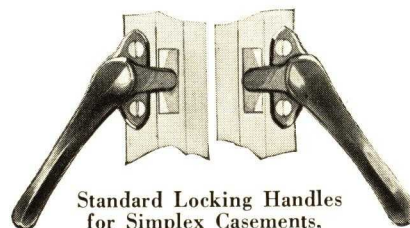
Series 5



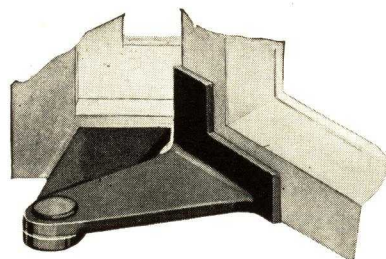
Locking Handles
for Roto Type Casements, Series 5-A and 5-B



Worm Drive Operator
for Roto Type Casements, Series 5-A and 5-B



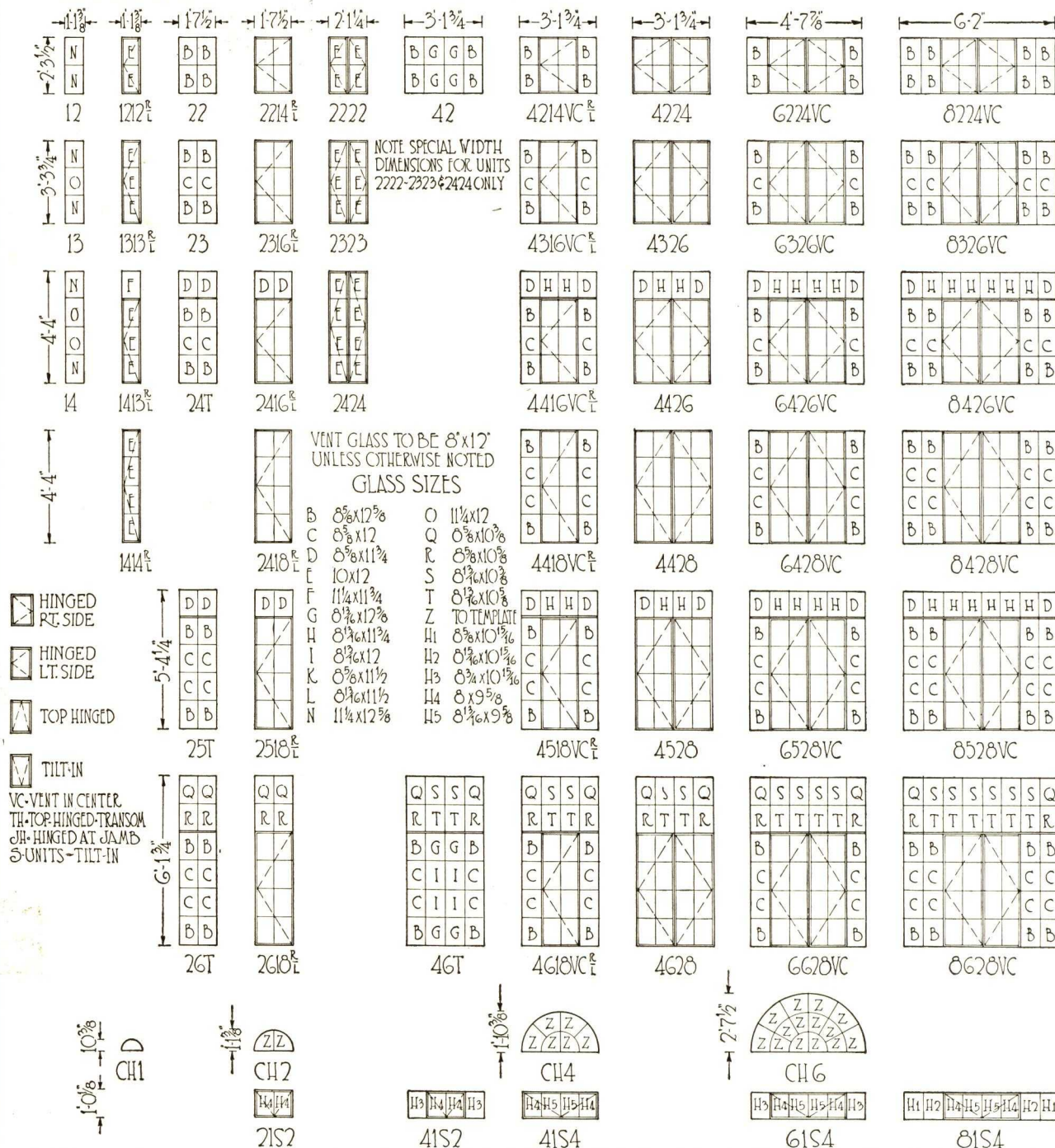
Standard Locking Handles
for Simplex Casements,
Series 5-C and 5-D



Extension Hinge
for Series 5 Casements

STANDARD UNITS

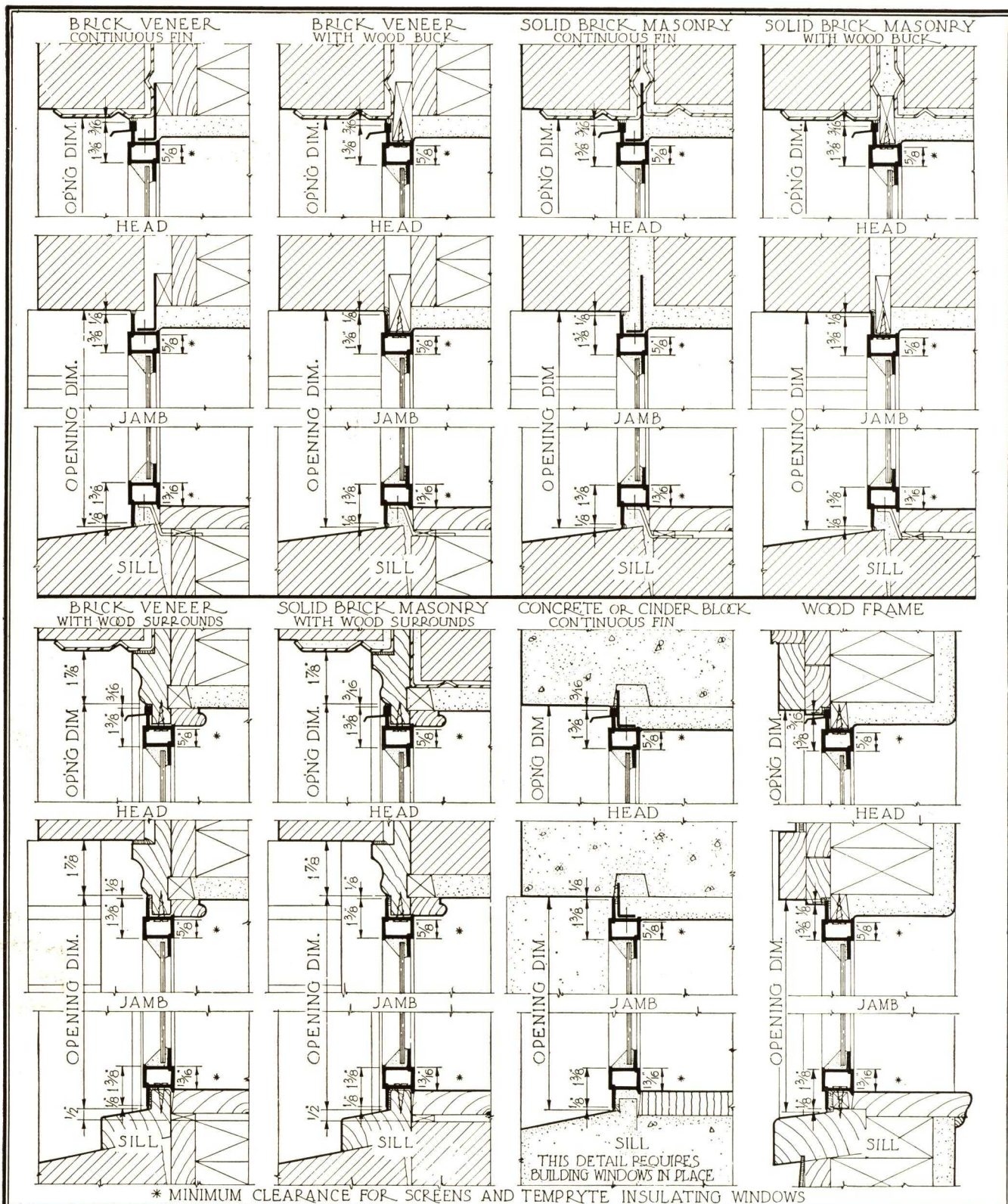
DIMENSIONS SHOWN ARE OPENING SIZES- FOR WINDOW DIMENSIONS DEDUCT $\frac{1}{4}$ " HANDING OF CASEMENTS. IS DETERMINED BY LOCATION OF HINGE VIEWED FROM OUTSIDE- ALWAYS SPECIFY WHETHER VENTS ARE RIGHT OR LEFT HAND-



TRUSCON
STEEL COMPANY
Youngstown, Ohio

TYPES AND SIZES
RESIDENCE CASEMENTS
SERIES 5

PLATE No.
CR-21
OCTOBER, 1938



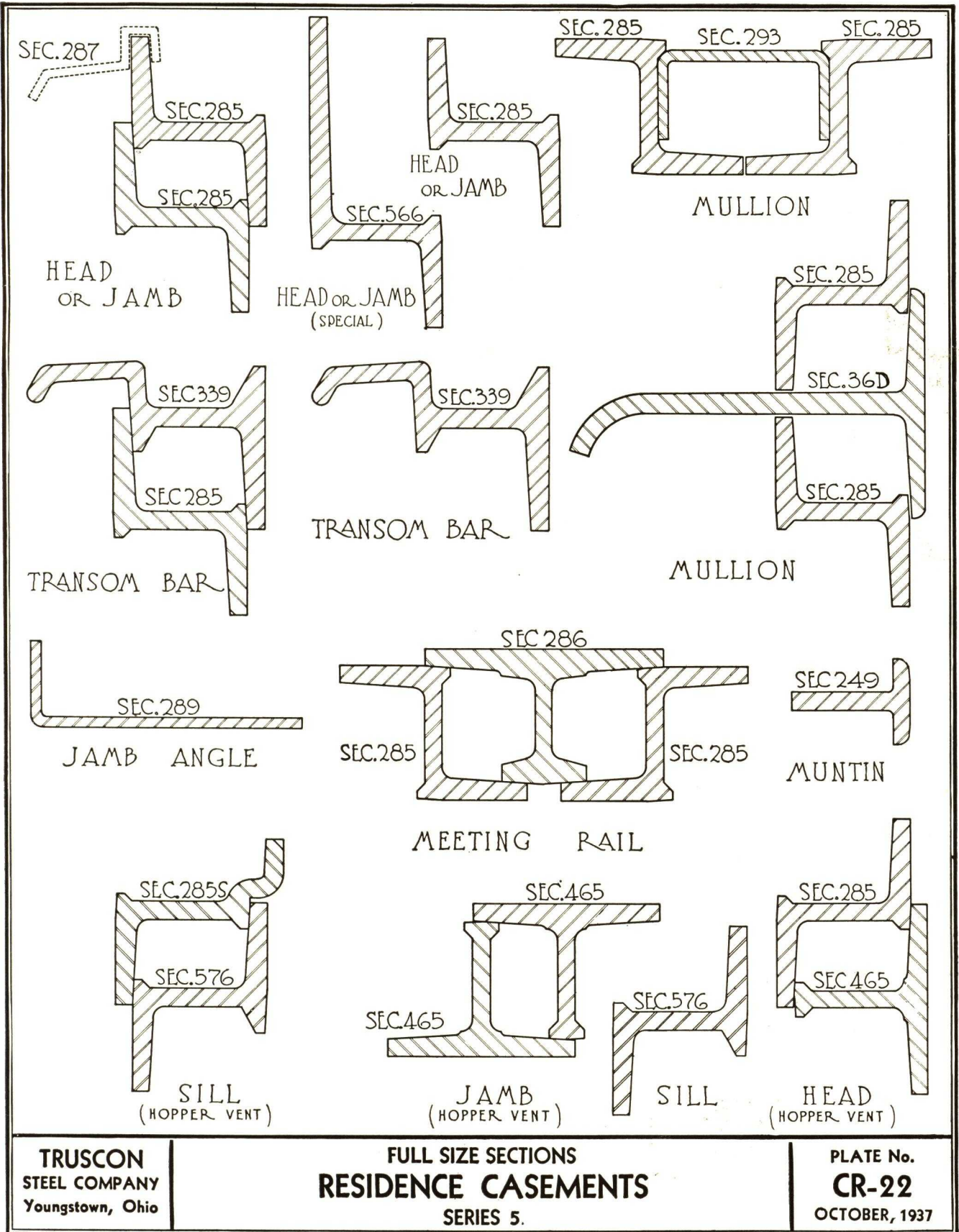
TRUSCON
STEEL COMPANY
Youngstown, Ohio

DETAILS OF CONSTRUCTION

RESIDENCE CASEMENTS

SERIES 5

PLATE No.
CR-23A
OCTOBER, 1938



ARCHITECTURAL CASEMENTS SERIES 15

[Frame Section
1 $\frac{7}{16}$ " Deep]

THE Architectural Casement, Series 15, has been designed to fill the need of a heavier type of casement for better class residential, apartment, public and semi-public buildings. Although standard types are available to fill average requirements, these casements can be built to conform with any architectural design.

SPECIFICATIONS

1 General—All windows so indicated on the plans and elevations and called for in these specifications shall be Architectural Casements, Series 15, as manufactured by Truscon Steel Company of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Material—Truscon specification, low carbon, new billet, hot-rolled, steel shall be used in the manufacture of all members.

3 Construction—(a) *All units* shall be square and true with outside frame sections not less than 1 $\frac{7}{16}$ in. deep. The combined weight of frame and ventilator sections exclusive of glazing beads or sub-frames shall be not less than 3.51 pounds per linear foot. The outside framing section shall be a channel leg section continuous from sill to head and jamb and shaped for double flat contact weathering of not less than $\frac{3}{8}$ in. between frames and swing leaves. Each corner of swing leaves and frames shall be mitered, electrically welded and ground smooth.

(b) *Muntins* shall be specially designed Tee Bar sections and shall be continuous between rails and stiles. At intersections there shall be a mechanical joint rigidly interlocking the muntins flush with each other. Joints of muntins and frames, stiles and rails shall be tenoned, mortised and air-hammer riveted (see note).

(c) *All stiles, rails, frames and muntins* shall be prepared for outside putty glazing with spring clips. (See note.)

(d) *All side hinged ventilators* shall open out unless otherwise specified and shall be equipped with Truscon design heavy extension steel hinges having bronze bushing and bronze bearing washers and acorn head steel hinge bolt with acorn nut.

Top hinged ventilators shall be hung on steel butt hinges with bronze pins.

(e) *A continuous drip* shall be provided on transom bars of all standard swing leaf combinations, or at the head where ventilators extend full height of the opening.

4 Hardware—(a) *All hardware* shall be bronze, medium statuary finish. Hardware shall be Roto type or Simplex type. Architect to specify which type is required.

ROTO TYPE

(b) *Operator type hardware* shall control the ventilator independently of the screen. The underscreen operator shall hold the ventilator securely in open position.

(c) *For hinged ventilators* solid bronze concealed latch locking handle and worm drive underscreen operator shall be furnished. (Locking handle keeper and channel guide for operator shall be attached in the shop.)

(d) *Concealed latch locking handles* shall have both cam action and kick out action.

For ventilators over 5 ft. 0 in. in height a double concealed latch locking device shall be furnished.

(e) *Worm drive underscreen operators* shall have $\frac{3}{4}$ in. diameter worm and operator arm with machine cut teeth. Case and crank shall be solid bronze, the arm shall be cadmium plated steel.

(f) *For top hinged ventilators* a heavy solid bronze underscreen push arm shall be furnished.

SIMPLEX TYPE

(g) *For side hinged swing leaves* up to and including five feet in height, a bronze cam acting locking handle and bronze strike shall be furnished. For side hinged swing leaves over five feet in height or when center line of swing leaf is 6 ft. 3 in. or more from the floor, bronze double locking device and bronze strikes shall be furnished.

(h) *For top hinged transoms* a bronze push arm shall be furnished.

(i) *For double vented units* with clear opening (no meeting rail) bronze cremone bolt hardware shall be furnished.

5 Shop Painting—(a) *All windows* shall be given a coat of protective rust-resisting gray paint, oven baked for at least 60 minutes at a temperature of not less than 300 degrees.

(b) *Windows* shall be BONDERIZED before painting. (Optional at slight extra cost.)

6 Erection—(a) *Each unit* shall be set plumb and true in the opening, securely wedged and held in alignment during construction. After windows have been placed in opening and before they have been glazed, the ventilator shall be carefully adjusted.

(b) *Mastic* in sufficient quantity shall be used in setting and bedding frames where they come in contact with mullions or wall construction.

7 Glazing—(To be done by glazing contractor.) All casements shall be glazed on the outside with glazing clips (See note).

Notes Muntin bars may be omitted if desired.

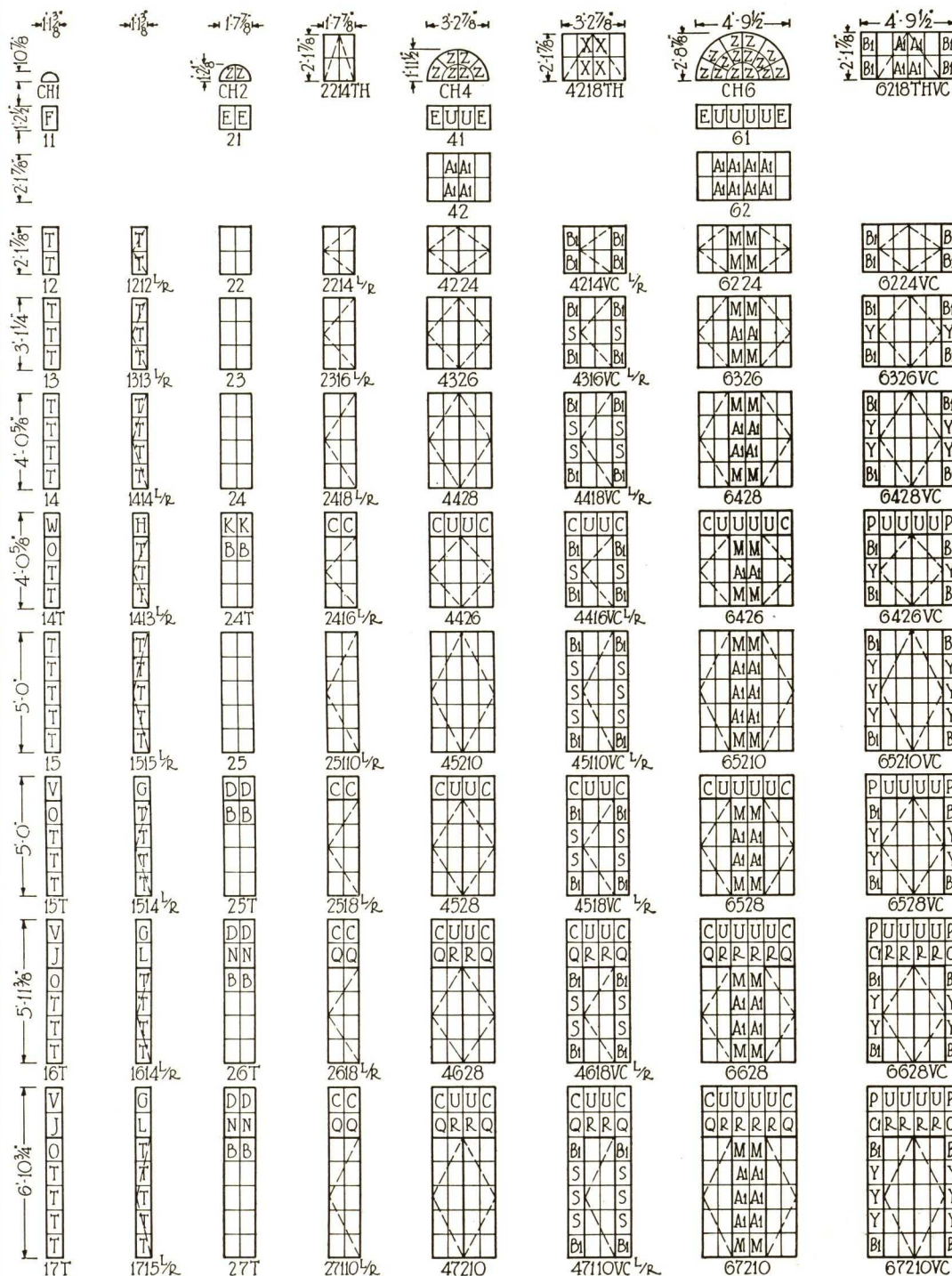
Windows may be inside bead glazed if specified.

Architectural Casements, Series 15, can be furnished to "open in."

UNDERWRITERS' LABEL

Underwriters' Label of approval may be specified for sizes not exceeding 6 ft. 6 in. in width and 6 ft. 6 in. height. Mullions not permitted. Side hinged, (outswing only) ventilators limited to 2 ft. 6 in. wide and 6 ft. 0 in. high and other ventilators 5 ft. 0 in. wide and 2 ft. 6 in. high. Outside putty glazed individual lights are limited to 125 sq. in. exposed area, if standard muntin bar is used, or 350 sq. in. exposed area, if extra heavy muntin bar is used, and 155 sq. in., exposed area, if inside bead glazing is used.

STANDARD TYPES



GLASS SIZES

A	8' x 11'
B	8' x 11 7/8
C	8 7/8' x 10 3/4
D	8' x 10'
E	8' x 10 3/4
F	9 7/8' x 10 3/4
G	11 3/8' x 10 7/8
H	11 3/8' x 10 3/4
J	9 7/8' x 11 1/4
K	8' x 9 7/8
L	11 3/8' x 11 1/4
M	9 7/8' x 11 7/8
N	8' x 11 1/4
O	9 7/8' x 11 7/8
P	8 3/4' x 10 3/4
Q	8 7/8' x 11 1/4
R	9 7/8' x 11 1/4
S	8 7/8' x 11
T	9 7/8' x 11
U	9 7/8' x 10 3/4
V	9 7/8' x 10'
W	9 7/8' x 9 7/8
X	8 3/4' x 10 3/4
Y	8 3/4' x 11
Z	TO TEMPLATE
A1	9 7/8' x 11'
B1	8 7/8' x 11 7/8
C1	8 3/4' x 11 1/4

NOTES

Dimensions shown are opening sizes and allow clearance for installing. See details.

Viewed from outside, handing of casements is determined by location of hinges. "R/L" indicates casement may be either right or left hand. "VC" indicates vent in center.

Placing of hinges indicated by dotted lines. Hinges occur where dotted lines converge.

Muntin bars may be omitted if desired.

All casements to be set in mastic cement.

Standard mullion dimension is 3/4". Where mullions are used, to obtain opening dimensions, add together opening dimensions of the specific windows to be combined.

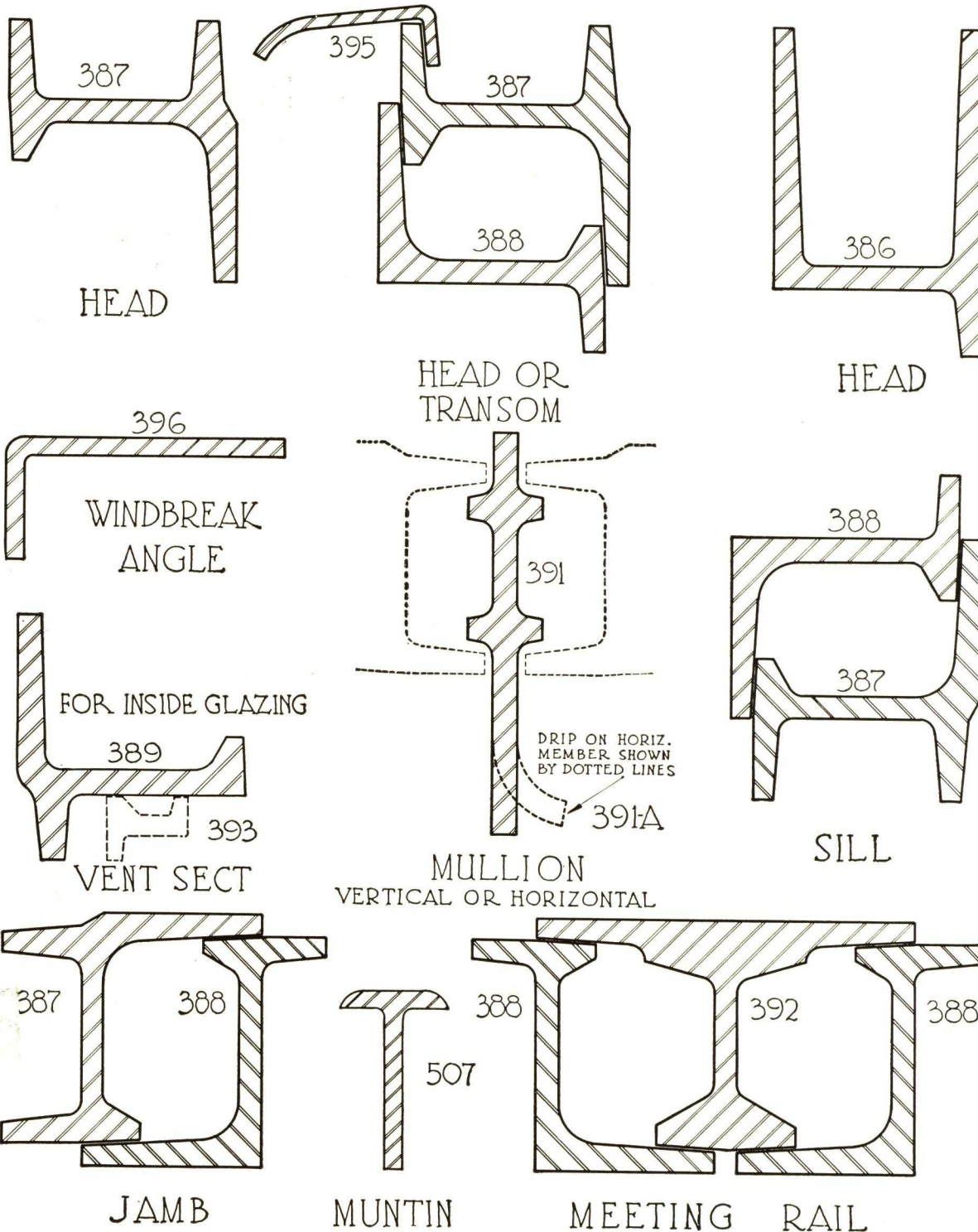
Unless otherwise noted glass size to be 8' x 11'.

For casement door, sidelights and transoms, types and sizes see plate CA-10.

TRUSCON
STEEL COMPANY
Youngstown, Ohio

TYPES AND SIZES
ARCHITECTURAL STEEL CASEMENTS
SERIES 15

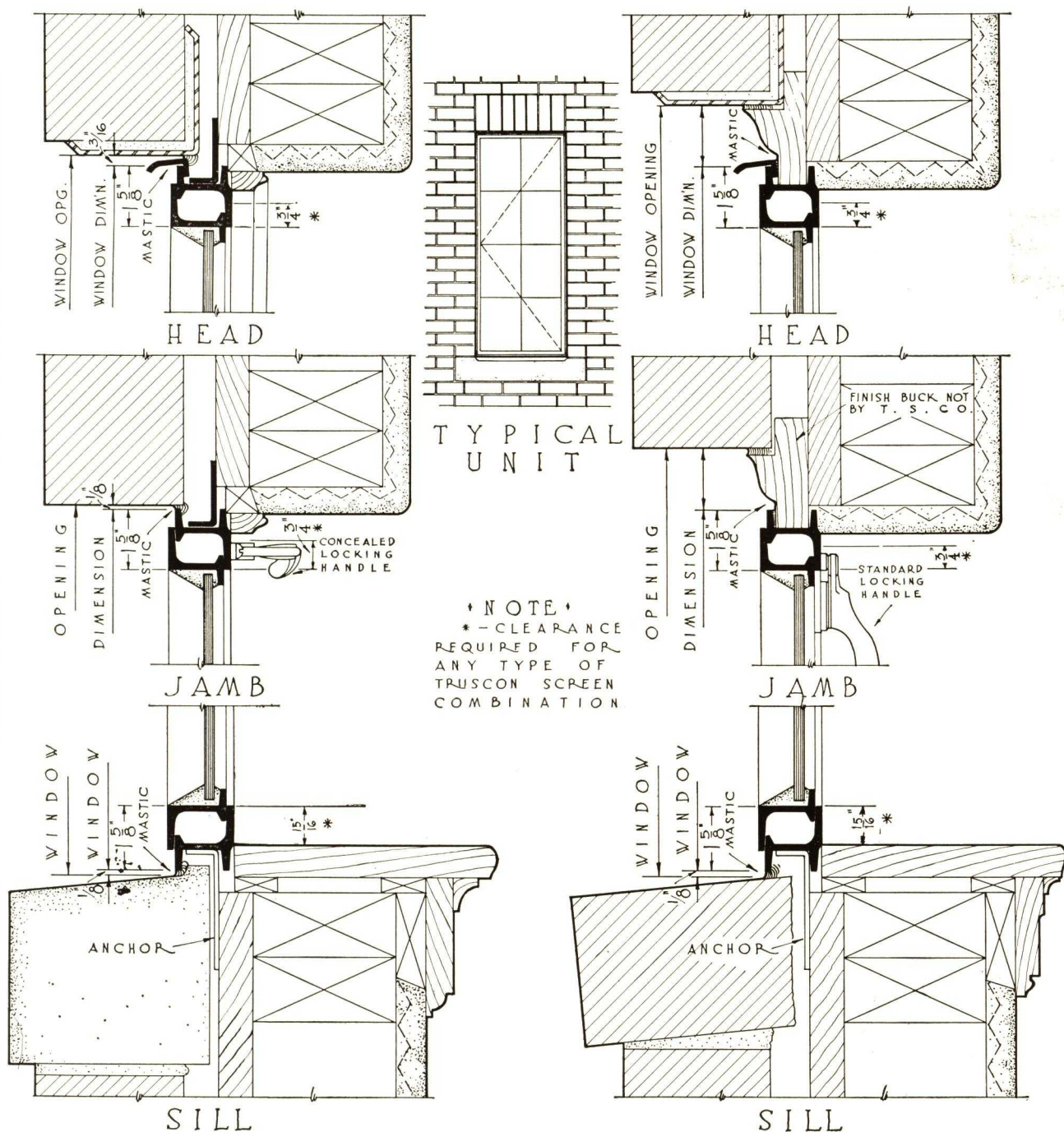
PLATE No.
CA-1
OCTOBER, 1938



SECTION-NUMBERS-INDICATED-ABOVE

<p>TRUSCON STEEL COMPANY Youngstown, Ohio</p>	<p>FULL SIZE SECTIONS ARCHITECTURAL STEEL CASEMENTS SERIES 15</p>	<p>PLATE No. CA-4 OCTOBER, 1937</p>
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BRICK VENEER DETAILS

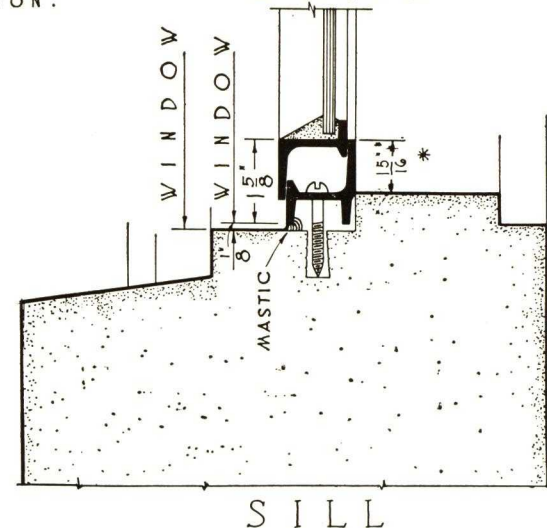
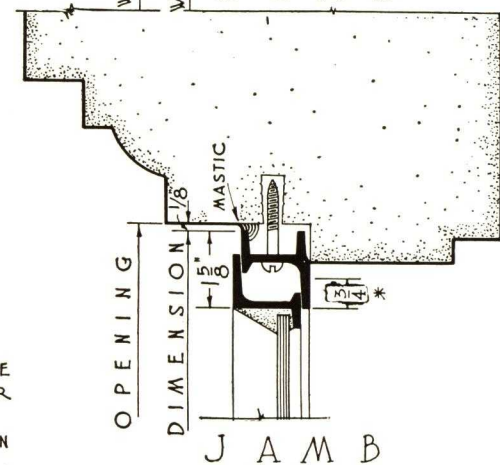
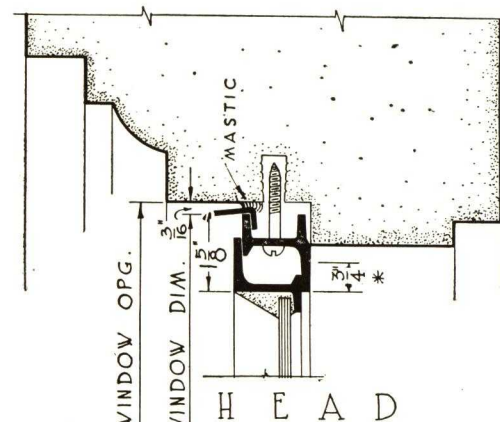
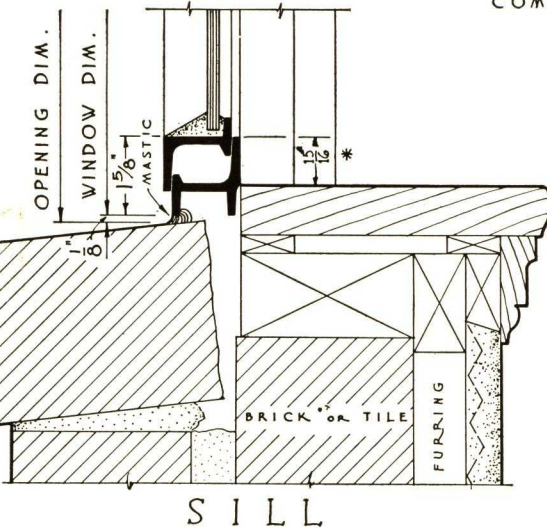
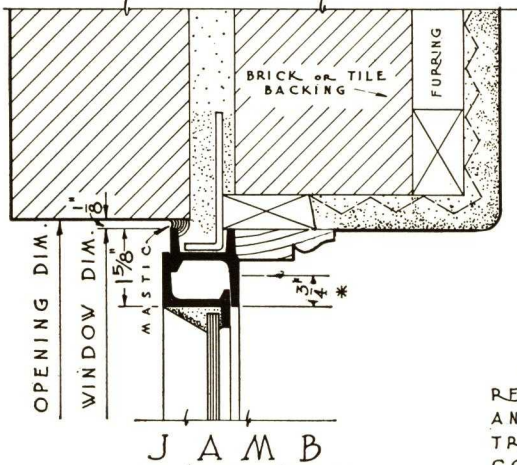
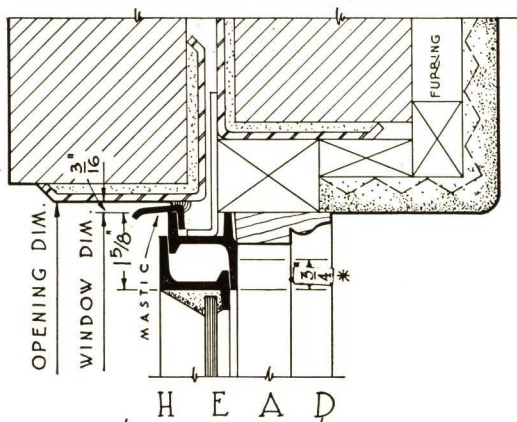


TRUSCON
STEEL COMPANY
Youngstown, Ohio

BRICK VENEER INSTALLATION DETAILS
ARCHITECTURAL STEEL CASEMENTS
SERIES 15

PLATE No.
CA-8
AUGUST, 1936

SOLID MASONRY DETAILS

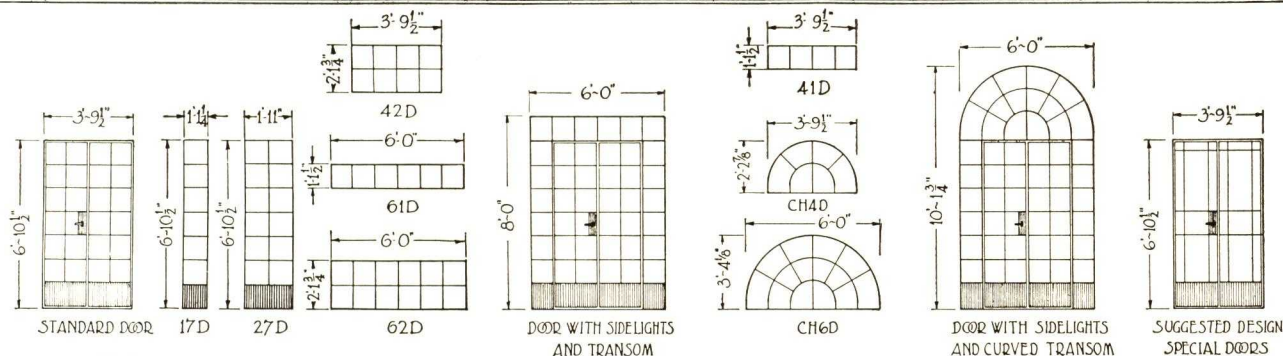


NOTE
* - CLEARANCE
REQUIRED FOR
ANY TYPE OF
TRUSCON SCREEN
COMBINATION.

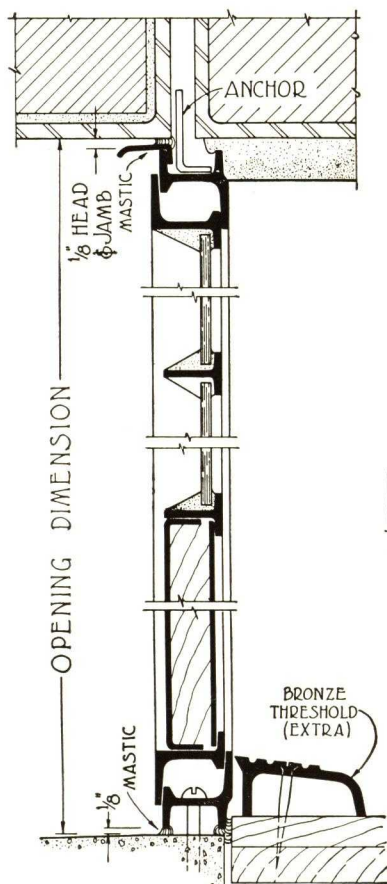
TRUSCON
STEEL COMPANY
Youngstown, Ohio

DETAILS OF CONSTRUCTION
ARCHITECTURAL STEEL CASEMENTS
SERIES 15

PLATE No.
CA-7
OCTOBER, 1938



TYPICAL DESIGN AND ARRANGEMENT OF DOORS SIDELIGHTS AND TRANSOMS



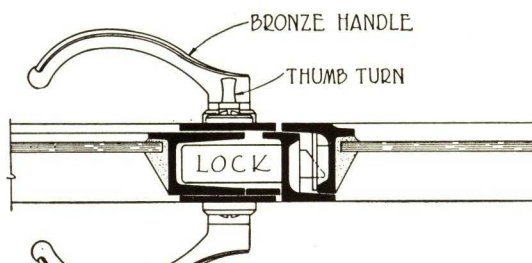
SWING OUT DOOR
(STANDARD)



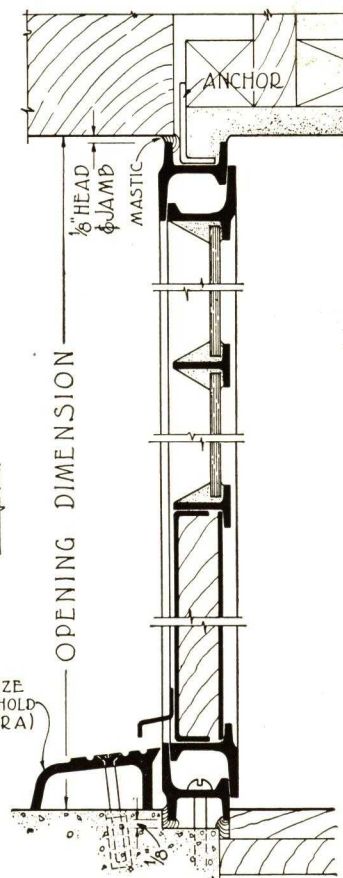
ALTERNATE SILL DESIGN
THRESHOLD AS PART OF FRAME

† STANDARD DOORS †

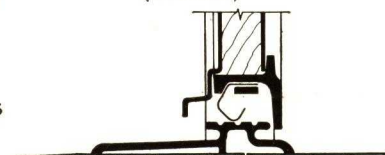
STANDARD DOORS SWING OUT ONLY ~ MUNTINS, EXCEPTING THE TWO HORIZONTAL MUNTINS FRAMING THE LOCK CASE, MAY BE OMITTED.
STANDARD DOORS ARE PROVIDED WITH THREE STEEL BUTT HINGES PER LEAF, MORTISE LOCK, HANDLES AND THUMB TURN ON ACTIVE LEAF, CONCEALED TOP AND BOTTOM BOLT ON INACTIVE LEAF.
CYLINDERS FOR MORTISE LOCK, BRONZE BUTT HINGES, BRONZE FRICTION ADJUSTERS, BRONZE THRESHOLD, DUMMY LOCK CASE AND HANDLES FOR INACTIVE LEAF AND PANIC BOLT HARDWARE WILL BE FURNISHED AT EXTRA COST.



DETAIL AT MEETING RAIL
SHOWING LOCKING HANDLES
(STANDARD SWING OUT DOORS)



SWING IN DOOR
(SPECIAL)



ALTERNATE SILL DESIGN
THRESHOLD AS PART OF FRAME

† SPECIAL DOORS †

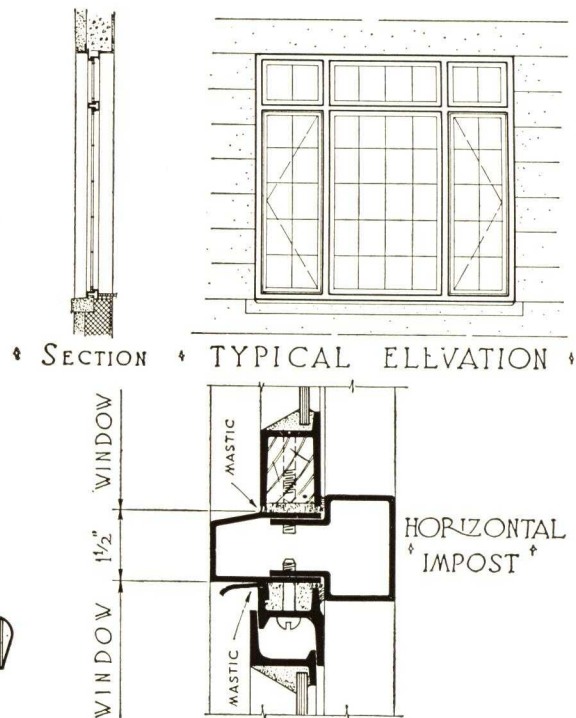
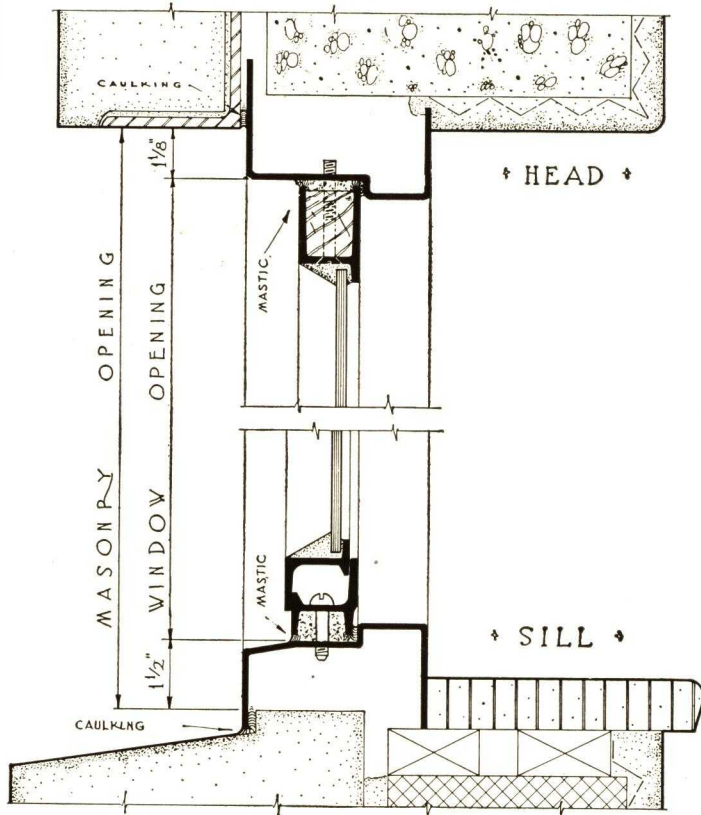
SPECIAL DOORS, TO SWING IN OR OUT, ARE BUILT IN ANY SIZE UP TO 5'-0" WIDE x 7'-6" HIGH (FOR DOUBLE DOORS) OF INTERMEDIATE WEIGHT SECTIONS AND UP TO 6'-0" WIDE x 8'-0" HIGH (FOR DOUBLE DOORS) OF HEAVY WEIGHT SECTIONS.
SPECIAL DOORS MAY BE GLAZED INSIDE WITH GLAZING BEADS.
THE SAME HARDWARE IS AVAILABLE FOR SPECIAL DOORS AS THAT SPECIFIED FOR STANDARD DOORS.

TRUSCON
STEEL COMPANY
Youngstown, Ohio

STANDARD DETAILS
ARCHITECTURAL CASEMENT DOORS
SERIES 15

PLATE No.
CA-10
NOVEMBER, 1935

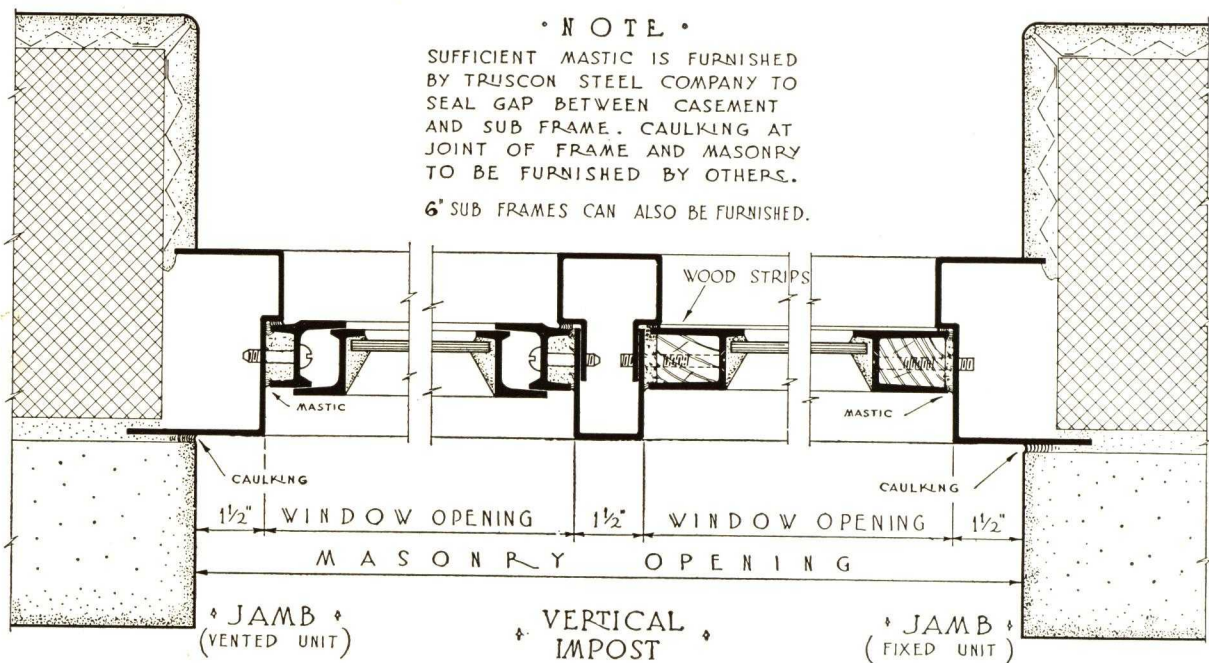
SUB - FRAME INSTALLATION



• NOTE •

SUFFICIENT MASTIC IS FURNISHED BY TRUSCON STEEL COMPANY TO SEAL GAP BETWEEN CASEMENT AND SUB FRAME. CAULKING AT JOINT OF FRAME AND MASONRY TO BE FURNISHED BY OTHERS.

6" SUB FRAMES CAN ALSO BE FURNISHED.



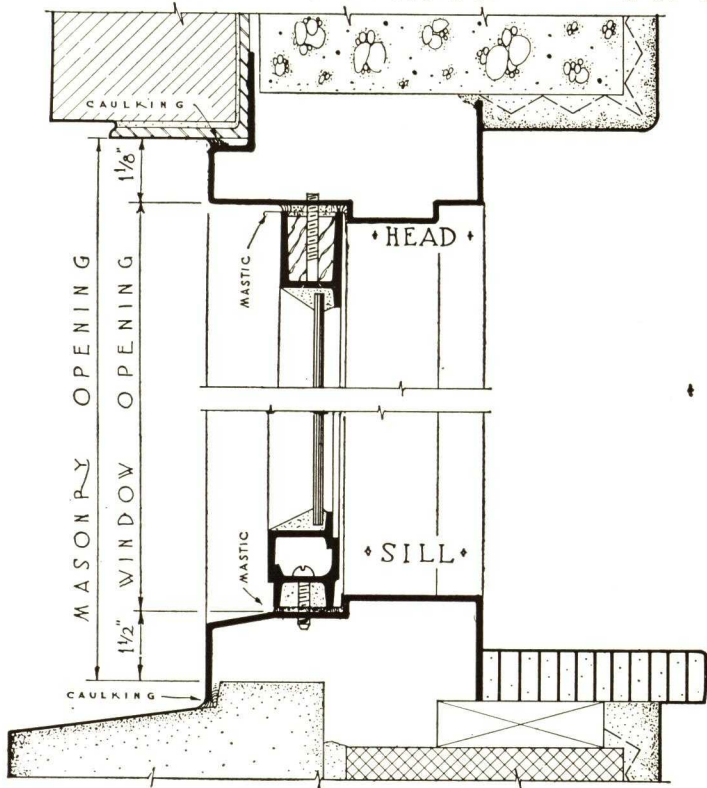
TRUSCON
STEEL COMPANY
Youngstown, Ohio

4" SUB-FRAME

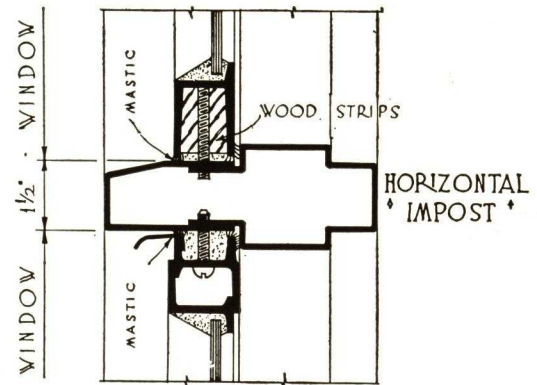
SERIES 15, 15C AND 15P

PLATE No.
CA-6
OCTOBER, 1937

SUB - FRAME INSTALLATION



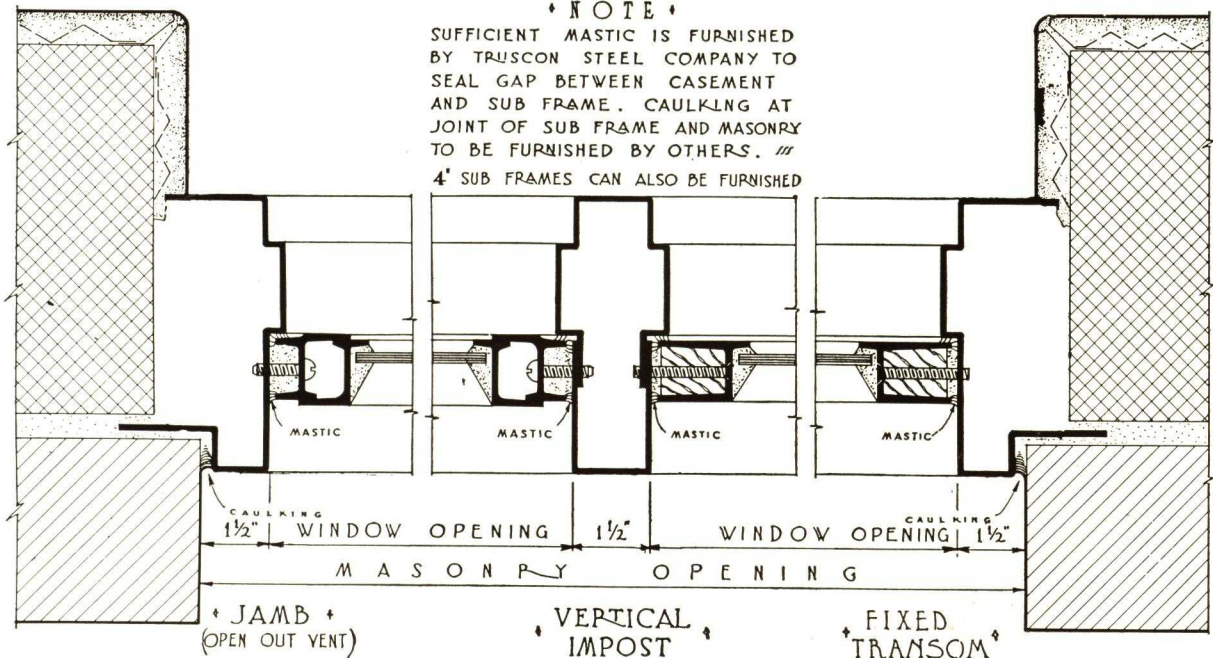
† SECTION † TYPICAL ELEVATION †



† NOTE †

SUFFICIENT MASTIC IS FURNISHED BY TRUSCON STEEL COMPANY TO SEAL GAP BETWEEN CASEMENT AND SUB FRAME. CAULKING AT JOINT OF SUB FRAME AND MASONRY TO BE FURNISHED BY OTHERS. //

4" SUB FRAMES CAN ALSO BE FURNISHED



TRUSCON
STEEL COMPANY
Youngstown, Ohio

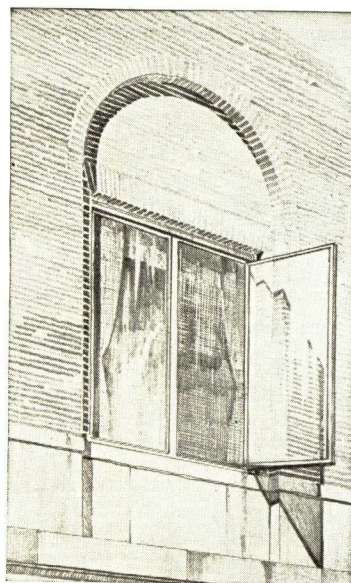
6" SUB-FRAME

SERIES 15, 15C AND 15P

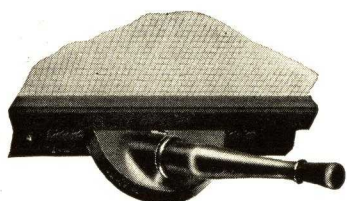
PLATE No.
CM-4
OCTOBER, 1937

HARDWARE FOR CASEMENTS

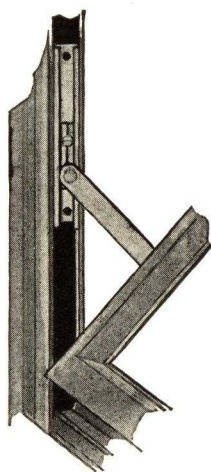
Series 15, 15C and 25



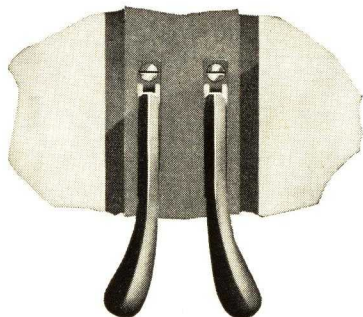
Cremone
Bolt
Assembly
with Finger
Pull



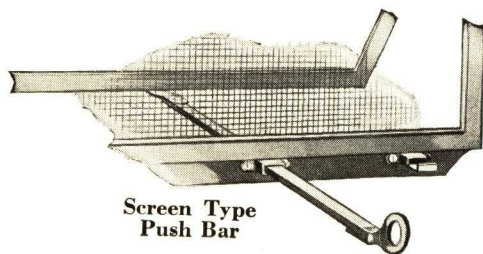
Worm and Gear Operator



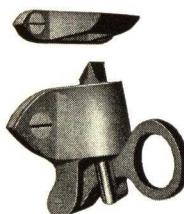
Concealed Side Arm



Roto Locking Handles



Screen Type
Push Bar



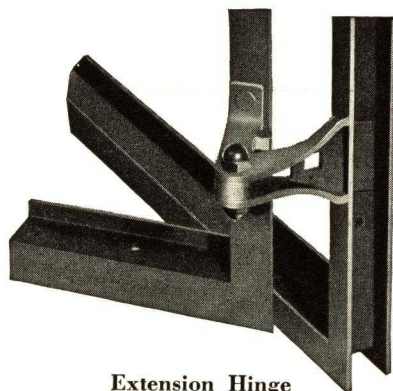
Transom Latch
Pole Operated



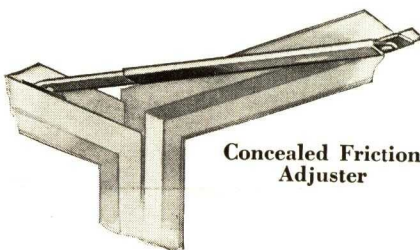
Transom
Latch
Cord
Operated



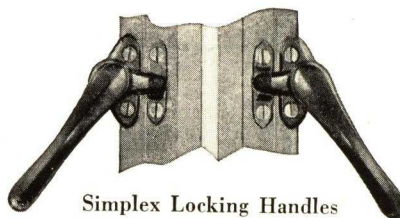
Butt Hinge



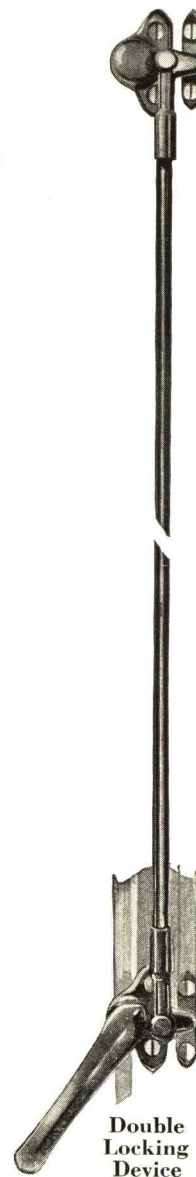
Extension Hinge



Concealed Friction
Adjuster



Simplex Locking Handles



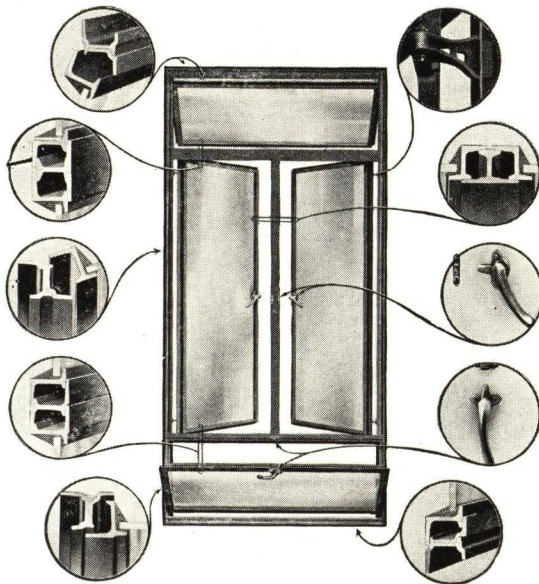
Double
Locking
Device

MONUMENTAL WINDOWS

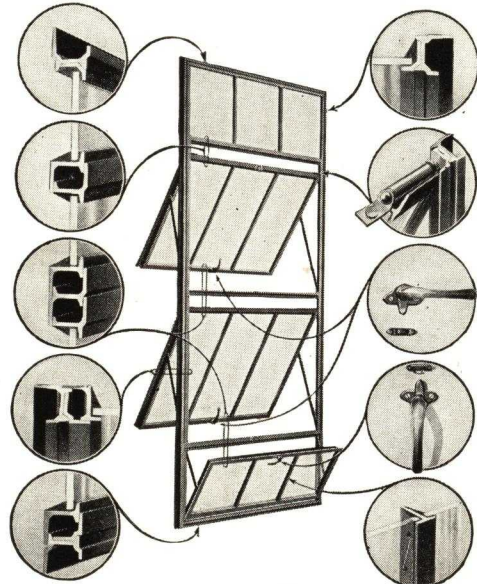
SERIES 15C AND 15P
[Frame Section— $1\frac{9}{16}$ " deep]

MONUMENTAL Windows are suitable for use in hospitals, educational and public buildings, and other buildings of similar character. Their appearance is in complete harmony with

such buildings as they are constructed of intermediate casement sections, and employ casement hardware. They are extra heavy to withstand the constant usage encountered in such buildings.









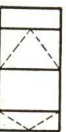
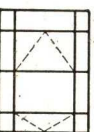


Series 15C
Casement Type



Series 15P
Projected Type

Specifications on Page 34

		STANDARD WIDTHS			
		1'-6"	2'-6"	2'-6"	5'-0"
		1'-9"	3'-0"	3'-0"	5'-6"
		2'-0"	3'-6"	3'-6"	6'-0"
		2'-3"	4'-0"	4'-0"	6'-6"
		2'-6"	4'-6"	4'-6"	7'-0"
					7'-6"
STANDARD HEIGHTS	4'-6"				
	5'-0"				
	5'-6"				
	6'-0"				
	6'-6"				
	7'-0"				
	7'-6"				
	8'-0"				
<p>NOTES</p> <p>FIXED UNITS ARE FURNISHED IN STANDARD WIDTHS FROM 1'-6" TO 4'-6" AND STANDARD HEIGHTS FROM 4'-6" TO 9'-0" ~ ALL CASEMENTS ARE VIEWED FROM OUTSIDE ~ HANDING OF CASEMENTS IS DETERMINED BY LOCATION OF HINGE ~ HINGED AT RIGHT IS A RIGHT HAND CASEMENT ~ HINGED AT LEFT IS A LEFT HAND CASEMENT ~ DIMENSIONS SHOWN ARE CLEAR OPENING DIMENSIONS ~ FRAME SECTION OF WINDOWS EXTENDS $\frac{3}{16}$ BEYOND CLEAR OPENING FOR MASONRY ANCHORAGE ~ STANDARD SCREEN TYPE HARDWARE AND SCREENS ARE AVAILABLE FOR ALL TYPES OF VENTILATORS ~ CASEMENT VENTS MAY BE MADE TO SWING IN ~ ALL CASEMENTS ARE SET IN MASTIC CEMENT WHERE COMING IN CONTACT WITH MASONRY.</p>					
<p>TRUSCON STEEL COMPANY Youngstown, Ohio</p>		<p>TYPES AND SIZES MONUMENTAL STEEL WINDOWS CASEMENT TYPE - SERIES 15C</p>		<p>PLATE No. CM-1 OCTOBER, 1934</p>	

STANDARD WIDTHS			NOTES
1'-6"	4'-0"		DIMENSIONS SHOWN ARE CLEAR OPENING DIMENSIONS ~ FRAME SECTION OF WINDOWS EXTENDS BEYOND CLEAR OPENING $\frac{3}{16}$ FOR MASONRY ANCHORAGE ~ ALL WIN- DOWS ARE SET IN MASTIC CEMENT WHERE COMING IN CONTACT WITH MASONRY ~ STANDARD SCREEN TYPE HARDWARE AND SCREENS ARE AVAILABLE FOR ALL TYPES OF VENTS.
2'-0"	4'-6"		
2'-6"	5'-0"		
3'-0"	5'-6"		
3'-6"	6'-0"		
4'-0"	6'-6"		
4'-6"	7'-0"		
1'-0", 1'-6"			
2'-0", 2'-6"			
3'-0", 3'-6"			
4'-0"			
HEIGHTS	3'-0", 3'-6"		
	4'-0", 4'-6"		
	5'-0", 5'-6"		
	6'-0"		
STANDARD	4'-6", 5'-0"		
	5'-6", 6'-0"		
	6'-6", 7'-0"		
HEIGHTS	6'-6", 7'-0"		
	7'-6", 8'-0"		
	8'-6", 9'-0"		
			
FIXED UNITS ARE FURNISHED IN STANDARD WIDTHS FROM 1'-6" TO 4'-6" AND STANDARD HEIGHTS FROM 1'-0" TO 9'-0" ~ DIRECTION OF PROJECTION AND LOCATION OF VENTS MAY BE CHANGED AS DESIRED.			
TRUSCON STEEL COMPANY Youngstown, Ohio		TYPES AND SIZES MONUMENTAL STEEL WINDOWS PROJECTED TYPE - SERIES 15P	
		PLATE No. CM-2 OCTOBER, 1934	

SPECIFICATIONS MONUMENTAL WINDOWS (SERIES 15C AND 15P WINDOWS)

1 General—All windows so indicated on the plans and elevations and called for in these specifications shall be Truscon Monumental Windows, either case-ment type Series 15-C or projected type, Series 15-P, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Material—Truscon specification low carbon, new billet, hot-rolled, steel shall be used in the manufacture of all members.

3 Construction—All units shall be square and true, with outside frame sections not less than $1\frac{7}{16}$ in. deep.

(a) The *Outside Frame* shall be an unequal leg section, designed for $\frac{5}{8}$ in. anchorage on the outside leg and continuous from head to sill and jamb to jamb and shaped for double flat contact weathering not less than $\frac{3}{8}$ in. between ventilators and frame members or rails. Outside Frame Section may also be equal leg section with continuous fins. Each corner of sash and frames shall be electrically butt welded rigid and tight and ground smooth before assembly. The ventilators and frame shall be made perfectly straight and true to insure perfect weathering and ease of operation.

(b) *Muntins*, where required, shall be a specially designed "T" bar section and shall be continuous between rails and stiles. At intersections there shall be a mechanical joint rigidly interlocking the muntins flush with each other. Joints of muntins and frames, stiles and rails shall be tenoned, mortised and air-hammer riveted.

(c) All *Stiles, Rails, Frames and Muntins* shall be prepared for outside putty glazing with clips. (See note.)

(d) *Series 15C Side Hinged Ventilators* shall swing out unless otherwise specified and shall be equipped with Truscon design heavy extension steel hinges having bronze bushing and bronze bearing washers and acorn head steel hinge bolt with acorn nut. Ventilators equipped with Simplex hardware hinges shall be friction type. Ventilators equipped with Roto hardware hinges shall be free swinging. Series 15C transom and sill ventilators shall be of the projected type. A continuous drip shall be provided on transom bars of all standard swing leaf combinations, or at the head where ventilators extend full height of the opening.

(e) *Series 15P Ventilators* shall be of the projecting type opening down and outward or up and inward as indicated. Each ventilator shall be balanced on two $\frac{3}{16}$ x 1 in. high carbon steel supporting arms attached to frame and ventilator by special shoulder rivets having a bronze flange bushing. Each ventilator shall be equipped with vertical sliding brass friction shoe at each jamb.

4 Hardware—(a) All *Hardware* shall be bronze medium statuary finish. Hardware shall be Roto type or Simplex type. Architect to specify which type is required.

ROTO TYPE

(b) *Operator type hardware* shall control ventilator independently of the screen. Underscreen operator shall hold the ventilator securely in open position.

(c) For *side hinged ventilators* solid bronze concealed latch locking handle and worm drive underscreen operator shall be furnished. (Locking handle keeper and channel guide for operator shall be attached in the shop.) Concealed latch locking handle shall have both cam action and kick out action. (For ventilators over 5 ft. 0 in. in height, a double concealed latch locking device shall be furnished.) Worm drive underscreen operator shall have $\frac{3}{4}$ in. diameter worm and operator arm with machine cut teeth. Case and crank shall be solid bronze, arm is cadmium plated steel.

(d) For *outward projected ventilator*, a heavy, solid, bronze underscreen push-arm shall be furnished.

SIMPLEX TYPE

(e) For *Side Hinged Ventilators* up to and including 5 ft. in height, a bronze cam acting locking handle and bronze strike shall be furnished.

For *Side Hinged Ventilators* over 5 ft. in height or when center line of ventilator is 6 ft. 3 in. or more from the floor, bronze double locking device and bronze strikes shall be furnished.

For *Double Vented Units* with clear opening (no meeting rail), bronze cremone bolt hardware shall be furnished.

(f) For *Projected Ventilators* a bronze cam acting locking handle and, where necessary, a bronze pole ring shall be furnished as standard. Where desired and specified, bronze spring latch, either pole or cord operated, shall be furnished.

5 Shop Painting—(a) All windows shall be given a coat of protective rust-resisting gray paint, oven baked for at least 60 minutes at a temperature of not less than 300 degrees.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

6 Erection—(a) *Each unit* shall be set plumb and true in the opening, securely wedged and held in alignment during construction.

After windows have been placed in opening and before they are glazed, the ventilator shall be carefully adjusted.

(b) *Mastic* in sufficient quantity shall be used in setting and bedding frames where they come in contact with mullions or wall construction.

7 Glazing—(To be done by glazing contractor.) All windows shall be glazed on the outside with glazing clips (see note).

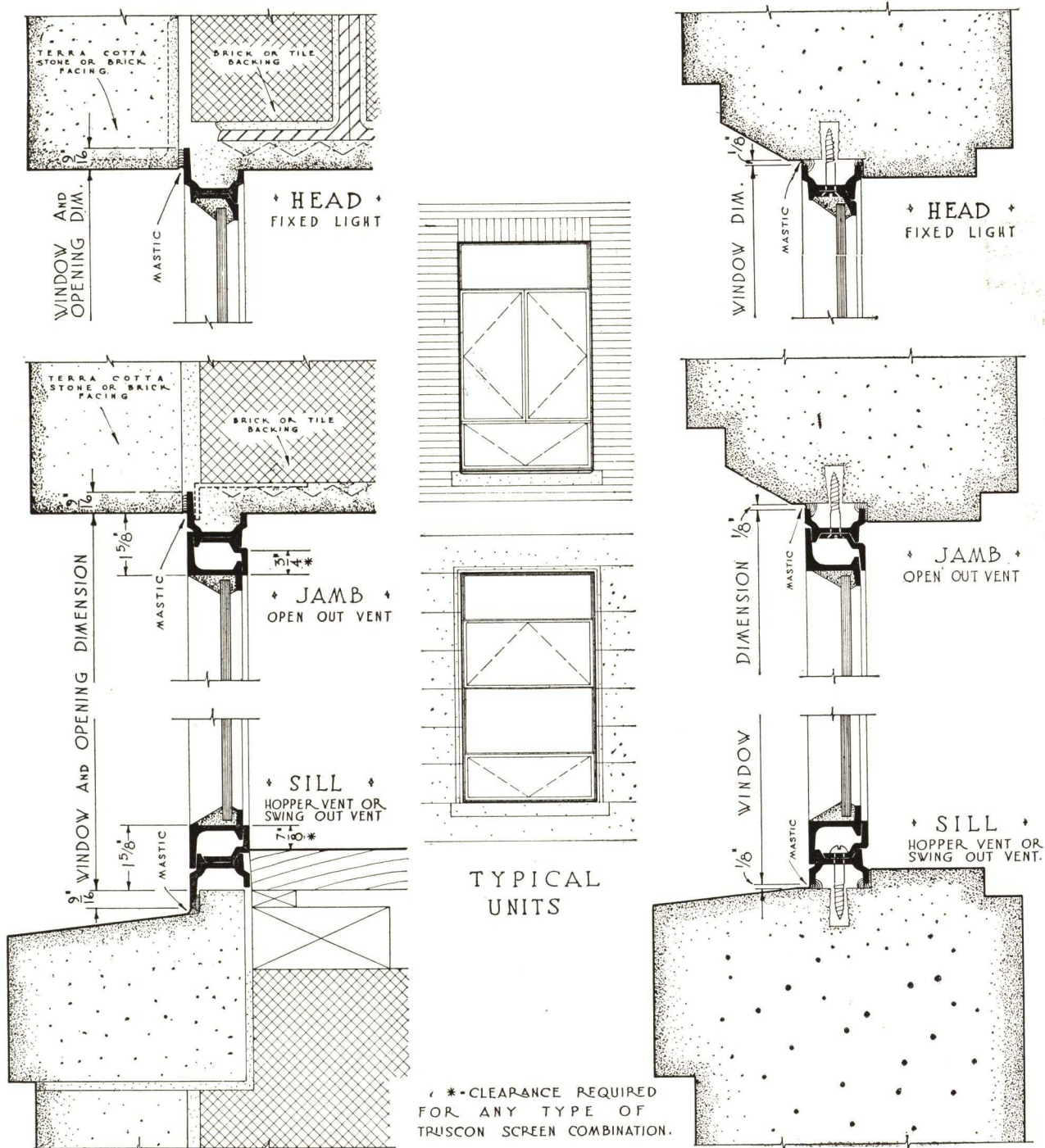
Notes: Windows may be inside bead glazed with solid section, hot-rolled glazing beads if desired and so specified.

When specified, Series 15C Monumental Casements can be furnished to "open in."

UNDERWRITERS' LABEL

Underwriters' Label of approval may be specified for sizes not exceeding 5 ft. 0 in. in width and 10 ft. 0 in. in height. Mullions not permitted. Side hinged (outswing only) ventilators limited to 2 ft. 6 in. wide and 6 ft. 0 in. high and other ventilators 5 ft. 0 in. wide and 2 ft. 6 in. high. Outside putty glazed individual lights are limited to 350 sq. in., exposed area, and 155 sq. in., exposed area, if inside bead glazing is used.

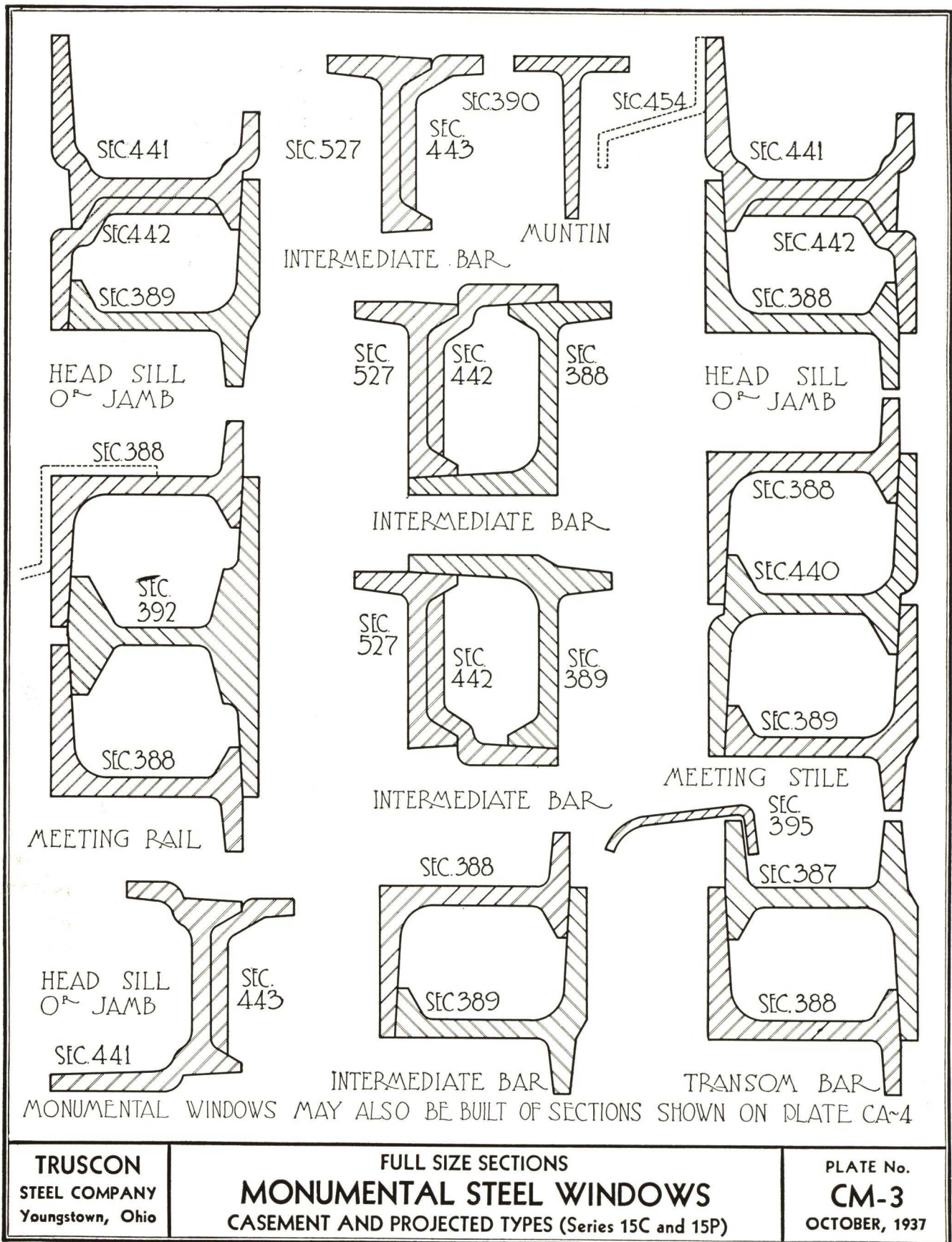
SOLID MASONRY CONSTRUCTION



TRUSCON
STEEL COMPANY
Youngstown, Ohio

MASONRY INSTALLATION
MONUMENTAL STEEL WINDOWS
CASEMENT AND PROJECTED TYPES (SERIES 15C AND 15P)

PLATE No.
CM-5
NOVEMBER, 1934



PARAMOUNT CASEMENTS

SERIES 25 [Frame Section—1½" deep]

WHERE architectural treatment and ventilation require exceptionally large swing leaves, Paramount Casements, Series 25, will meet the most exacting architectural specifications.

SPECIFICATIONS

1 General—All windows so indicated on the plans and elevations and called for in these specifications shall be Paramount Casement Windows, Series 25, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Construction—(a) Windows shall be custom made and of type, size and design to swing either in or out, as shown on the drawing.

(b) *Major Members* shall be not less than 1½ in. in depth and shall be hot-rolled from new billet steel. The combined weight of frame and swing leaf members shall be not less than 4 lbs. per linear foot.

(c) *All Corners* of swing leaves and frames shall be mitered and electrically welded and all exposed surfaces ground smooth. Double contact of not less than ⅜ in. shall be provided for weathering on all windows where swing leaves contact frame members.

3 Hardware—(a) *Unattached Hardware* shall be solid bronze, Medium Statuary finish of Truscon standard design. Standard Roto type hardware shall be furnished and windows prepared for same when so specified (illustrated on page 32). Unattached hardware shall be packed separately and shipped with windows.

(b) *Swing Leaves* shall be provided with standard extension cleaning hinges, either friction or free swinging types; or with butt hinges, at the option of the architect. All hinges so designed as to have 100% bronze to steel contact on all pivot points. (Optional in lieu of friction hinges or Roto Hardware.) Ventilators shall be provided with sill adjusters, one to each vent.

4 Shop Painting—(a) All windows shall be given a coat of protective rust-resisting gray paint, oven baked for at least 60 minutes at a temperature of not less than 300 degrees.

(b) Windows shall be BONDORIZED before painting. (Optional at slight extra cost.)

5 Erection—(a) All windows shall be set plumb and true in their respective openings and properly adjusted.

(b) *Mastic* in sufficient quantity shall be used in setting and bedding frames when they come in contact with mullions or wall construction.

All hardware shall be applied in accordance with manufacturer's instructions. (It is recommended that the manufacturer shall erect and adjust the windows.

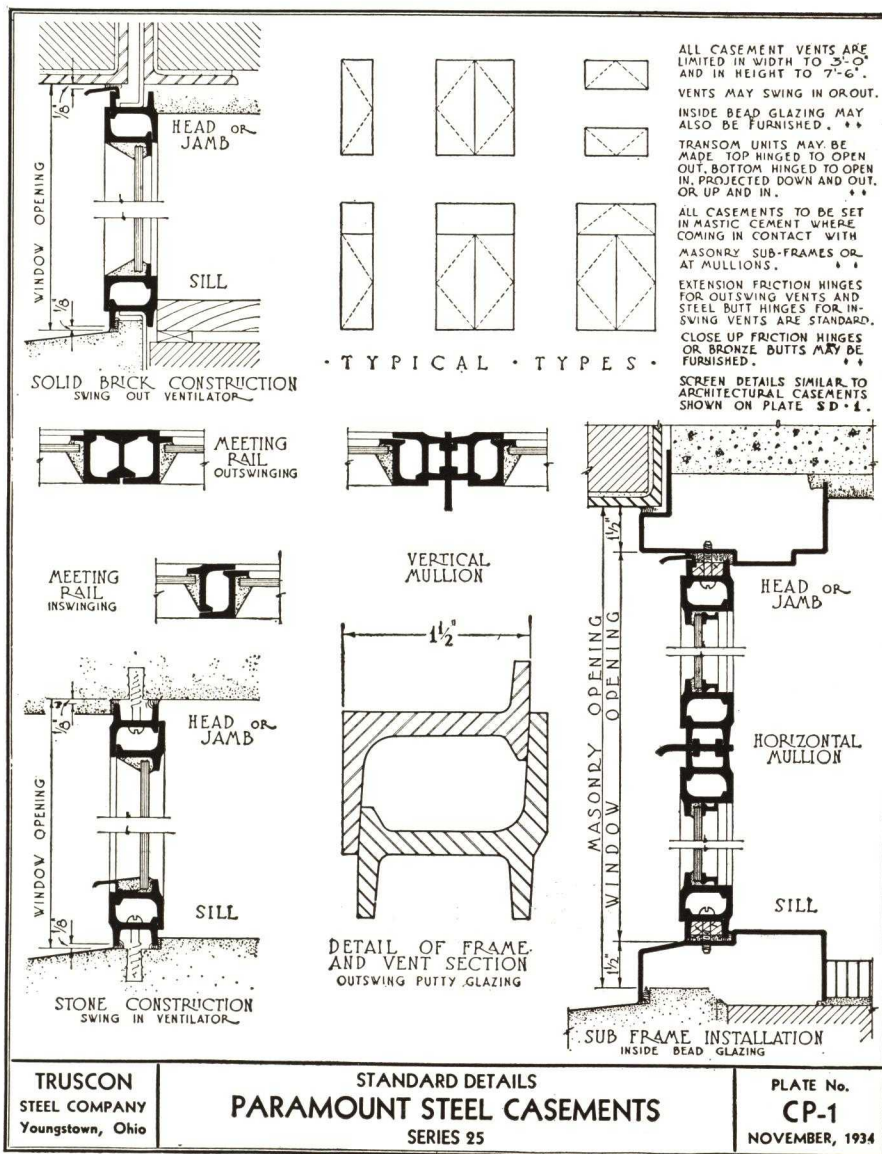
The Erection Division of the TRUSCON STEEL COMPANY will contract to furnish this service.)

Frame members of windows shall be so designed that they can be readily installed in Truscon standard design steel sub frames erected by others. Frame members shall also be prepared to accept standard fins so that windows may be built-in with the construction.

6 Glazing—(To be done by glazing contractor.) Windows shall be furnished with glazing clips for outside putty glazing. When specified, windows shall be fitted with a solid moulded steel glazing stop for inside glazing. Glazing stops shall be carefully fitted to each light and attached with bronze screws.

UNDERWRITERS' LABEL

Underwriters' Label of approval may be specified for sizes not exceeding 5 ft. 0 in. in width and 10 ft. 0 in. in height. Mullions not permitted. Side hinged (outswing only) ventilators limited to 2 ft. 6 in. wide and 6 ft. 0 in. high and other ventilators 5 ft. 0 in. wide and 2 ft. 6 in. high. Outside putty glazed individual lights are limited to 350 sq. in., exposed area, and 155 sq. in. exposed area if inside bead glazing is used.

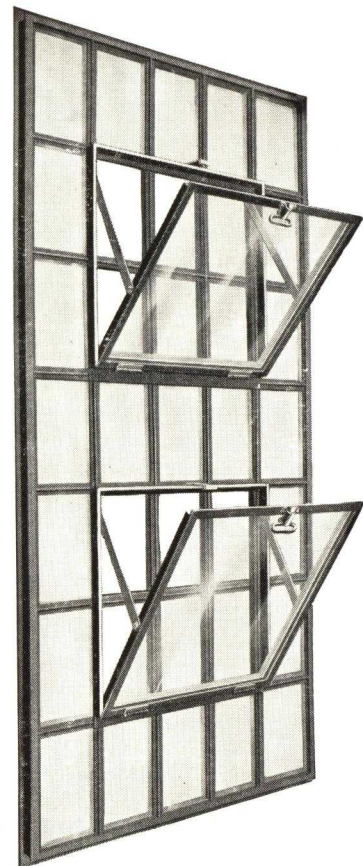
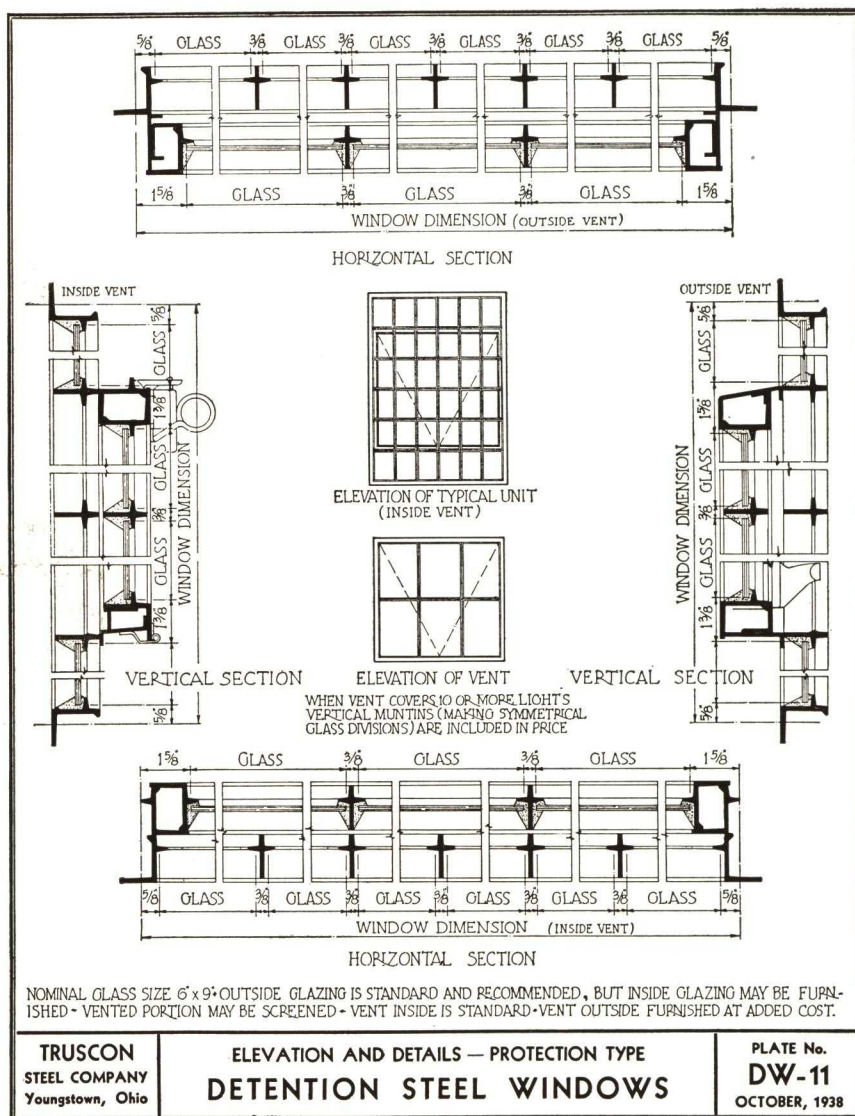


DETENTION WINDOWS

MODERN penology definitely recognizes that light and ventilation are among the most certain incentives to the good behavior and health of the inmates. In selecting windows for detention institutions such as prisons, reformatories and psychopathic hospitals, the designs require a variety of types to conform to the different conditions found within an institution.

Security is the first consideration, but it is obvious that what might be adequate security for one class of inmates is totally inadequate for a more desperate class. It is with the object of providing maximum efficiencies consistent with the degree of detention-security desired that the various types of Truscon Detention Windows were developed.

Included in the full line of Truscon Detention Windows are types which will meet all requirements for such institutions. Each type offers particular advantages—in some cases, maximum security; in others maximum lighting and ventilation. The individual needs will, in each case, govern the selection. Only a few of the many types of these detention windows can be portrayed on these pages. Information on other types may be secured upon request.



Truscon Lock Bar Detention Window

LOCK BAR WINDOW

This window can be furnished with sections of various weights, depth and thickness. All windows, however, incorporate the maximum in detention and ventilating features.

DOUBLE HUNG WINDOW

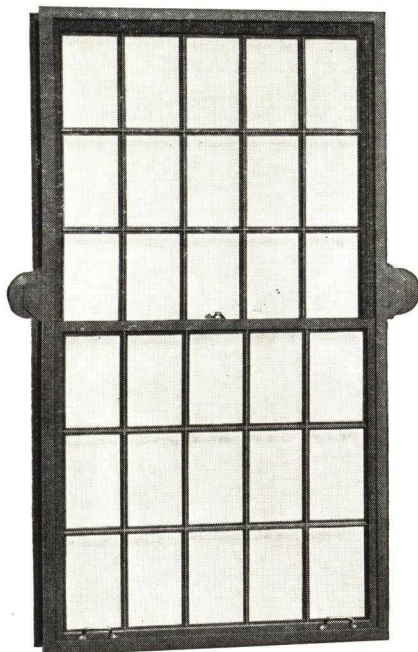
This type of detention window is the Truscon solid steel, plate type, galvanized and weather-stripped, double-hung window. A steel bar grille is welded securely to the exterior frame providing a positive barrier when window is open. Where desired, these windows can be equipped with a combination fly screen and protective wire guard to be installed on the inside.

OTHER DETENTION WINDOWS

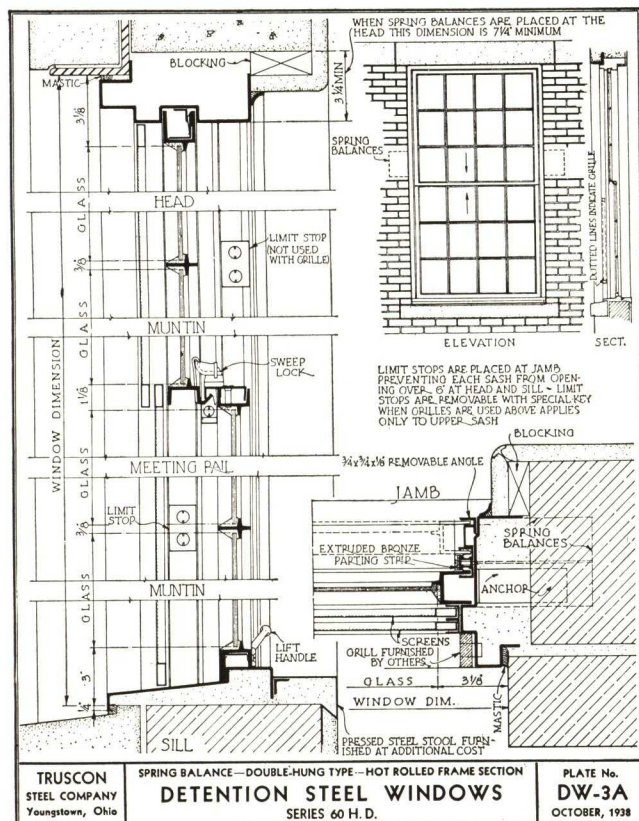
Donovan Windows and Casement Windows can be designed to incorporate detention features and still retain the salient features peculiar to their design.

DETENTION WINDOWS (Continued)

WHERE the exterior and interior simplicity of ordinary institutional construction is the desirable feature the Spring Balanced Detention Window fulfills those requirements admirably. In this type of window ventilation may be obtained at top and bottom.



Truscon Spring Balanced Detention Window
Series 60HD



SPECIFICATIONS Series 60HD

1 General—All windows so indicated on the plans and elevations and called for in these specifications shall be Heavy Detention Spring Balance Double-Hung windows as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Material—Sash shall be constructed of hot rolled new billet steel; frame shall be formed of 12 gauge sheet steel.

3 Construction—(a) Frame members shall be formed from a single sheet of steel in design as indicated on drawings. All corners shall be welded and ground smooth on exposed surfaces. Design of window shall provide for removal of sash by use of special tool.

(b) *Sash*—Shall be constructed of channel sections not less than $1\frac{7}{16}$ in. deep, the corners to be welded.

(c) *Muntins*—Where required, shall be hot-rolled sections. At intersections, there shall be a mechanical joint rigidly interlocking the muntins flush with each other. Joints of muntins and frames, stiles and rails shall be tenoned, mortised and air-hammer riveted.

4 Weathering—A specially designed combination weathering and parting strip of extruded bronze shall be provided at the jambs. (See detail.) There shall be a weathering block provided at the meeting rail.

5 Hardware—(a) All units shall be equipped with one pair of malleable lift handles and sweep lock at meeting rail. Special jamb detention locking device, key operated, can be furnished in place of sweep lock at option of customer.

(b) Each sash shall be suspended on two enclosed spring balances as furnished by TRUSCON STEEL COMPANY. Spring balances shall be enclosed in a metal housing and securely attached to frame. Metal tapes shall be properly attached to sash and shall hang vertically and run freely at all times.

(c) (Optional) Where exterior grilles are not used to cover lower half of window opening, limit stops are to be provided to prevent upper and lower sash from opening more than 6 in. and shall be removable only by special key. Where exterior grilles are used, limit stops shall be furnished for upper sash only.

6 Anchors—Units shall be equipped with strap anchors at jamb for attaching to building construction.

7 Shop Painting—(a) All windows shall be given a coat of protective rust-resisting gray paint, oven baked for at least 60 minutes at a temperature of not less than 300 degrees.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

Note: Screen guides can be furnished and applied to exterior sub-frame of Series 60HD windows to permit application of vertical sliding screen. (See detail.)

PROJECTED WINDOWS ARCHITECTURAL TYPE

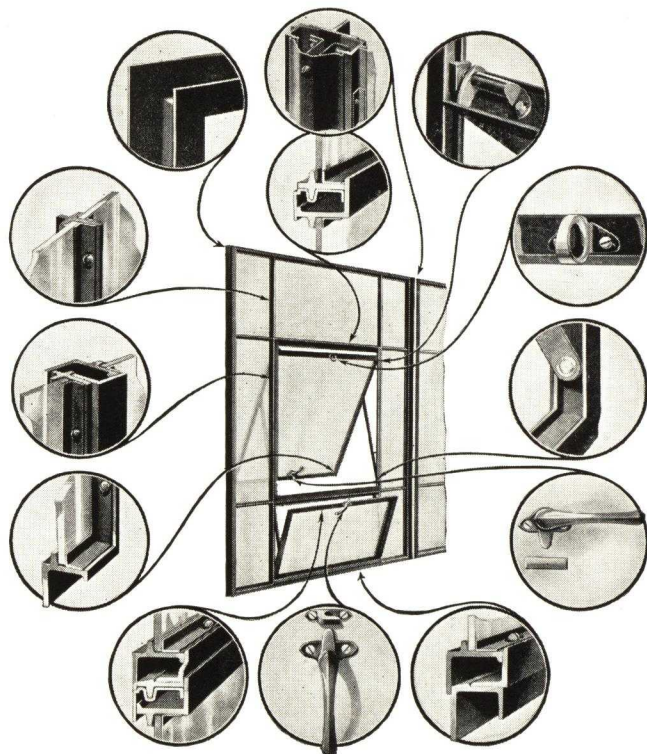
DESIGNED for appearance as well as practicality. The architect has a wide range of types to choose from, thereby enabling him to use standard types and take advantage of their economy.

The outside frame is a solid heavy channel, giving great strength. Rigidity in the ventilator is secured by the use of a heavy solid angle section mortised and tenoned and also welded at the corners. The ventilator frame is rolled with integral baffle, similar in design used on highest quality casements.

Solid bronze hardware is standard for these windows and the quality and design are in keeping with the word "Architectural."

Windows with inside glazing angles are standard. Windows arranged for outside glazing with putty can be furnished at a saving in cost. Projecting ventilators permit easy cleaning from the inside. Weather-tightness is assured by the rigid construction of the window and the Truscon double contact weathering.

Screens and underscreen operating hardware are available for all ventilators.



SPECIFICATIONS

General

1. All windows so indicated on the plans and elevations and called for in these specifications shall be the Architectural Projected Type as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

Material and Construction

2. All members shall be constructed from Truscon specifications, hot rolled, new billet steel.

3. All joints shall be mortised and tenoned, and air hammer riveted, and in addition all ventilator corners and frame corners shall be welded.

4. The intersection of horizontal and vertical muntins shall have a dovetail mitre, rigidly interlocking the bars.

5. No excess metal or projecting surfaces shall be permitted where muntin bars intersect.

6. Muntin bars, except where ventilators occur, shall be continuous from head to sill and from jamb to jamb.

7. The members of the windows shall not be bent or deformed during process of manufacture.

8. Double contact weathering shall be provided on all four sides of the ventilator.

9. The outside section of the window shall be a heavy, solid rolled steel channel.

10. Uniform tension to hold ventilator in any desired position shall be obtained by a sliding friction shoe.

11. The sliding friction shoe shall be constructed of forged brass with compression spring enclosed in steel tubing.

12. The side of the window frame shall act as a guide for the sliding friction shoe.

13. There shall be two heavy supporting arms attached to the ventilator and frame, designed to be concealed when ventilator is closed. The rivet holes in supporting arms shall have brass flanged bushings.

Outward Projecting or Inward Projecting Ventilators

14. Outward projecting ventilators when opened shall have no part of the ventilator extending inside the normal plane of the window.

15. Inward projecting ventilators shall not extend outside the normal plane of the window.

Vertical Mullions

16. Where two or more window units, less than 6 ft. 0 in. in height are used in the same opening, they shall be connected together with Truscon Standard Plate Mullions (Type T-1).

(Continued on page 41)

PROJECTED WINDOWS Architectural Type SPECIFICATIONS (Continued)

17. For windows over 6 ft. 0 in. high, and up to and including 10 ft. 0 in. high, Truscon Standard T-Bar Mullions (Type T-2) shall be used.

18. For all window openings over 10 ft. 0 in. high, Truscon Standard Double T-Bar Mullions (Type T-3) shall be used.

19. All mullions shall be 2½ in. wide (2 in. mullion distance) with slotted holes to allow for adjustment.

20. Mullions shall extend 1⅛ in. below the leg of window at sill to provide a firm anchorage in sill construction.

21. All mullions shall have standard Truscon interior mullion covers.

Unattached Hardware

22. All hardware shall be solid bronze.

23. All outward projecting ventilators within reach of the floor, shall be equipped with a solid bronze cam handle and strike.

24. All outward projecting ventilators not easily accessible, shall be equipped with solid bronze cam handle, (ring type), strike and pole hook ring.

25. All inward projecting ventilators shall be equipped with solid bronze cam handle and keeper.

Underscreen Hardware

(When Underscreen Hardware is required instead of standard hardware for outward projecting ventilators, the following specification applies):

26. Underscreen Push Bar operating through the window section shall open and close the ventilator without moving the screen. Underscreen Push Bar shall have cam locking action to draw ventilator tight when closed.

Shade Bracket Clips

(Include only when required.)

27. Shade bracket clips shall be pressed steel, located at upper corners of frame. Two slotted holes for attachment of shade brackets shall be provided 1¼ in. on centers. Shade brackets to be furnished by shade contractor.

Structural Support

28. All structural work for the support of steel windows shall be provided by another contractor.

Shop Painting

29. (a) All windows shall be given a coat of protective rust-resisting gray paint, oven baked for at least 60 minutes at a temperature of not less than 300 degrees.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

Erection

30. Window units shall be trued in all directions and set plumb in the masonry.

31. In setting windows, wooden wedges to hold unit in place must be located so as not to cause bulging or distortion.

32. After windows have been set in opening and properly built in, the joint between the window frame and masonry shall be carefully pointed up by the mason contractor.

33. The erection of the windows shall be performed by the manufacturer of same.

Glazing

(To be done by glazing contractor.)

Architect to specify either one of the following methods of glazing:

Specification for Angle Glazing

34. All windows shall be glazed on the INSIDE. Glass shall be bedded in steel window putty and held in place with continuous glazing angles attached to the window with brass screws.

Specification for Spring Clip Glazing

35. All windows shall be glazed on the OUTSIDE. Glass shall be bed and face puttied and held in place by Truscon copper clad wire glazing clips.

Screens

36. Screens shall be of the following types:

- (a) Fixed screen on outside of inward projecting ventilators.
- (b) Top hinged screen for outward projecting ventilators with standard hardware.
- (c) Fixed screen for use with underscreen push bar for outward projecting ventilators.

37. Screens shall have rewireable electro-galvanized steel frames and solid bronze 16 mesh (.0113 in. diameter) screen cloth. Frames shall be given one standard coat baked enamel for inside screens and two coats for outside screens.

Underwriters' Label

(National Board of Fire Underwriters.)

38. Underwriter's label of approval may be specified for sizes not exceeding 7 ft. 0 in. in width by 12 ft. 0 in. in height. One or more vertical mullions may be used. Special horizontal mullions may be used, provided opening width is not greater than 14 ft. 0 in. *Windows must be inside angle glazed.* Individual glass lights shall not exceed 350 sq. in. exposed area, 54 in. in height or 48 in. in width.

TYPES AND SIZES

GLASS SIZES

16 1/4	19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2
16 1/4	19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2

GLASS SIZES

19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2
19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2

GLASS SIZES

19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2
19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2

GLASS SIZES

13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2
13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2

GLASS SIZES

13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2
13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2

GLASS SIZES

13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2
13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2

GLASS SIZES

13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2
13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2

GLASS SIZES

13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2
13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2

GLASS SIZES

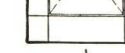
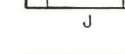
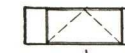
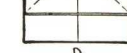
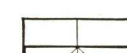
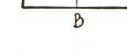
13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2
13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2

GLASS SIZES

13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2
13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2

GLASS SIZES

13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2
13 1/4	15 1/2	17 1/2	19 1/2	21 1/2	23 1/2



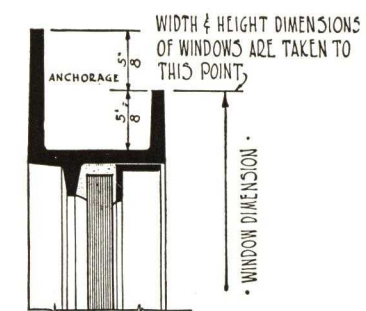
SYMBOLS



STANDARD WINDOW UNITS MAY BE COMBINED WITH MULLIONS SHOWN ON PLATE NO. 23. ADD 2" TO DAY OPENING WIDTH FOR EACH MULLION USED.

WINDOWS CAN BE FURNISHED WITH GLAZING ANGLES FOR INSIDE GLAZING OR CAN BE FURNISHED FOR PUTTY GLAZING INSIDE OR OUTSIDE.

GLASS SIZES SHOWN ARE FOR FIXED LIGHTS - VENTILATOR GLASS IS CUT 1" SMALLER AT ALL EDGES



WIDTHS

	3'0"	3'6"	4'0"	4'6"	5'0"
4'6"	D	D	L	L	L
5'0"	E	E	M	M	M
5'6"	E	E	M	M	M
6'0"	E	E	M	M	M
6'6"	F	F	N	N	N
7'0"	F	F	N	N	N
7'6"	F	F	N	N	N
8'0"	F	F	N	N	N
8'6"	F	F	N	N	N
9'0"	H	H	P	P	P

The above schedule shows standard types. All other types are listed specials.

STANDARD HEIGHTS (OPENING DIMENSIONS)

STANDARD WIDTHS (OPENING DIMENSIONS)

GLASS SIZES

2'-0"	22 1/4"
2'-6"	28 1/4"
3'-0"	34 1/4"
3'-6"	40 1/4"

GLASS SIZES

4'-0"	22 1/4"	22 1/4"
4'-6"	25 1/4"	25 1/4"

GLASS SIZES

4'-0"	22 1/4"	11 5/8"
4'-6"	28 1/4"	11 5/8"
5'-0"	34 1/4"	11 5/8"
5'-6"	40 1/4"	11 5/8"
6'-0"	40 1/4"	14 5/8"

HEIGHTS

TRUSCON
STEEL COMPANY
Youngstown, Ohio

ARCHITECTURAL TYPE » » TYPES AND SIZES
PROJECTED STEEL WINDOWS

PLATE No.
B-21
APRIL, 1936

PROJECTED WINDOWS COMMERCIAL TYPE

WHERE neat design and economy are the keynote of the construction, architects will appreciate the quality, appearance, performance and low cost of these windows.

They are widely used in buildings where low cost is essential. The projected feature is especially valuable when ventilation depends upon the natural clearing off of vapor, smoke and stale air. The tilted ventilator acts as a deflector of the elements and can be kept open in all kinds of weather. Direct drafts are eliminated and a continuous change of air is obtained. Projecting ventilators make possible ready cleaning from the inside.

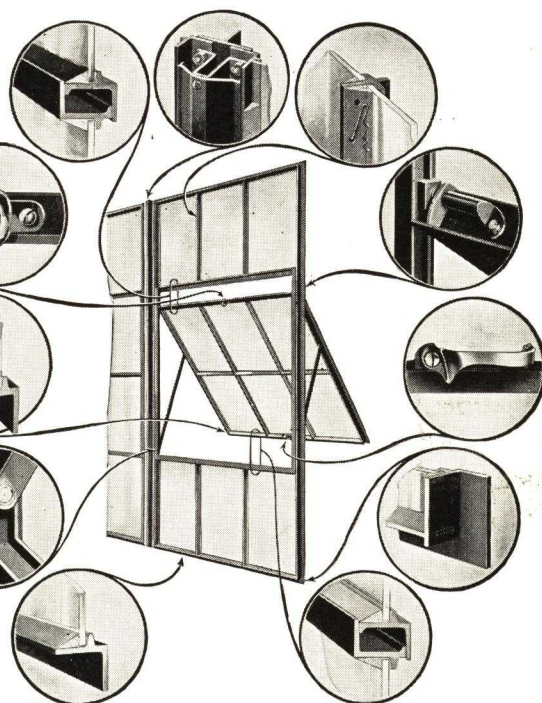
Because of the similarity between the appearance of the Commercial Projected and Pivoted Windows, the Projected Windows can be used in the office section of an industrial plant with complete conformity to the general design.

Thirty-two standard types of Commercial Projected Windows, as shown on page 45, are available in 12x18 in. or 14x20 in. glass size, many of which are carried in warehouse stocks.

SCREENS

Ventilators projecting inwardly with fixed flat screens on outside are the most practicable and economical.

However, top hinged screens can be furnished for ventilators projecting outwardly or fixed screens can be used in connection with under-screen push bar hardware.



EXPLOSION HARDWARE

Explosion type hardware conforming to specifications of Associated Factory Mutual Fire Insurance Companies can be furnished at increased cost over standard hardware for outwardly opening projected ventilators. This hardware operated either by pole or chain allows the ventilator to open automatically in case of explosion.

SPECIFICATIONS

General

1. All windows so indicated on the plans and elevations and called for in these specifications shall be the Commercial Projected Type as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitutions shall be made without the written approval of the architect.

Material and Construction

2. All members shall be constructed from Truscon specification, hot-rolled, new billet steel.
3. All joints shall be mortised and tenoned, and air hammer riveted.
4. The intersection of horizontal and vertical muntins shall have a dovetail mitre, rigidly interlocking the bars.
5. No excess metal or projecting surfaces shall be permitted where muntin bars intersect.
6. Muntin bars, except where ventilators occur, shall be continuous from head to sill and from jamb to jamb.
7. The members of the windows shall not be bent or deformed during process of manufacture.

8. Double contact weathering shall be provided on all four sides of the ventilator.
9. Uniform tension to hold ventilator in any desired position shall be obtained by a sliding friction shoe.
10. The sliding friction shoe shall be constructed of forged brass with compression spring enclosed in steel tubing.
11. The side of the window frame shall act as a guide for the sliding friction shoe.
12. There shall be two heavy supporting arms attached to the ventilator and frame, designed to be concealed when ventilator is closed. The rivet holes in supporting arms shall have brass flanged bushings.

Outward Projecting or Inward Projecting Ventilators

13. Outward Projecting Ventilators when open shall have no part of the ventilator extending inside the normal plane of the window.
14. Inward Projecting Ventilators shall not extend outside the normal plane of the window.

(Continued on page 44)

PROJECTED WINDOWS, Commercial Type**SPECIFICATIONS (Continued)****Vertical Mullions**

15. Where two or more window units, less than 6 ft. 3 in. in height, are used in the same opening, they shall be connected with Truscon Standard Plate Mullions (Type T-1).

16. For window units over 6 ft. 3 in. high and up to and including 10 ft. 3 $\frac{1}{8}$ in. high, Truscon Standard T-Bar Mullions (Type T-2) shall be used.

17. For all window openings over 10 ft. 3 $\frac{1}{8}$ in. high Truscon Standard Double T-Bar Mullions (Type T-3) shall be used.

18. All mullions shall be 2 $\frac{1}{2}$ in. wide (2 in. mullion distance) with slotted holes to allow for adjustment.

19. Mullions shall extend 1 $\frac{3}{8}$ in. below the leg of window at sill to provide a firm anchorage in sill construction.

Pressed steel mullion covers for interior use are available at extra cost.

Unattached Hardware

20. All hardware shall be malleable iron, cadmium plated, unless otherwise specified.

21. All outward projecting ventilators within reach of the floor, shall be equipped with a malleable iron cam handle.

22. All outward projecting ventilators not easily accessible, shall be equipped with malleable iron cam handle and pole hook ring.

(Truscon automatic chain operated latch may be substituted for cam latch pole hook where so required.)

23. All inward projecting ventilators shall be equipped with spring latch and keeper.

Underscreen Hardware

(When Underscreen Hardware is required instead of standard hardware for outward projecting ventilators, the following specification applies):

24. Underscreen Push Bar operating through the window section shall open and close the ventilator without moving the screen. Underscreen Push Bar shall have cam locking action to draw ventilator tight when closed.

Explosion Type Hardware

(When Explosion Type Hardware is required instead of standard hardware for outward projecting ventilators, the following specification applies):

25. Explosion Type Hardware shall conform to specifications of Associated Factory Mutual Fire Insurance Companies. Hardware shall be designed for hand, pole or chain operation. *(State which type is desired.)*

Shade Bracket Clips

(Include only when required.)

26. Shade bracket clips shall be pressed steel, located at upper corners of frame. Two slotted holes for attachment of shade brackets shall be provided 1 $\frac{1}{4}$ in. on centers. Shade brackets to be furnished by shade contractor.

Mechanical Operator

(Include only when required.)

27. All runs of ventilators, shown on drawings as "mechanically controlled," shall be equipped with rack and pinion operator, as manufactured by the TRUSCON STEEL COMPANY.

Structural Support

28. All structural work for the support of steel windows and mechanical operators shall be provided by another contractor.

Shop Painting

29. (a) All windows shall be given a coat of protective rust-resisting gray paint, oven baked for at least 60 minutes at a temperature of not less than 300 degrees.

(b) Windows shall be BONDERIZED before painting. *(Optional at slight extra cost.)*

Erection

30. Window units shall be trued in all directions and set plumb in the masonry.

31. In setting windows, wooden wedges to hold unit in place must be located so as not to cause bulging or distortion.

32. After windows have been set in opening and properly built in, the joint between the window frame and masonry shall be carefully pointed up by the mason contractor.

Glazing

(To be done by glazing contractor.)

33. All standard windows shall be glazed on the inside.

34. Glass shall be held in place by Truscon copper clad steel wire glazing clips, four per light.

35. Glass shall be bed and face puttied with steel window putty.

Screens

36. Screens shall be of the following types:

(a) Fixed screen on outside of inward projecting ventilators.

(b) Top hinged screen for outward projecting ventilators with standard hardware.

(c) Fixed screen for use with underscreen push bar for outward projecting ventilators.

37. Screens shall have rewireable electro-galvanized steel frames and solid bronze 16 mesh (.0113 in. diameter) screen cloth. Frames shall be given one standard coat baked enamel for inside screens and two coats for outside screens.

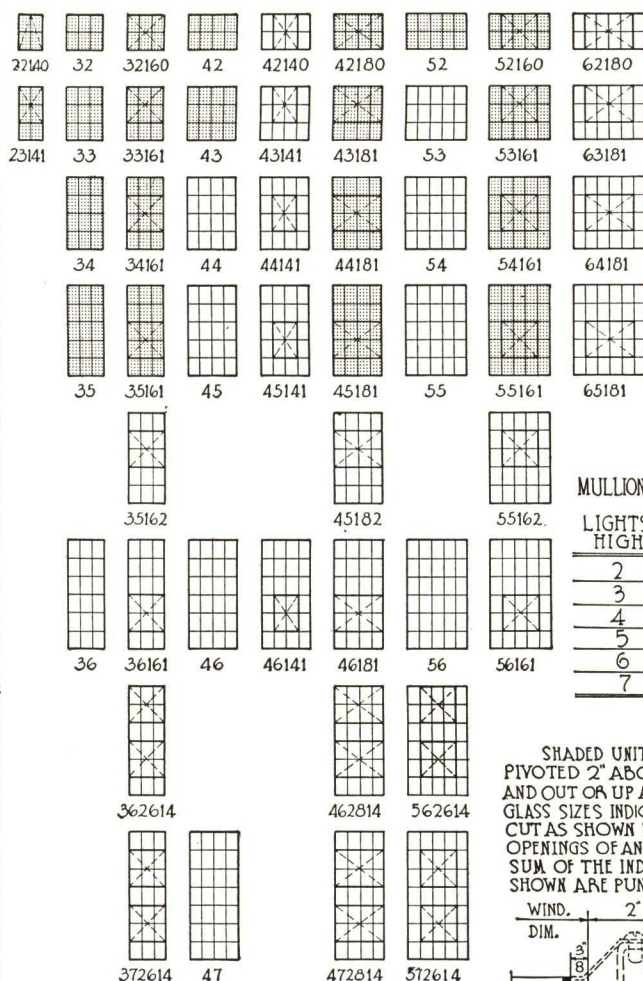
Underwriters' Label

(National Board of Fire Underwriters.)

38. Underwriter's label of approval may be specified for sizes not exceeding 7 ft. 0 in. in width by 12 ft. 0 in. in height. One or more vertical mullions may be used. Special horizontal mullions may be used, provided opening width is not greater than 14 ft. 0 in. *Windows must be inside angle glazed.* Individual glass lights shall not exceed 350 sq. in. exposed area, 54 in. in height or 48 in. in width.

PIVOTED TYPE

12"×18" AND 14"×20" GLASS SIZE

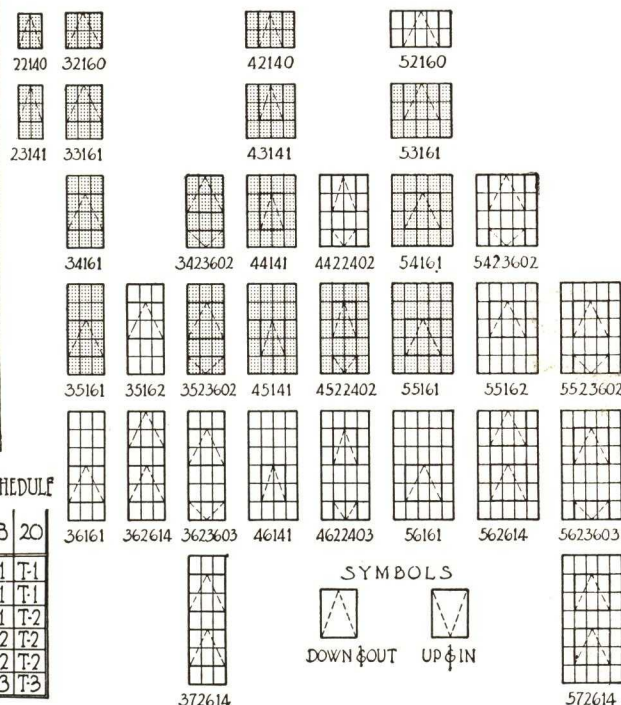


MULLION SCHEDULE

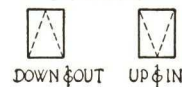
LIGHTS HIGH	18	20
2	T-1 T-1	
3	T-1 T-1	
4	T-1 T-2	
5	T-2 T-2	
6	T-2 T-2	
7	T-3 T-3	

PROJECTED TYPE

12"×18" AND 14"×20" GLASS SIZE

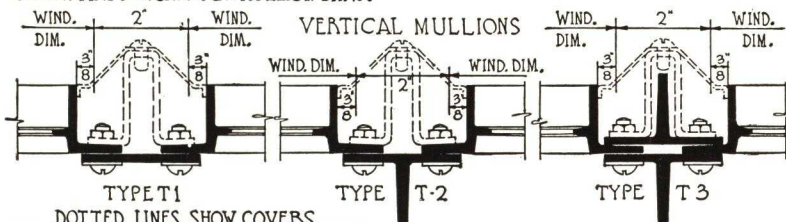


SYMBOLS



NOTES

SHADED UNITS ARE WAREHOUSE STOCK TYPES. PIVOTED VENTS ARE HORIZONTALLY PIVOTED 2" ABOVE CENTER. PROJECTED VENTS MAY BE SPECIFIED TO PROJECT DOWN AND OUT OR UP AND IN. VENTS OF WINDOWS CARRIED IN STOCK PROJECT ONLY AS SHOWN. GLASS SIZES INDICATED ARE FOR FIXED LIGHTS ONLY. GLASS LIGHTS IN VENTILATORS MUST BE CUT AS SHOWN IN GLASS SIZE DIAGRAMS BELOW. WINDOWS MAY BE COMBINED TO FILL OPENINGS OF ANY WIDTH BY MEANS OF MULLIONS, THE WIDTH OF THE OPENING BEING THE SUM OF THE INDIVIDUAL SASH DIMENSIONS PLUS 2" FOR EACH MULLION ADDED. ALL TYPES SHOWN ARE PUNCHED FOR MULLION BARS.

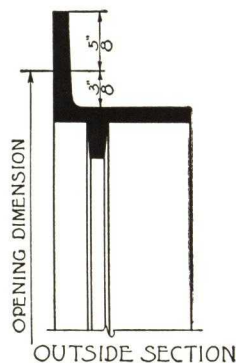


OPENING DIMENSIONS

LIGHTS WIDE	GLASS WIDTH 12"	GLASS WIDTH 14"	LIGHTS HIGH	GLASS HEIGHT 18"	GLASS HEIGHT 20"
2	2'-1 5/8"	2'-5 5/8"	2	3'-1 5/8"	3'-5 5/8"
3	3'-2"	3'-8"	3	4'-8"	5'-2"
4	4'-2 3/8"	4'-10 3/8"	4	6'-2 3/8"	6'-10 3/8"
5	5'-2 3/4"	6'-0 3/4"	5	7'-8 3/4"	8'-6 3/4"
6	6'-3 3/8"	7'-3 1/8"	6	9'-3 3/8"	10'-3 3/8"
			7	10'-9 1/2"	11'-11 1/2"

12' 18"	12' 18"	12' 18"	12' 18"	12' 18"
12' 18"	11' 17"	12' 17"	11' 17"	12' 18"
12' 18"	11' 17"	12' 17"	11' 17"	12' 18"
12' 18"	12' 18"	12' 18"	12' 18"	12' 18"

14' 20"	14' 20"	14' 20"	14' 20"	14' 20"
14' 20"	13' 19"	14' 19"	13' 19"	14' 20"
14' 20"	13' 19"	14' 19"	13' 19"	14' 20"
14' 20"	14' 20"	14' 20"	14' 20"	14' 20"



GLASS SIZES FOR STANDARD PIVOTED WINDOWS

GLASS SIZES FOR STANDARD COMMERCIAL PROJECTED WINDOWS

TRUSCON
STEEL COMPANY
Youngstown, Ohio

**TYPES AND SIZES
PIVOTED AND COMMERCIAL PROJECTED
STEEL WINDOWS**

PLATE No.
A-1-B
OCTOBER, 1937

PIVOTED WINDOWS

ADAPTABLE to all types of industrial and manufacturing buildings including warehouse, factory and storage buildings, garages, filling stations, etc., and especially desirable when a great deal of light is needed. The slender but strong and rigid steel muntin bars admit the maximum of light to the interior. They are permanent, fireproof, never stick or warp and open or close easily regardless of climatic conditions.

SPECIFICATIONS

General

1. All windows so indicated on the plans and elevations and called for in these specifications shall be the Horizontally Pivoted type as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitutions shall be made without the written approval of the architect.

Material and Construction

2. All members shall be constructed from Truscon specification, hot-rolled, new billet steel.
3. All joints shall be mortised and tenoned, and air hammer riveted.
4. The intersection of horizontal and vertical muntins shall have a dovetail mitre, rigidly interlocking the bars.
5. No excess metal or projecting surfaces shall be permitted where muntin bars intersect.
6. Muntin bars, except where ventilators occur, shall be continuous from head to sill and from jamb to jamb.
7. The members of the windows shall not be bent or deformed during process of manufacture.
8. Double contact weathering shall be provided on all four sides of the ventilator.
9. Unless otherwise specified the ventilators shall be horizontally pivoted 2 in. above the center line.
10. The pivots shall be solid steel securely welded to the ventilator and side bar of window, and equipped with $\frac{3}{8}$ in. steel removable pins held in place with washers and cotter pins.
11. Top and bottom rails of ventilators shall be cambered in shop before being fitted to windows, so, when closed, the corners shall engage first, allowing the ventilator to be evenly drawn up to the weather-tight bearing by means of standard locking device.

Vertical Mullions

12. Where two or more window units, less than 6 ft. 3 in. in height, are used in the same opening, they shall be connected with Truscon Standard Plate Mullions (Type T-1).
13. For window units over 6 ft. 3 in. high, and up to and including 10 ft. $3\frac{1}{8}$ in. high, Truscon Standard T-Bar Mullions (Type T-2) shall be used.
14. For all window openings over 10 ft. $3\frac{1}{8}$ in. high, Truscon Standard Double T-Bar Mullions (Type T-3) shall be used.
15. All mullions shall be $2\frac{1}{2}$ in. wide (2 in. mullion distance) with slotted holes to allow for adjustment.
16. Mullions shall extend $1\frac{3}{8}$ in. below the leg of window at sill to provide a firm anchorage in sill construction.

Unattached Hardware

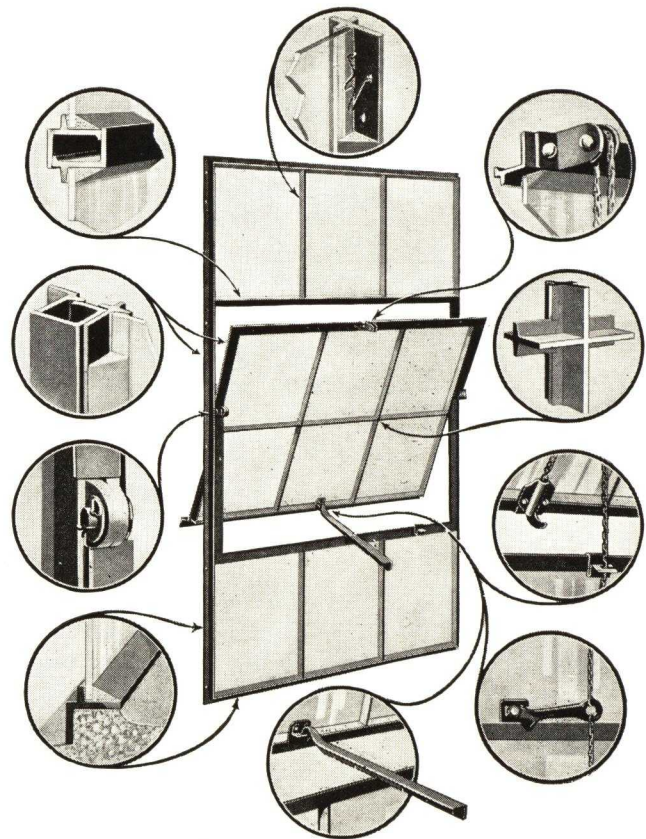
17. All ventilators shall be equipped with either push bar, gravity cam latch or spring latch and chain, as marked on drawings or as hereinafter specifically called for; all iron and steel hardware except push bars shall be cadmium plated before shipment. Push bars are painted.

(Schedule of proper hardware for windows to be inserted here.)

Mechanical Operator

18. All runs of ventilators, shown on drawings as "mechanically controlled", shall be equipped with worm and gear or with rack and pinion operator, as manufactured by the TRUSCON STEEL COMPANY.

(Insert specifications for proper type of mechanical operator.)



Structural Support

19. All structural work for the support of steel windows and operators shall be provided by another contractor.

Shop Painting

20. (a) All windows shall be given a coat of protective rust-resisting gray paint, oven baked for at least 60 minutes at a temperature of not less than 300 degrees.
- (b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

Erection

21. Window units shall be trued in all directions and set plumb in the masonry.
22. In setting windows, wooden wedges to hold unit in place must be located so as not to cause bulging or distortion.
23. After windows have been set in opening and properly built in, the joint between the window frame and masonry shall be carefully pointed up by the mason contractor.

Glazing (To be done by glazing contractor.)

24. All standard windows shall be glazed on the INSIDE.
25. Glass shall be held in place by Truscon copper clad steel wire glazing clips, four per light.
26. Glass shall be bed and face puttied with metal window putty.

Screens

27. Standardized metal screens are available for Truscon Pivoted Steel Windows. However, for economy, when screens are required, we recommend commercial projected ventilators opening inwardly. See Truscon Commercial Projected Window catalog.

Underwriters' Label

(National Board of Fire Underwriters.)

28. Underwriter's label of approval may be specified for sizes not exceeding 7 ft. 0 in. in width by 12 ft. 0 in. in height. One or more vertical mullions may be used. Special horizontal mullions may be used, provided opening width is not greater than 14 ft. 0 in. Windows must be inside angle glazed. Individual glass lights shall not exceed 350 sq. in. exposed area, 54 in. in height or 48 in. in width.

CONTINUOUS WINDOWS

IDEALLY suited for use in industrial plants where the nature of the work requires frequent and rapid ventilation of the building. They are also most practical for any buildings having monitors or saw-tooth faces, or where banks of windows reach considerable heights, necessitating remote control for operation. Particularly valuable where large areas are enclosed which cannot be satisfactorily lighted through the side walls.

The scientific application of Continuous Windows to a building insures maximum daylight and gives absolute control of temperature and ventilation, resulting in a marked effect on increased efficiency and reduction of production costs. The quick opening and closing of glass areas by mechanical operation is invaluable to clear out gases, smoke and excessive heat and to protect against sudden change in weather.

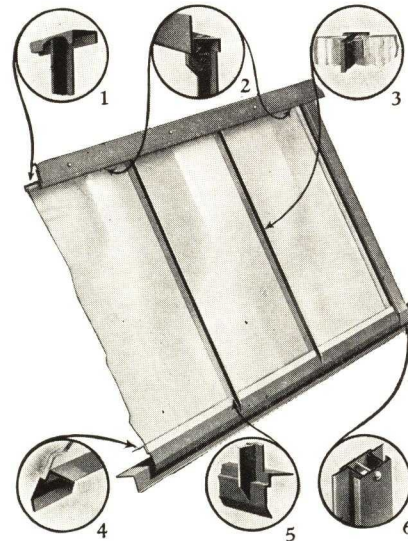
PRESSED STEEL FRAMES

Particularly well adapted for use in modern structures, especially powerhouses, where the effect of massive strength must be accurately met. Made of heavy gauge steel, absolutely uniform and economical. Details furnished on request.

1 Welded Mortise and Tenon Joint—Prevents twisting.

2 Hinge Member—With hot rolled top rail channel provides continuous bearing and weathering without use of flashing.

3 Glazing Clips—Of heavy brass on vertical muntin bars.



4 Bottom Rail—Hot rolled bottom rail wide flange adds lateral stiffness to window. For the attachment of mechanical operator.

5 Welded Mortise and Tenon Joint—

6 Vertical Mullion—Provides for expansion.

MECHANICAL OPERATORS

TRUSCON is confident that its many years' experience in solving the problems of daylighting and ventilation through the medium of a complete line of steel windows has placed it in an enviable position to design and manufacture efficient and dependable mechanical window operators.

Operators for opening and closing Continuous, Pivoted and Projected types of windows are available in either hand or motor

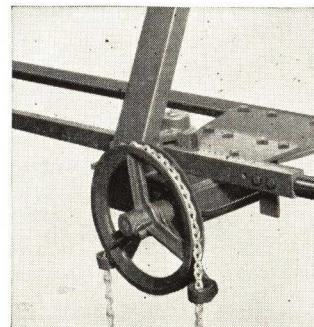
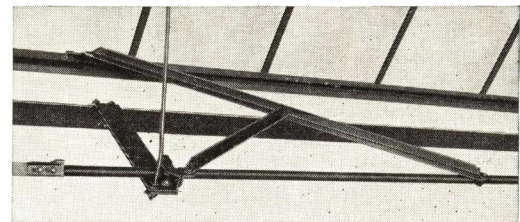
operated units. They are made in various designs and capacities to meet the requirements of any job. On this and the following page are illustrated a few representative types of operators designed and manufactured by TRUSCON STEEL COMPANY.

We offer the services of our Engineering Department to assist you in working out problems of operator design or installation. Truscon maintains offices in all key cities for your convenience.

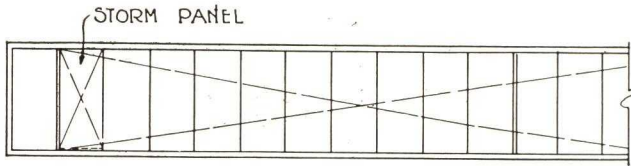
CONTINUOUS WINDOW OPERATOR TENSION TOGGLE TYPE

THE operator illustrated below is of the Tension Toggle Type and is used to operate long runs of Continuous windows. For short runs, Rack and Pinion type may be used due to lighter loads.

Tension Toggle Arms as illustrated below are made in four sizes to suit the different standard heights of continuous windows.

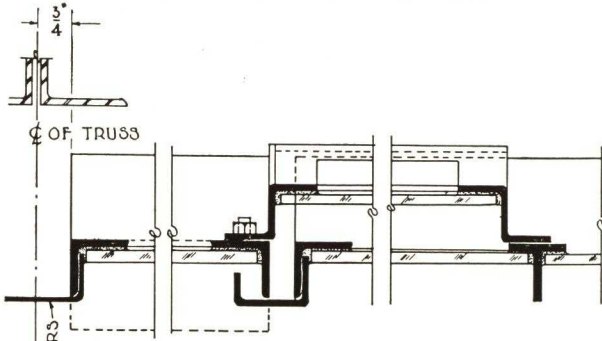


At the left is illustrated P-750 Hand Chain Operated Power for tension toggle operation of medium length runs. This power can be motorized conveniently when electrical control is desired. For longer runs, CP-69 Light Duplex Power, or CP-83 Heavy Duplex Power is recommended. Powers CP-69 and CP-83 must be motorized.

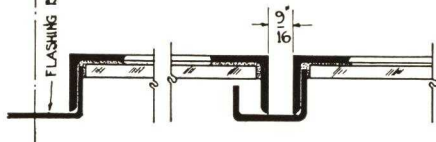


OUTSIDE ELEVATION

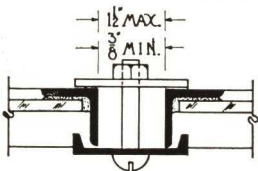
HEIGHT OF OPENINGS	HEIGHT OF SASH	GLASS SIZES		
		STANDARD PANELS	END PANELS	STORM PANELS
2'-10 1/2"	3'-0"	23 3/8" x 32 3/4"	22 3/8" x 32 3/4"	23 3/8" x 32 3/4"
3'-10 1/2"	4'-0"	23 3/8" x 44 3/4"	22 3/8" x 44 3/4"	23 3/8" x 44 3/4"
4'-10 1/2"	5'-0"	23 3/8" x 56 3/4"	22 3/8" x 56 3/4"	23 3/8" x 56 3/4"
5'-10 1/2"	6'-0"	23 3/8" x 68 3/4"	22 3/8" x 68 3/4"	23 3/8" x 68 3/4"



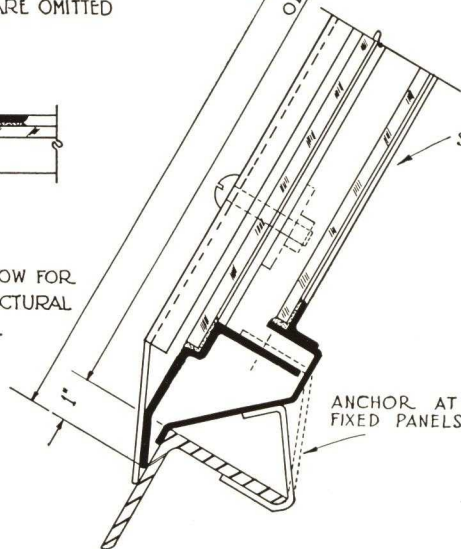
TYPICAL END SECTION SHOWING END AND STORM PANEL



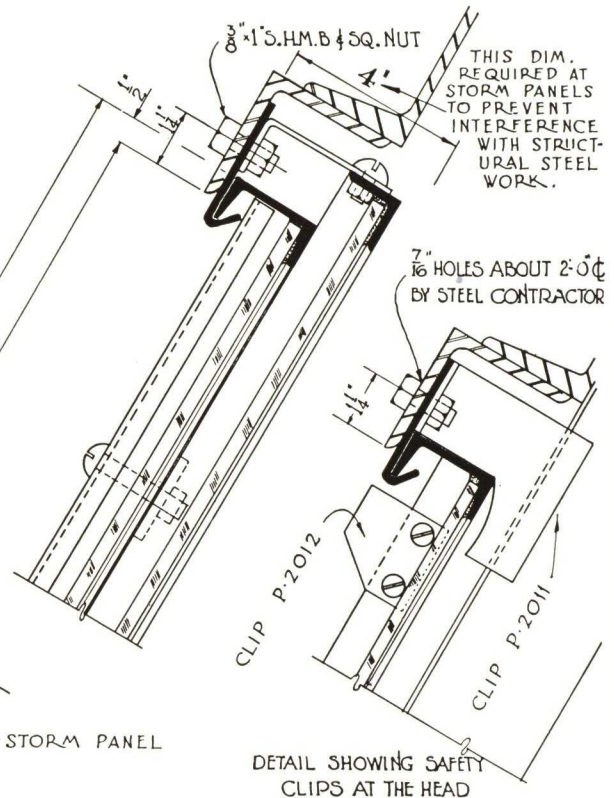
END CONDITION WHERE STORM PANELS ARE OMITTED



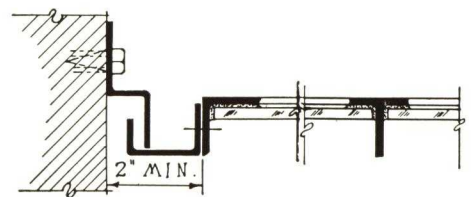
MULLION
ADJUSTABLE TO ALLOW FOR
VARIATION IN STRUCTURAL
STEEL WORK



SECTION SHOWING SWING SASH
AND STORM PANEL.
SASH CAN BE HUNG IN EITHER VERT-
ICAL OR SLANTED POSITION.



DETAIL SHOWING SAFETY
CLIPS AT THE HEAD



TYPICAL END SECTION SHOWING
SWING SASH EXTENDING TO JAMB

-NOTES-

STANDARD UNITS OF TRUSCON CONTINUOUS SASH
ARE DESIGNED FOR TRUSS SPACING OF 20'-0\"/>

TRUSCON
STEEL COMPANY
Youngstown, Ohio

STANDARD DETAILS
CONTINUOUS STEEL WINDOWS

PLATE No.
E-7
OCTOBER, 1937

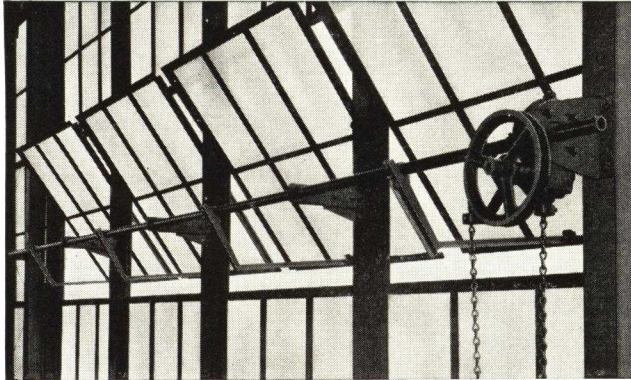
WORM AND GEAR OPERATORS

Lever Arm

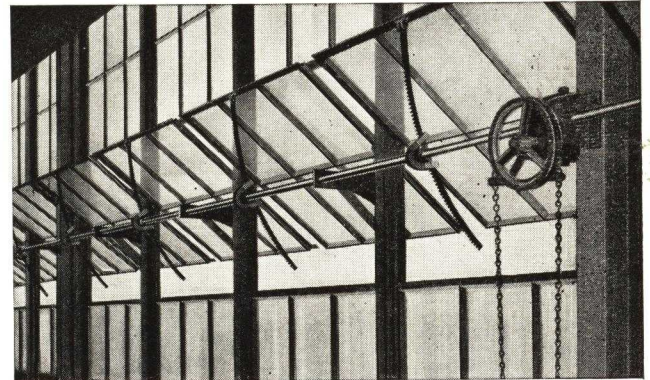
ILLUSTRATED below is lever arm operator, hand chain controlled, which operates a torsion shaft with lever arms to actuate one or more tiers of horizontal pivoted ventilators. Vertical shaft with mitre gear and hand wheel can be used instead of hand chain. The worm and gear is fully enclosed and runs in oil tight housing.

Rack and Pinion

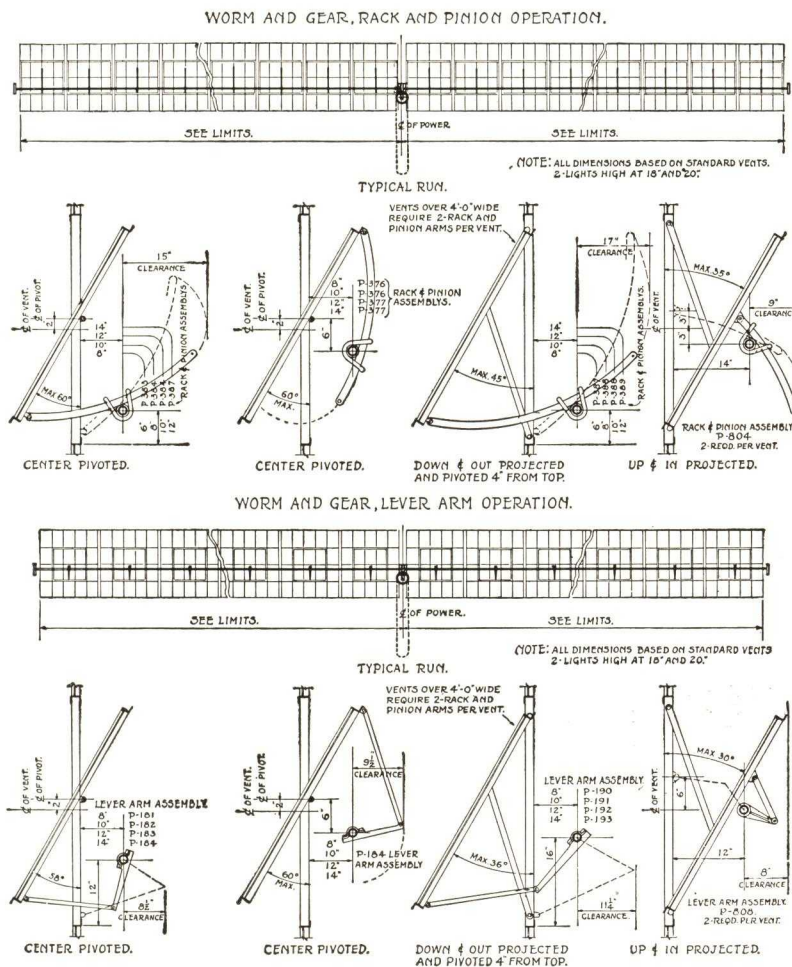
RACK and pinion operator is practically the same as worm and gear, except that rack and pinion arms are used instead of lever arms, and the torsion shaft makes one or more complete rotations. This type is generally used for operating projected and top pivoted ventilators but may be used when it is desired to operate long lines of horizontal pivoted ventilators. In addition to hand chain or vertical shaft with mitre gear and hand wheel control, rack and pinion operators can be electrically controlled.



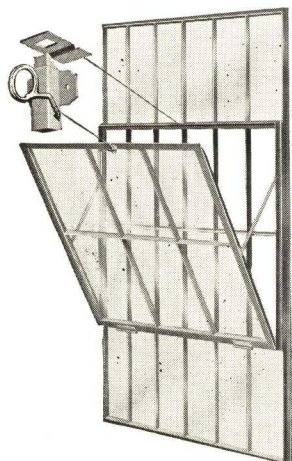
Typical Illustration of Lever Arm Operation of Horizontally Pivoted Windows



Typical Illustration of Rack and Pinion Operation of Horizontally Pivoted Windows

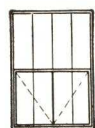


SECURITY STEEL WINDOWS



TRUSCON Security Windows are used in store buildings, warehouses and other buildings where adequate ventilation and at the same time protection from prowlers is required. The Truscon Security Window is a ventilated window and guard combined in one complete unit. The ventilator is bottom hinged and is equipped with friction side arms to hold the ventilator in any open position up to a maximum opening of 30° to 35°.

The nominal glass size of the main frame lights is only 6 in. x 18 in. which prevents entrance even if the glass is removed. The ventilator lights are 12 in. x 18 in. In glazing, glass is placed in the ventilator lights and the fixed lights above and below the ventilators but glass is not installed in the guard portion, which then forms a grille over the ventilator opening. Windows are prepared for INSIDE putty glazing. Nine sizes of Security Windows are carried in stock. Mullions for joining two or more Security Windows side by side in one opening are also carried in stock.



42-1-4-0



43-1-8-0



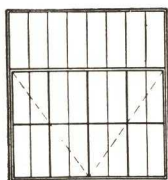
62-1-6-0



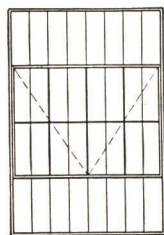
63-1-12-0



64-1-12-1



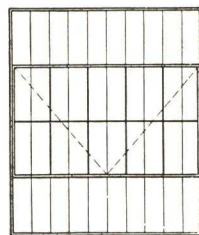
83-1-16-0



84-1-16-1



10-3-1-20-0



10-4-1-20-1

SCREENS

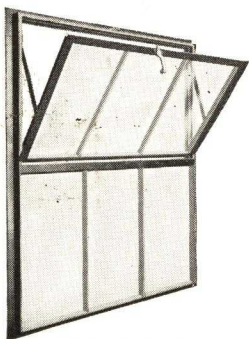
Screens, when required, shall be attached to the outside of the main frame opposite ventilator opening.

Screens have rewirable electro-galvanized steel frames and solid bronze 16 mesh (.0113 in. diameter) screen cloth. Frames shall be given two coats of baked enamel before shipment.

SIZES

Type	Width ft.—in.	Height ft.—in.
42-1-4-0	2-1 5/8	3-1 5/8
43-1-8-0	2-1 5/8	4-8
62-1-6-0	3-2	3-1 5/8
63-1-12-0	3-2	4-8
64-1-12-1	3-2	6-2 3/8
83-1-16-0	4-2 3/8	4-8
84-1-16-1	4-2 3/8	6-2 3/8
10-3-1-20-0	5-2 3/4	4-8
10-4-1-20-1	5-2 3/4	6-2 3/8

UTILITY STEEL WINDOWS PROJECTED TYPE



Projects In



Projects Out

TRUSCON Utility Steel Windows are ideal for use in buildings, such as garages, stores, shops, basements, area-ways, etc. The ventilator is a balanced projecting type which in opening swings outwardly, leaving the interior entirely unobstructed, or with ventilator projecting inwardly when it is desired to have no part of the window extending beyond the outside face of the building and for economical screening.

Utility Steel Windows are furnished with ventilator projecting out or projecting in and in only one size—3 ft. 4 in. wide by 3 ft. 7 5/8 in. high. Glass size in fixed portion of sash is 13 by 20 in. in the two outside lights, and 12 by 20 in. in center fixed light. The glass size of lights in the ventilator is 12 by 20 in.

SCREENS

For Utility Windows with inward projecting ventilators, a fixed screen attached to the outside is the more practical. The ventilator can be opened or closed without opening or disturbing the screen. Screens are easily removed or installed from the inside. When conditions do not permit the use of inward projecting ventilators, top hinged screens are used. This screen must be opened before operating the ventilator. Screens shall have rewirable electro-galvanized steel frames and solid bronze 16 mesh (.0113 in. diameter) screen cloth. Screen frames have baked enamel finish.

STEEL BASEMENT WINDOWS

TRUSCON Steel Basement Windows are manufactured of heavy hot-rolled sections; cannot warp, swell nor stick; always operate easily under all conditions. The continuous double overlapping weathering around Truscon Windows is an exclusive feature that makes them weather-proof.

All Basement Windows are bonderized and receive a coat of protective rust-resisting gray paint, oven baked for at least 60 minutes at a temperature of not less than 300 degrees.

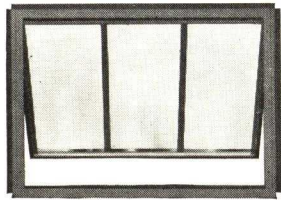
Basement Windows are made either with the hinge at the top or at the bottom, both types having the same sizes and both opening in. The bottom-hinged window has an arm to limit the opening. Furnished complete with hardware.

Steel frame screens with 16 mesh bronze cloth and clips, are available if required.

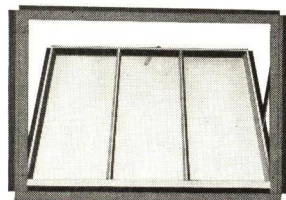
FIVE STANDARD SIZES

Glass Size, in.	No. of Lights Wide	Window Opening, ft.-in.
*10 x 12	2	1-11 $\frac{1}{4}$ x 1-3
10 x 12	3	2-9 $\frac{1}{2}$ x 1-3
10 x 20	3	2-9 $\frac{1}{2}$ x 1-11
14 x 20	2	2-7 $\frac{1}{4}$ x 1-11
12 x 18	3	3-3 $\frac{1}{2}$ x 1-9

*Furnished in top hinged only.

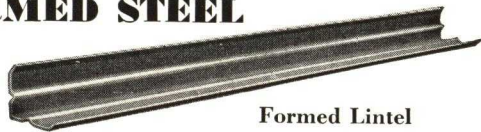


Top Hinged



Bottom Hinged

LINTELS FORMED STEEL



Formed Lintel

THE continuous horizontal ribs and the turned edges of Truscon formed lintels provide much greater strength than plain formed angles of the same size. The horizontal ribs and turned edges provide a more proper bed for the brick and mortar. The 3 $\frac{1}{2}$ -in. horizontal leg does not extend beyond the face of the brick.

All lintels are bonderized and receive a coat of protective gray paint, oven baked for at least 60 minutes at a temperature of not less than 300 degrees. Truscon formed Steel Lintels can be used for any opening up to 6 ft. 3 in. not having concentrated loads occurring directly above the lintel.

Lintels are stocked in eleven sizes in all Truscon warehouses for immediate delivery.

3 $\frac{1}{2}$ in. x 3 $\frac{1}{2}$ in. x 11 gauge—2 ft., 2 ft. 6 in., 3 ft., 3 ft. 6 in., 4 ft. and 4 ft. 6 in. lengths.

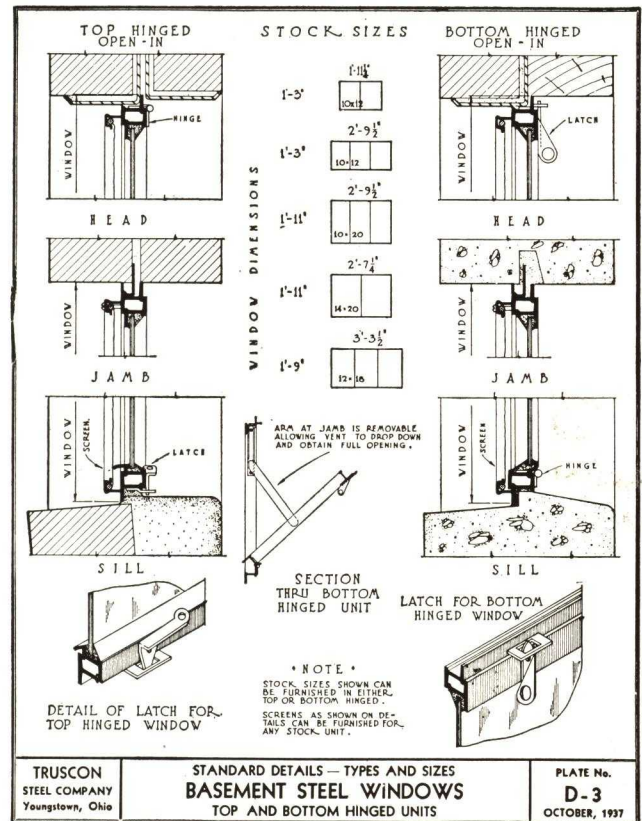
4 $\frac{1}{2}$ in. x 3 $\frac{1}{2}$ in. x 9 gauge—5 ft., 5 ft. 6 in., 6 ft., 6 ft. 6 in., and 7 ft. lengths.

HOT ROLLED

TRUSCON Hot Rolled Lintels are made from new stock; no reclaimed material is used. These lintels are carried in stock, cut to standard lengths. 3 $\frac{1}{2}$ in. x 3 $\frac{1}{2}$ in. x $\frac{1}{4}$ in. Angle; 11 sizes, 2 ft. 0 in. to 7 ft. 0 in. (multiples of 6 in.); 4 in. x 3 $\frac{1}{2}$ in. x $\frac{1}{8}$ in. Angle; 8 sizes, 5 ft. 6 in. to 9 ft. 0 in. (multiples of 6 in.).



Hot Rolled Lintel



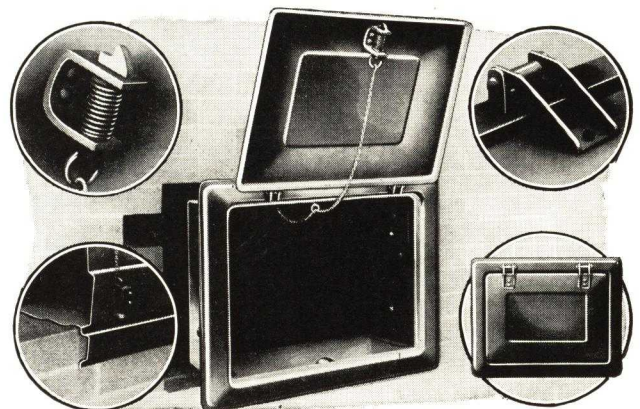
COAL CHUTES PRESSED STEEL

TRUSCON Coal Chute is break-proof, weather-tight, thief-proof and simple. No castings are used . . . the door and frame being made entirely of heavy, rust-resisting pressed steel.

The neat, trim appearance adds considerably to the attractiveness of the exterior of the house, and the sturdy door which closes into a deep recess in the frame excludes drafts.

The Truscon Coal Chute is complete with positive spring latch, slotted hinges which hold the door open when desired, and formed lugs which act as anchors for cementing in masonry openings. Every detail has been developed to afford the maximum utility in keeping with the proper architectural style.

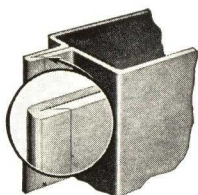
Two standard sizes—Frame 27 x 21 $\frac{1}{4}$ in. Door opening, 22 $\frac{1}{2}$ x 16 $\frac{3}{4}$ in. Depths, 8 or 12 in.



INDUSTRIAL STEEL DOORS, SERIES 31

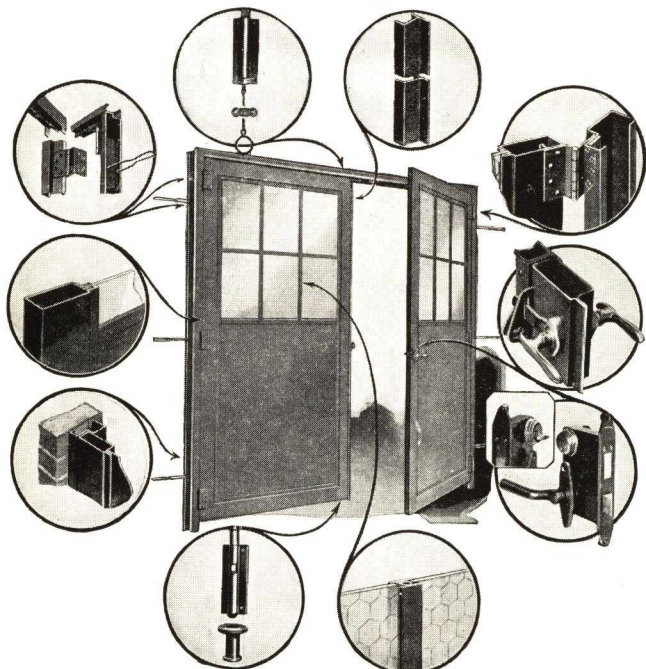
SWING AND SLIDE TYPES

ADAPTABLE for use in basements, rear entrances, boiler rooms, fire exits and similar places in residences, hotels, apartments, schools, churches, shops, warehouses, filling stations and stores. Swing Type Doors can be furnished with heavily reinforced pressed steel door frames, prepared for standard hardware.

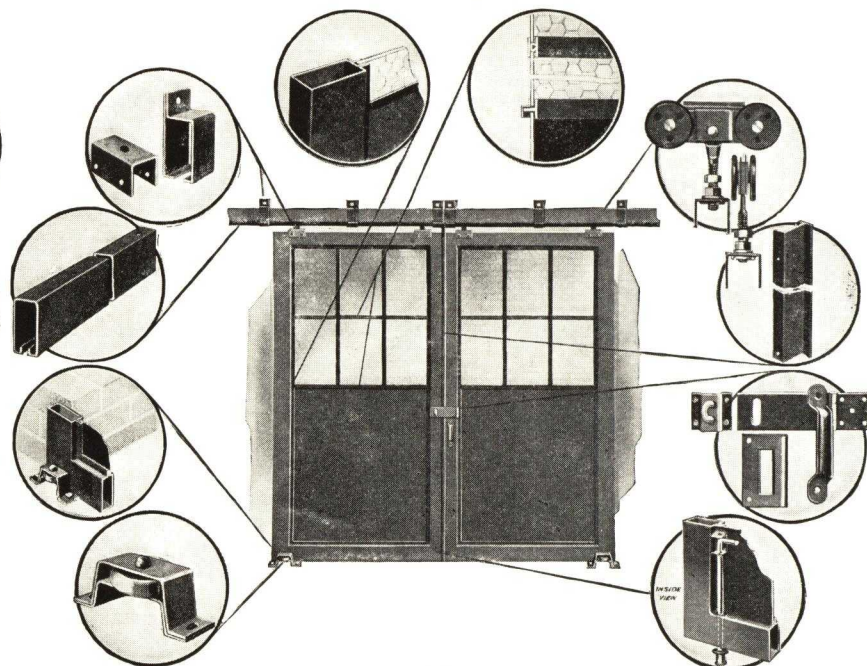


Lock Seam Tube

Stiles and rails are made of pressed steel tubing with lock seam. All corners are carefully fitted and welded solidly. The large size of the 14 gauge tube, $1\frac{3}{4} \times 5$ in., provides an ideal condition for welding. Practically 14 in. of weld at corners.



Swing Type



Slide Type

SPECIFICATIONS

1 General—All doors so indicated on the plans and elevations and called for in these specifications shall be Industrial Steel Doors, Series 31, either swing or slide type, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Material—(a) The stiles, top rail and bottom rail of the Industrial Steel Door, Series 31, shall be constructed of $5 \times 1\frac{3}{4}$ in. 14-gauge pressed steel tube.

(b) Sash panel shall be an integral part of the door leaf securely welded to the door rails.

(c) The steel panels shall be constructed from annealed and patent leveled sheets.

3 Construction—(a) The corners shall be of welded construction with all joints face welded and ground smooth.

(b) The upper portion of the door shall be fitted with a sash panel, all members of which shall be welded in place. The glass shall be held in place with putty and glazing angles.

Note: Upper portion of the door may be fitted with solid steel panel at no extra charge.

(c) The lower portion of the door shall be equipped with patent level steel panels electrically spot-welded to the stiles and rails and shall not be less than 18-gauge in thickness.

4 Hardware—(a) Each swinging leaf shall be equipped with three (3) heavy steel half surface template butt hinges.

(b) All swing doors shall be equipped with Truscon standard mortise cylinder lock with solid bronze face, or lever latch and padlock brackets (specify which). Cylinder lock to be equipped with spring bolt operated by lever handles and dead bolt operated by thumb turn from inside and by key from outside.

(c) Where swing doors are hung in pairs one leaf shall be equipped with foot bolt and spring top bolt.

(d) Sliding leaves shall be hung from four (4) wheel roller-bearing trolleys and shall be provided with guides, handles, stops and hasp and staples as shown on the drawings.

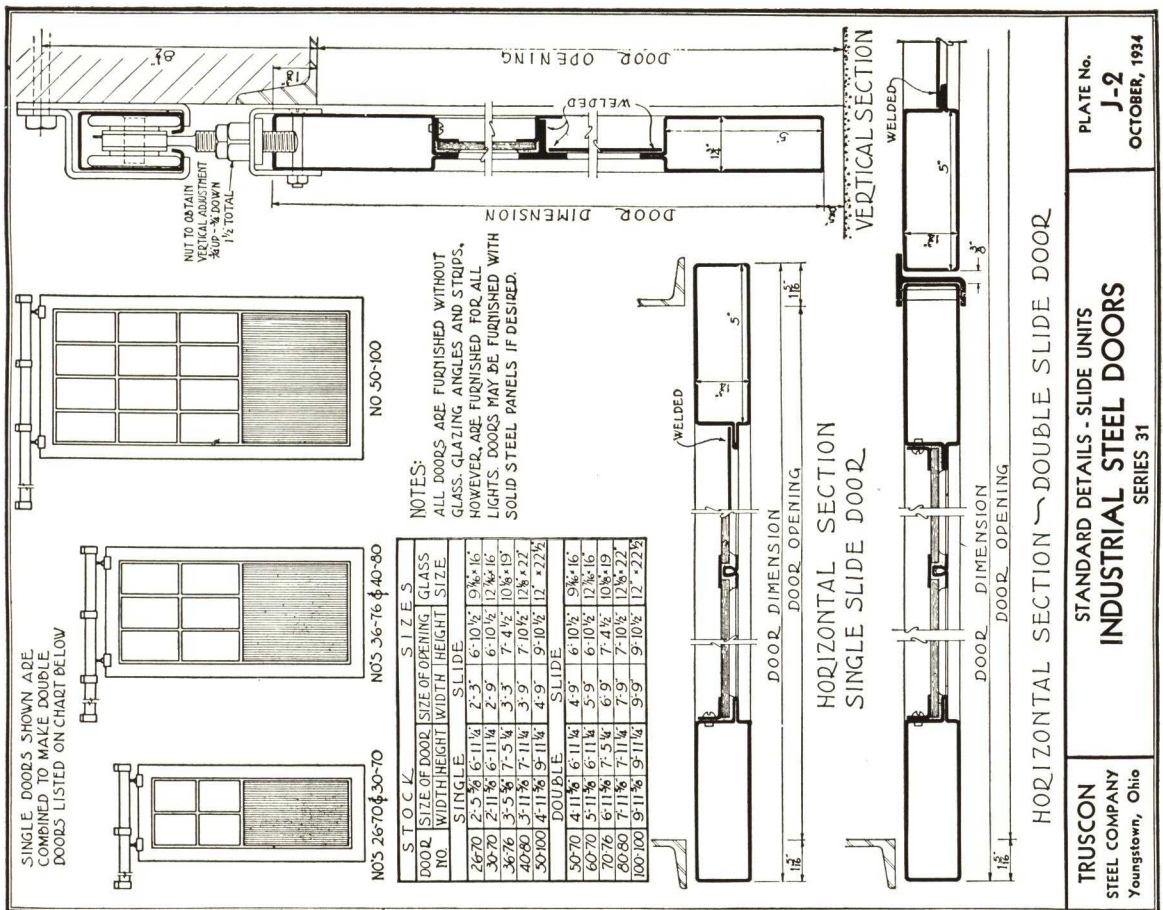
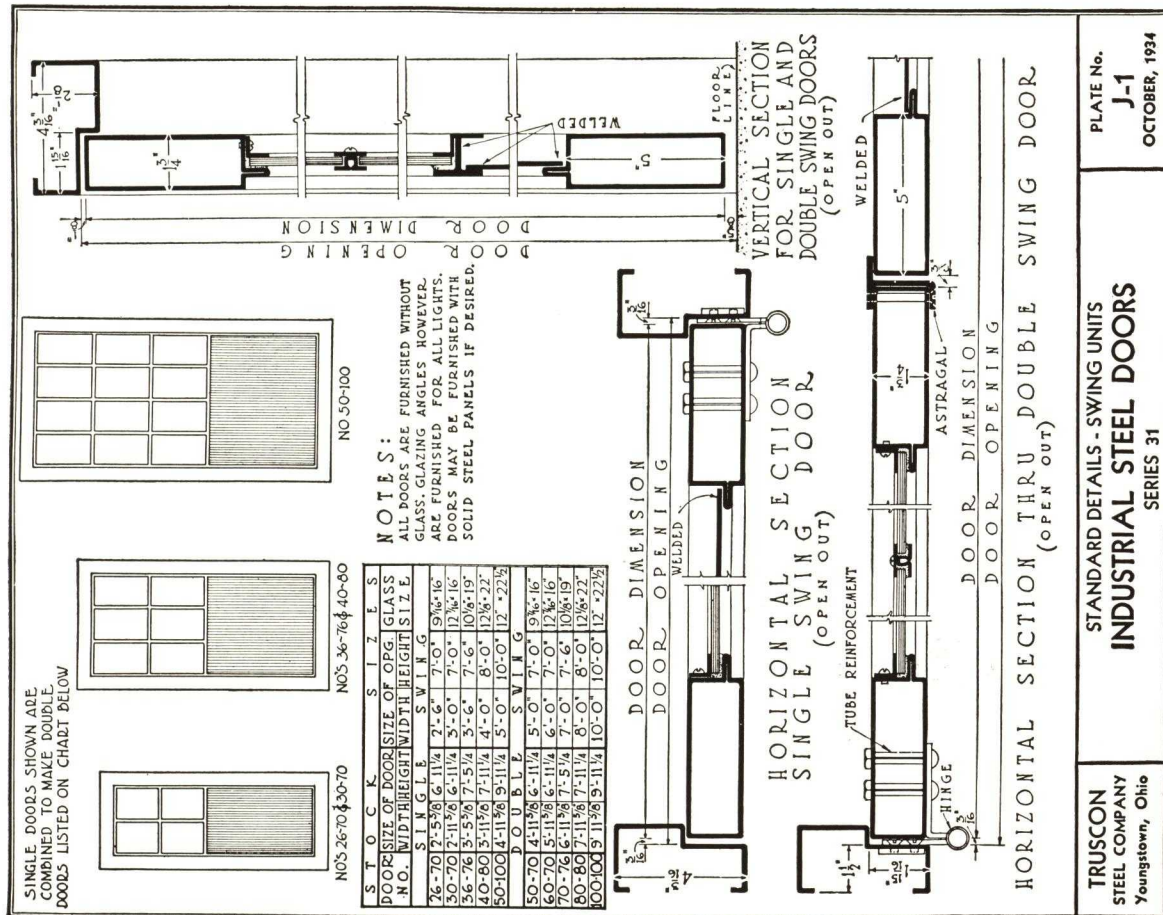
(e) With all double swing or double slide doors, an astragal shall be provided by door manufacturer.

5 Pressed Steel Door Frame—(a) All Industrial Doors shall be provided with a pressed steel door frame made of 14-gauge steel. Unless otherwise specified, these frames shall be supplied by the door manufacturer.

(b) Frame shall be either fastened directly to the structural steel or shall have anchors built into the masonry. The frame, regardless of jamb anchorage, shall extend 3 in. below finished floor line.

6 Shop Painting—All doors and frames shall receive one coat of protective paint before shipment.

7 Erection—The erection of all doors shall be performed by the door manufacturer.



INDUSTRIAL DOORS FOR LARGE OPENINGS

SERIES 100

THIS door was primarily designed for large openings exceeding ten feet in either dimension and where they are subjected to extreme hard and rough usage. They can also be furnished economically in smaller sizes where conditions warrant this heavier type of construction.

Stiffness is the prime requisite of a large swing or slide door. One of the governing factors necessary to obtain this stiffness depends upon the torsional strength of the stiles and rails. This is assured by the use of the large tube. The fully welded corners and welded attachments of the sash and plates adds further rigidity to the door leaves.

All stiles and rails are constructed from 13-gauge cold rolled welded steel tubing, 4 in. x 2½ in. The corners are mitred and internally reinforced. All corners, joints and intersections are 100% electrically welded and external surfaces ground smooth.

The upper portion of the door consists of sash panels made from hot rolled sections. The sash panels are provided for glass to be bed puttied and held in place by continuous glazing angles mitred at the corners. The glazing angles only are fitted and attached in the shop.

The lower portion of the door is covered with 13-gauge patent leveled steel sheets.

The sash and steel panels are bedded in mastic and plug welded to the tube in a weather tight manner.

Swinging doors are regularly equipped with heavy steel strap hinges. Full surface ball bearing butt hinges can be furnished when specified. When the door is used for a main entrance it should be fitted with a pass door equipped with a mortise cylinder lock. If pass door is not used, it is customary to furnish lever latch and padlock brackets with heavy inside and outside handles. If the door is to be locked from the inside, we can furnish heavy cane bolts at the bottom and large spring bolts at the top.

Sliding Doors are hung from four-wheel roller bearing trolleys and heavy channel track and shall be equipped with back stops, binders, handles and hasp and staple hardware for locking the doors.

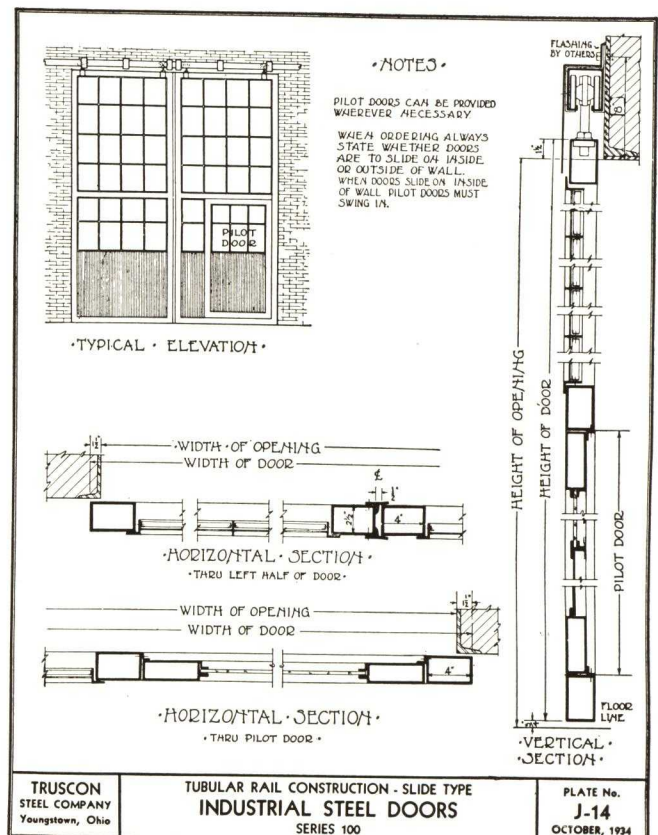
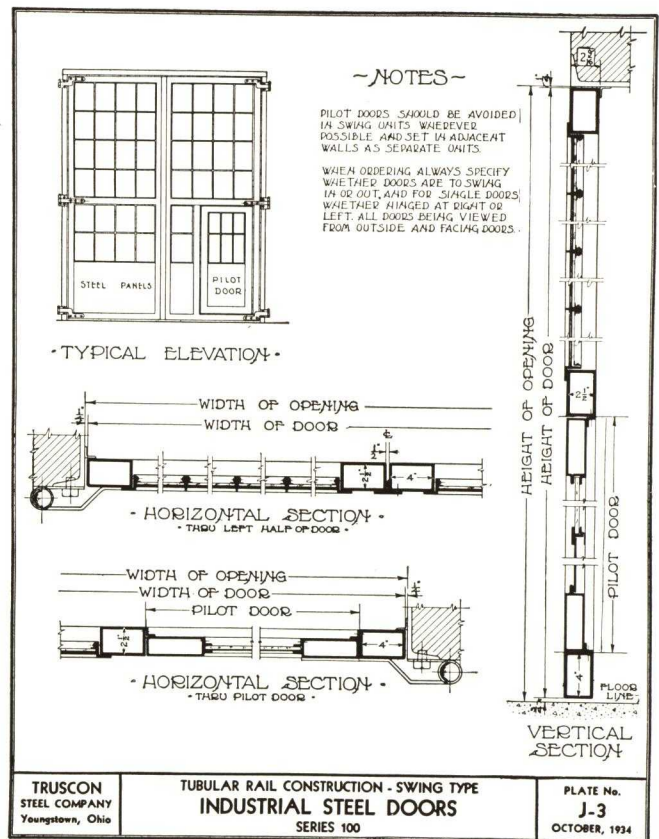
Astragal plates are always furnished with double swing and slide doors.

Flashing, special weathering and special sill conditions and door frames can be furnished as an extra when specified.

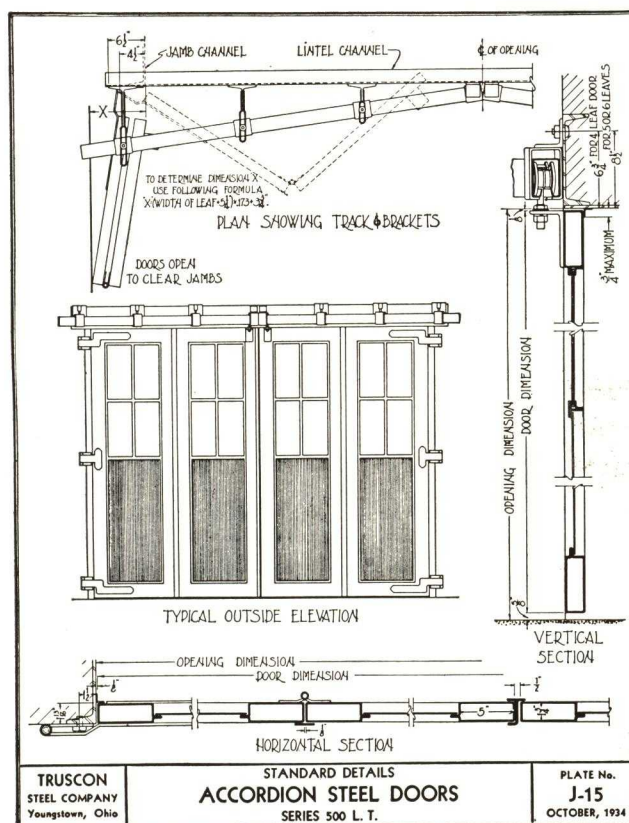
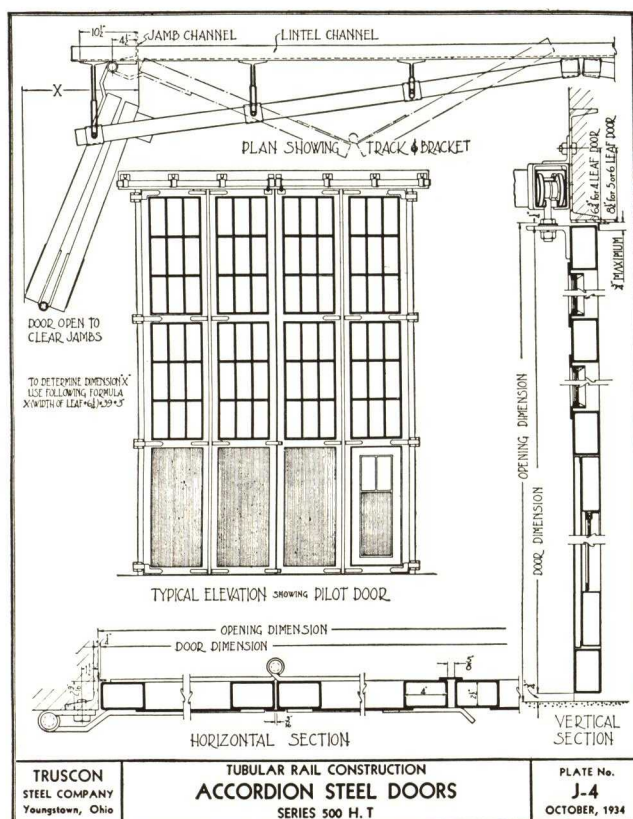
Door leaves and hardware are given a protective coat of metallic paint before shipment.

We recommend that doors be erected by the door manufacturer to insure proper installation.

Both swing and slide doors can be electrically-operated when desired.



ACCORDION DOORS SERIES 500HT AND 500LT

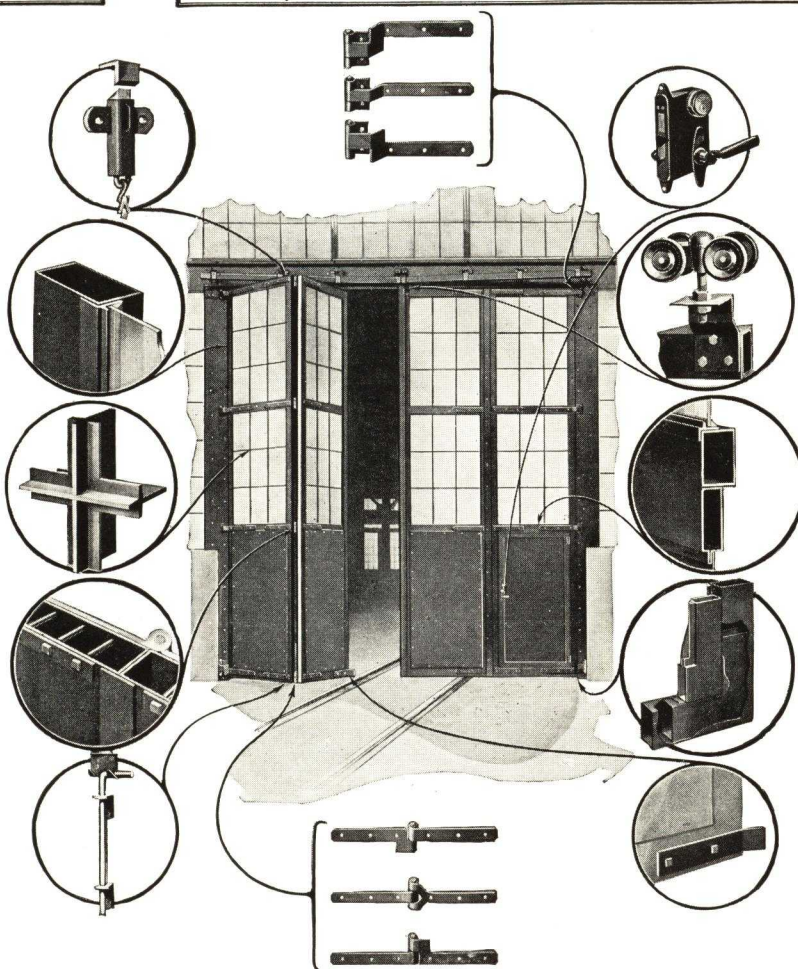


ACCORDION doors are used extensively in extremely wide or high openings, in place of swing doors, and where practically no head room is available. This door can be made to swing either in or out. It requires considerably less clearance than the ordinary double swing door.

Large out-swinging accordion doors are less susceptible to any damage from the wind. They are very easily and quickly operated by hand and when electrically-operated are used in fire departments and service garages where quick exit without heat loss is a factor.

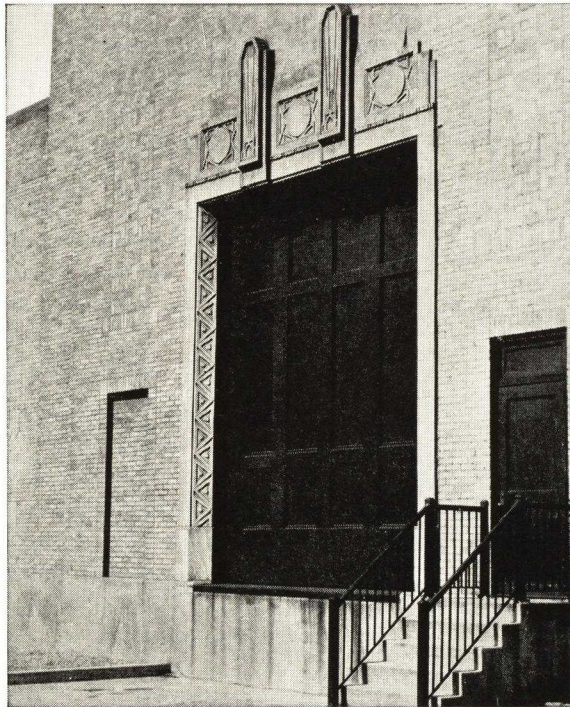
It is also practical to have various arrangements such as a single leaf at one jamb and two leaves at the other jamb or three leaves opening toward one jamb.

The construction of the leaves is the same as the light and heavy doors. The hardware is designed especially for a steel door that is subjected to rough usage. The light tube door is not recommended over 16 ft. wide and 12 ft. high.

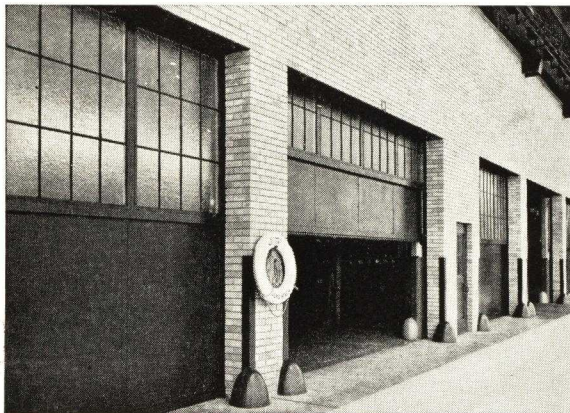


MECHANICAL DOORS

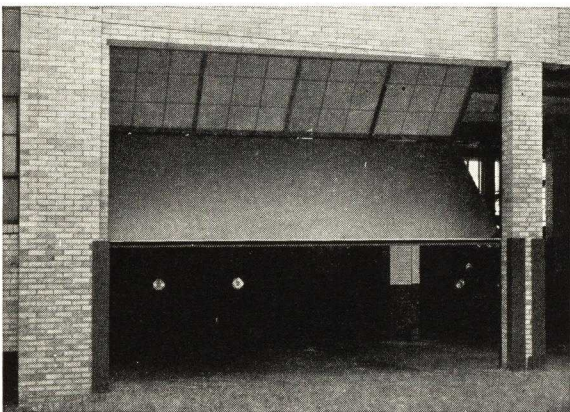
SINGLE SECTION VERTICAL LIFT DOORS



Single Section Vertical Lift Door



Two Section Vertical Lift Door



Bi-Fold Door

This door consists of a single large leaf that raises vertically to a position directly over the opening. It is held in position by continuous guideways attached to each jamb of the opening. It is suspended by a pair of cables which in turn run to a counterweight equivalent to the total weight of the leaf. A simple hand chain and spur gear reduction is used to operate doors over 10 feet in height or 100 square feet in area.

Where the head room permits, this is the simplest type of overhead door that can be used. It has ideal clearance lines when in operation and is considerably more substantial than either swing or slide doors. The operating mechanism is simple and requires a minimum of service. It can be weathered very effectively.

TWO SECTION VERTICAL LIFT DOOR

Where sufficient headroom does not permit the use of a single section door, we recommend the two section door. The opening is closed by two leaves, each approximately one-half the opening height, sliding vertically upward in guideways attached to the jambs of the opening. The bottom leaf sets behind the top leaf and moves simultaneously but at twice the speed of the upper leaf. The operating mechanism consists of a pair of cables operating over a series of sheaves to a single counterweight which balances both leaves.

The door leaves for this type of door are not in the same plane and the meeting rail between the two leaves adds another horizontal joint that must be weathered. Rubber weathering is also applied at the top and where the floor is not level, rubber packing can be applied to the bottom rail. Wheel guards can be used with this type of door.

Clearance required for a two section vertical lift door above the lintel should be approximately one-half the door height plus 22 in.

BI-FOLD DOOR

This is a popular type of overhead door which is commonly used for openings that do not have sufficient clearance at the head for a vertical lift door. It is made up in two sections, the small top leaf and large bottom leaf being hinged together, horizontally, on the outside face of the door. The top leaf is also hinged to the lintel, over the opening, on the inside of the building by a series of extension hinges. The bottom corners of the bottom leaf are fitted with large rollers that ride against the jambs of the building as the two suspension cables lift the door from the bearing pins of these rollers. The leaves swing in and up to their open position behind the lintel of the door opening.

Both leaves lie in the same vertical plane when in the closed position but the height of each leaf is definitely fixed, depending on the height of the opening.

This door gives very effective weathering at the jambs, head and sill. Attention should be given to the clearance required on the inside because a definite clearance line is required to operate the door.

The anchorage for the extension hinges of the top leaf to the building must be secure. When possible, we recommend through bolts or direct attachment to the steel work.

Doors over 10 ft. high or exceeding 100 sq. ft. should have hand chain operator. The door is locked at both jambs by means of throw bolts.

MECHANICAL DOORS

SINGLE SECTION TURNOVER DOORS

Single Section Turnover Doors have been used extensively for a number of years on piers and warehouses where a limited amount of headroom is available. The door is closed by a single large leaf, the head of which is carried on tracks that extend back into the building while the bottom of the leaf is held against the jambs of the opening by a system of guides and rollers. Suspension is accomplished by cables running from the bottom of the leaf over sheaves to the counterweight.

Although allowance must be made inside the building for the clearance of the leaf as it opens and closes, this door can be used on street entrances where the building laws prohibit a door from opening out over the sidewalk. As the door is closed by a single leaf, like the single section vertical lift door, the only restrictions upon the design of the leaf or its architectural treatment are the construction joints needed to split the large leaves up for shipment.

The door is perfectly counterweighted in all phases of its movement and can be easily operated by means of hand chain operator. It has very effective weathering at the head and jambs and rubber weathering can be applied at the sill when floor is not level.



Single Section Turnover Door

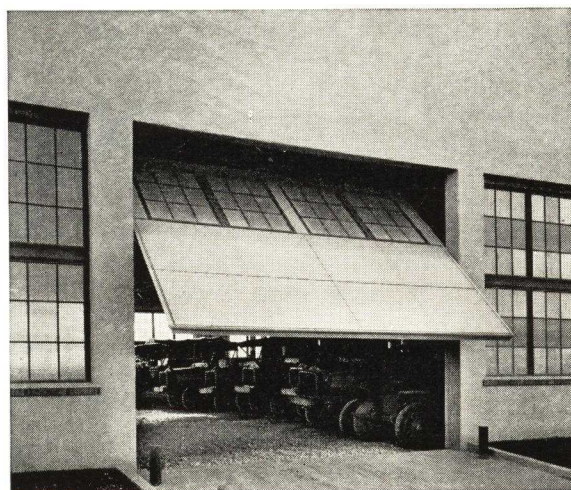
CANOPY DOOR

This is another type of door requiring a minimum of headroom. It is a single leaf door that is held against the opening by a pair of rollers located halfway up on the jambs of the leaf and operating in guideways attached to the sides of the opening. The two cables suspending the leaf are attached to the shafts of these rollers from which they run directly to the counterweight. As the door raises, it turns on its horizontal axis in such a manner that when fully open approximately half the door forms a canopy outside over the opening. This turning movement is accomplished by a pair of arms at the sides and near the top of the leaf, one end of the arms being pivoted to the building over the opening while the other end is pivoted to the leaf about three-fourths of the distance up from the floor.

Consideration must be given to the clearance line outside the building especially when the door opens out over a sidewalk.

This door provides very good weathering at head and jambs and if floor is not level rubber weathering can be provided at the sill.

Doors greater than 10 ft. in height or exceeding 100 sq. ft. should have hand chain operator. Throw bolts are provided at each jamb for locking door in tight position.



Canopy Door

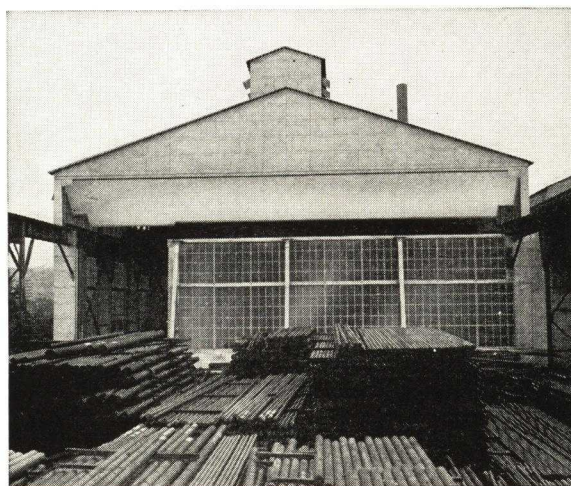
CRANE DOOR

A good dependable crane door is an asset to any plant which has a building over a portion of the crane way. Frequently the cost of a door of this type is saved in a single season due to the increased efficiency of the workmen in the building and the conservation of heat in winter time. The leaf can also be completely filled with sash.

Due to their unusual width and the height above the floor, careful consideration must be given to all details. The door consists of a single large leaf that is hinged along its top to the bottom chord of the building structure. A system of knuckle braces holds the bottom of the leaf in its proper position when closed. The door is opened by a series of cables which collapse these knuckle braces and swing the leaf in and up to a horizontal position.

Each cable is wound up on a drum which in turn is keyed to the main line shaft. The shaft, self-locking worm reducer, electric motor limit switches and other mechanism is carried on the framing between the bottom chords of the trusses. For electric operation the counterweights are omitted.

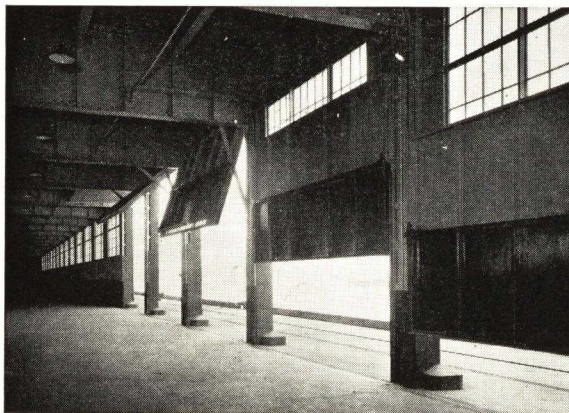
These doors open and close quickly, the usual speed of operation being 45 ft. per minute. They are very weather-tight and can withstand severe wind loads. All the working mechanisms are in a protected location inside the building and require a minimum of servicing. This design has the added safety feature that the hinges give the leaf a positive connection to the building and does not depend upon the cables alone to suspend the door in its elevated location.



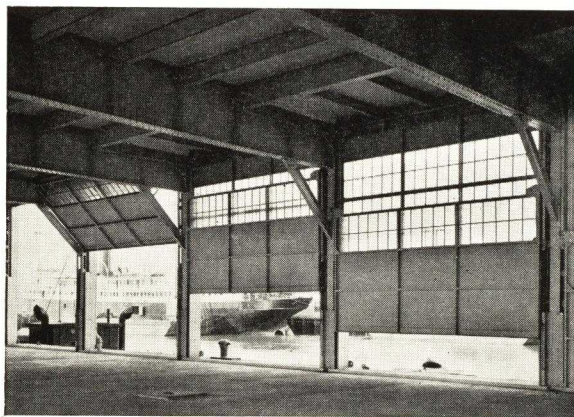
Crane Door

MECHANICAL DOORS

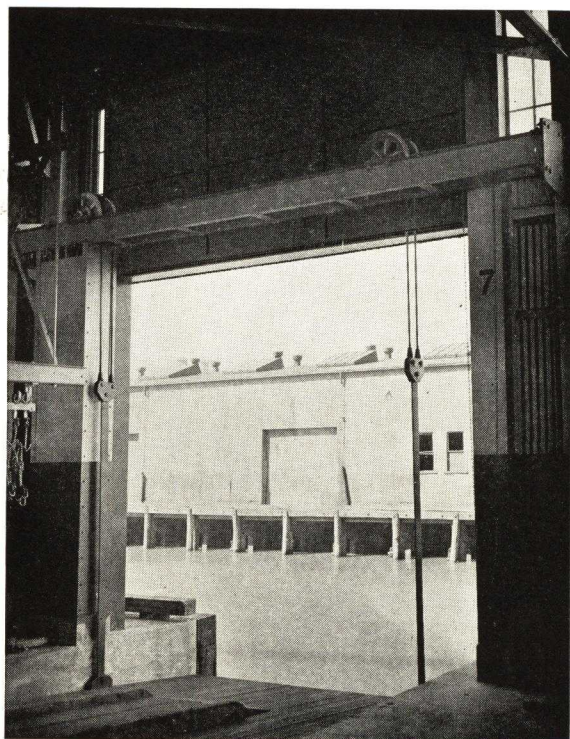
PIER DOORS — LIFT-SWING AND TURNOVER TYPES



Lift-Swing Pier Doors



Turnover Pier Door



Wharf Drop

These doors are characterized by their unusually heavy construction, which is needed along the water front to withstand the corrosive action of the salt water and the severe service from handling heavy cargo. They are built with a top and a bottom leaf which, when open, are completely inside the building. They then lie in a horizontal position in the limited headroom behind the door header. Strict attention is given, in the design, to have these heavy leaves perfectly counterweighted in any operating position so the door may be easily opened and closed by hand. Extraordinary precautions are taken to make the doors wind and weather proof for their exposed location.

Requirements of the users, prompted TRUSCON STEEL COMPANY to develop two types of pier doors, each has its own distinct advantages. One is the *Turnover Type* in which the bottom leaf slides vertically upward until it lies directly opposite and behind the top leaf. Both leaves then move together, turning over, so that their outside surfaces are upward when they reach their horizontal position. The two methods of accomplishing this turnover movement classify the turnover doors generally as the link type or the track type. However, to give the upper leaf a definite attachment to the building for safety and to get a perfect balance of both leaves for operation, Truscon's design employs a combination of the two.

The principle advantage of the two section turnover door is the reduced clearance on the inside of the building that is needed to open or close the top leaf. With this, it is possible to pile cargo, directly behind the door, higher than the bottom leaf. This is particularly advantageous on small doors where storage space is expensive.

The second, or lift-swing door, differs from the "Turnover" door in that the top leaf is hinged to the lintel over the opening so that after the bottom leaf has raised, both leaves swing in and upward to their horizontal position. The door is counterbalanced in all its operating positions by a unique system of arms and tracks at both jambs of the opening. The arms perform in exactly the same manner as the bottom leaf on a track type turnover door.

The advantage of this lift-swing door is that it is not necessary in inclement weather to raise the top leaf to its full open height for the normal operation of loading and unloading cargo from a pier. An important feature of the operator for a Lift-Swing Door is that it employs no spring locks or catches of any type to control the sequence of operation of the leaves. This is all accomplished very simply by the movement of the arms in their tracks which makes the vertical movement of the bottom leaf flow smoothly into the swinging movement of the top leaf. When this movement is reversed it is a positive means of closing the top leaf against the strongest winds. This smooth operation is particularly desirable for motor-operated doors and because of this, lift-swing doors are used for warehouses, bus garages and similar buildings.

WHARF DROPS

Late developments have included this type of mechanical equipment as part of the pier building itself and due to the proximity and interference with the door operating mechanism it has been found advantageous for the door manufacturer to include this equipment, when possible, with the doors. In character they are similar to small ferry slips and are used to facilitate the movement of cargo on trucks to and from ships and lighters. They are always made to order and can be either hand or electrically operated, as desired. It is urgently recommended that the hand-operated drops of even smaller sizes be counterweighted.

A number of different wharf drop designs have been made by Truscon engineers to suit special conditions. When the drops are inside the building the operating mechanism can be placed overhead. Where they are outside, all the mechanism and counterweight can be placed under the drop in water-tight enclosures so that when they are "up" there are no obstructions above the floor.

HANGAR DOORS ORIGINAL "KANOPY" TYPE

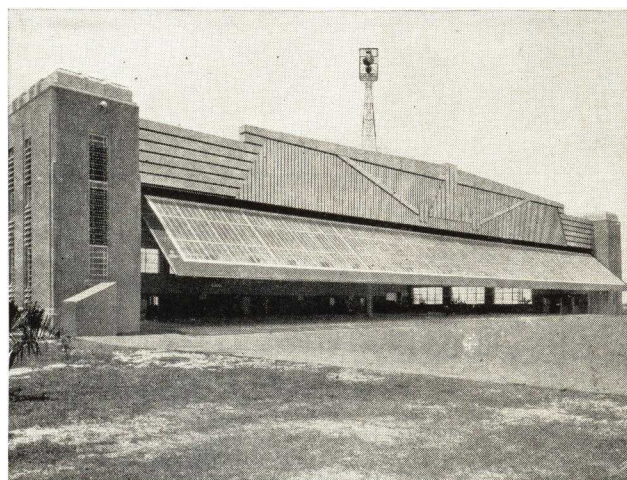
This door is of the full canopy type. The door leaf has no telescoping or folding features and is not counterweighted. Each leaf is hinged at the top of the hangar opening and swings upward and outward to form a canopy or marquee, virtually increasing the area of the building by the full height of the door.

The door facing is made up of standard steel sidewall fixed windows and light plate mounted on 4-in. channel framing. Construction is standardized in the form of panels twenty-five (25) to thirty (30) ft. long, dividing the door face into two or three horizontal sections. These panels are made complete in the shop (except for glazing) of a width for convenient shipment and are bolted together when erecting. Combinations of these panels will take care of any opening.

Heavy driving screws, attached to the hinge beams, carry the door face and rigidly support it in all positions. There is no looseness or play and the door face cannot fall or be affected by the wind. There are no ropes to stretch or chains to work loose, and, once installed, the door remains permanently in adjustment. The operating time is approximately one (1) minute to open or to close. Emergency hand-operation is provided.

All framing is welded and the gearing is enclosed in oil-tight housings, insuring efficiency and quietness of operation.

Despite the full canopy effect of these doors, the extended leaf, when open, is considerably counterbalanced by the machinery and supports which lie behind the front truss, and consequently does not throw any torsional loads into the front truss.



For convenience of operation and conservation of heat, the door is preferably divided into individually operated leaves twenty-five (25) or thirty (30) ft. wide. Wide leaves ninety (90) ft. to one hundred fifty (150) ft. in width can also be furnished at a slight saving in cost.

The Truscon Hangar Door, original "Kanopy" Type, possesses marked advantages, notably in convenience, strength, reliability and safety, as well as in ease with which the design can be adapted to various types of hangar construction.

DOUBLE ACTING TELESCOPIC AIRPLANE HANGAR DOORS

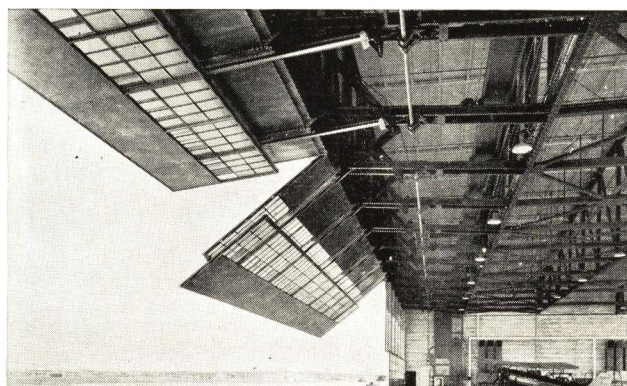
The Telescopic Airplane Hangar Door is adaptable to buildings where it is desirable to keep the center of gravity of the door inside the front trusses and where a restricted canopy overhang is necessary. The design also adapts itself readily to any construction where it is advisable to reduce to a minimum any interior structural supports or bracing for the door.

The operating mechanism consists of a motor reducer unit shafting, pocket chain wheels and high carbon proof chains, with the proper electrical control equipment.

The door is opened by a downward pull on the chains fastened to the top of an extension on the structural vertical supports or hinge beam. The hinge beam is made in two pieces, the lower one telescoping into the upper one as the door opens. Each pull down chain is run over pocket wheels keyed to the shaft and then to the counterweights used to counterbalance the dead weight of the door.

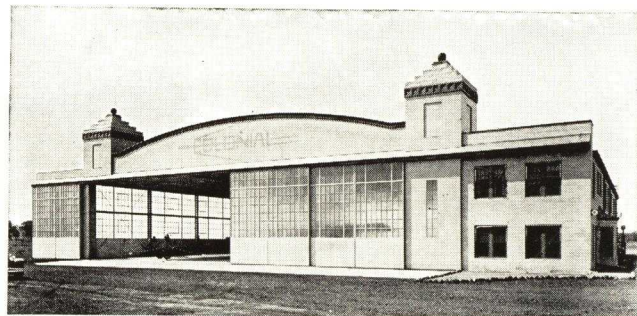
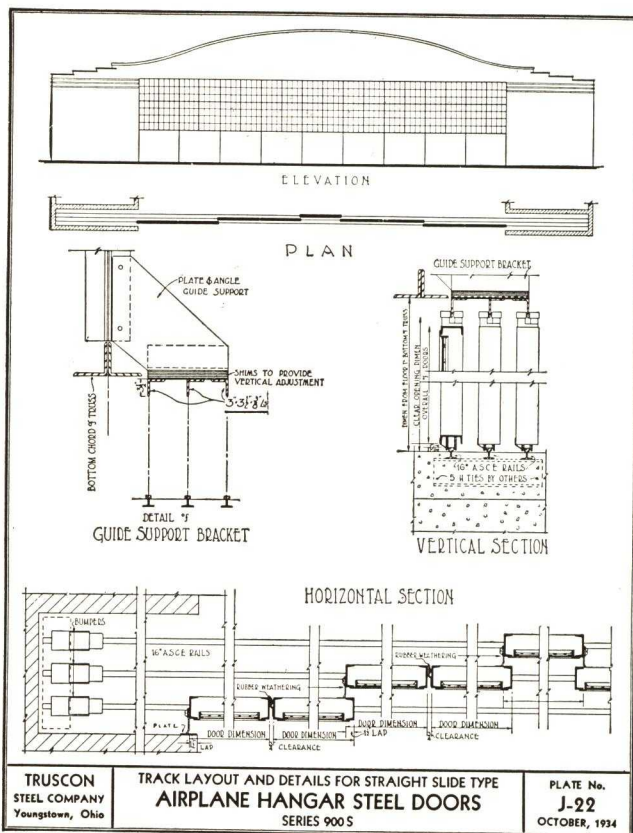
The hinge beams, spaced at intervals across the opening, form the vertical supports for the door facing. These supports are held firmly in place by a hinge at the lintel around which the hinge beams prescribe a parabolic curve as they swing outward. The telescoping feature of the lower leaf, which raises and swings simultaneously with the upper leaf, keeps the center of gravity of the leaves and operator behind the front truss, so that there is no turning moment in the front truss. In a closed position, the hinge beams are automatically fastened at the floor to form a continuous rigid member.

This door is very simple and direct in its operation. There are no complicated engineering problems when determining the actions of the various parts that are working under the specified wind load. Since the door is hinged permanently at the lintel, the hinge beams can be considered as a cantilevered beam and all loads followed to their ultimate distribution through the structural steel.



HANGAR DOORS

STRAIGHT SLIDE AND CURVED TRACK TYPES



Straight Slide Type

THE simplest types of steel doors used on hangars are the "straight slide" and "round-the-corner" types. These two types of doors run on small 16-pound rails set in the concrete floor. Double rollers at the top corner of each leaf hold the leaves in a vertical position. These rollers ride on the sides of the $3\frac{1}{2}$ in. x 3 in. x $\frac{3}{8}$ in. guide angles which are attached to the building over the centerline of the leaves.

Usually these types of doors are hand-operated. However, in hangars where ships are constantly moving in and out and where heat conservation is a factor, they can be motor-operated to move at a reasonably fast speed.

These doors are furnished of either tubular or structural steel construction, depending on size and use. Details and specifications are shown on this page and page 61.

CONDENSED SPECIFICATIONS

1 General—All doors shown on drawings shall be of the tubular rail type, Series 900T, as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written consent and approval of the architect.

2 Material—(a) All stiles and rails shall be constructed from steel tubing.

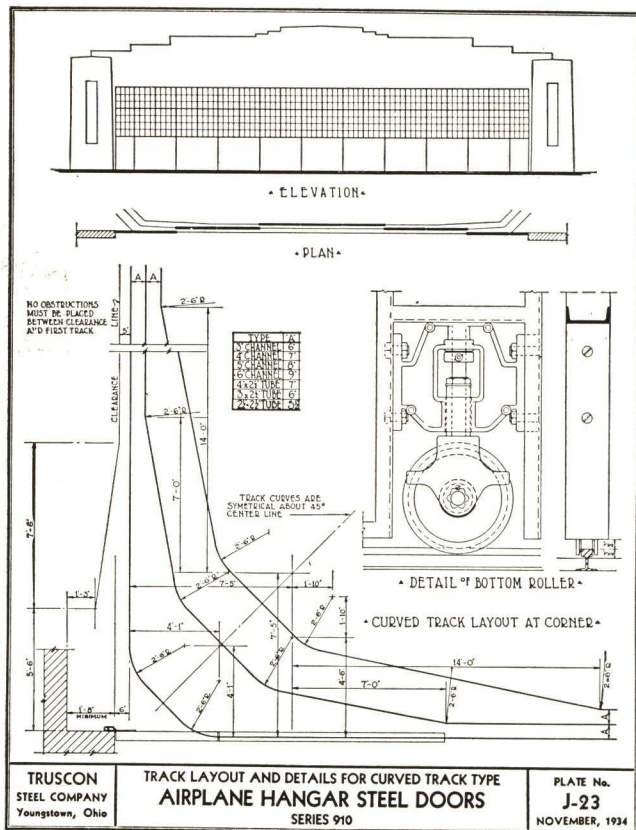
(b) All frame members, sheets and sash included in doors shall be constructed from hot-rolled new billet steel.

3 Construction—(a) The stiles, top rail, cross rails and bottom rail shall be constructed of steel tubing 4 in. x $2\frac{1}{2}$ in. x No. 13 ga.

(b) All corners and intersections shall be welded and ground smooth. Welds must develop the full strength of the section. Corners shall be mitered.

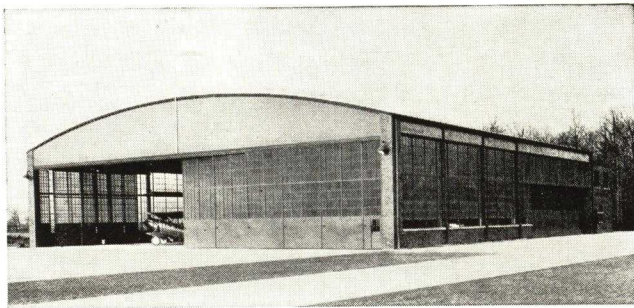
(c) The lower portion of the door shall be fitted with 13-ga. patent level steel sheet. (If insulation is required for the lower portion of the door leaves, 1 in. thick insulation shall be cemented to the inside of the 13-ga. sheets. 24-ga. patent leveled sheets shall in turn be cemented to the inside of the 1-in. insulation. A steel angle moulding strip shall then be applied around the edges of inside sheet and welded to the frame of the door leaf.)

(d) The upper portion of the doors shall be fitted with sash built up of Truscon standard members and glazed with glass lights as shown on the drawings. The glass shall be held in place with steel window putty and spring wire glazing clips. (Continuous glazing angles can be furnished as an extra if so specified.)



HANGAR DOORS

STRAIGHT SLIDE AND CURVED TRACK TYPES (Continued)



Curved Track Type

(e) A Standard Truscon Pilot Door shall be provided in lower portion of one door unit, where shown on drawings.

(f) Sash and steel panels shall be attached to the frame members by means of electric welding, which does not appear on the outside face of the door. These panels are to be bedded in a good grade of caulking cement.

4 Hardware—(a) Each door leaf shall be mounted on two adjustable roller bearing bottom rollers, equipped with grease fittings. Top rollers shall be double wheel type, bronze bushed. One cane bolt and flush pull shall be furnished for each sliding leaf. (Wheel locks, clamping latch and track and guide bumpers to be furnished if specified.)

(b) Top rollers are to be bronze bushed and machined to minimize only friction developed during the rolling between the structural steel guides as furnished by general contractor. Rollers shall be of such design as to act purely as guides and in no way transmit any of the weight of the door to the overhead structural guides.

5 Frames and Collateral Steel—Contractor furnishing structural steel shall furnish and erect overhead structural steel guides to conform to track layout beneath; he shall furnish and install steel contact strip at both jambs to meet weathering on door leaf; and shall also furnish and set in concrete suitable sized track which must be laid perfectly straight and true to conform to track layout.

6 Weathering—Steel Weathering shall be furnished at top of leaves between the top rollers and at bottom of leaf for entire width. Weathering between leaves and at both jambs shall be canvas insert rubber weathering.

7 Shop Painting—All doors shall receive one shop coat of gray Bar-Ox spray primer paint.

8 Erection—The erection of doors shall be performed by the door manufacturer.

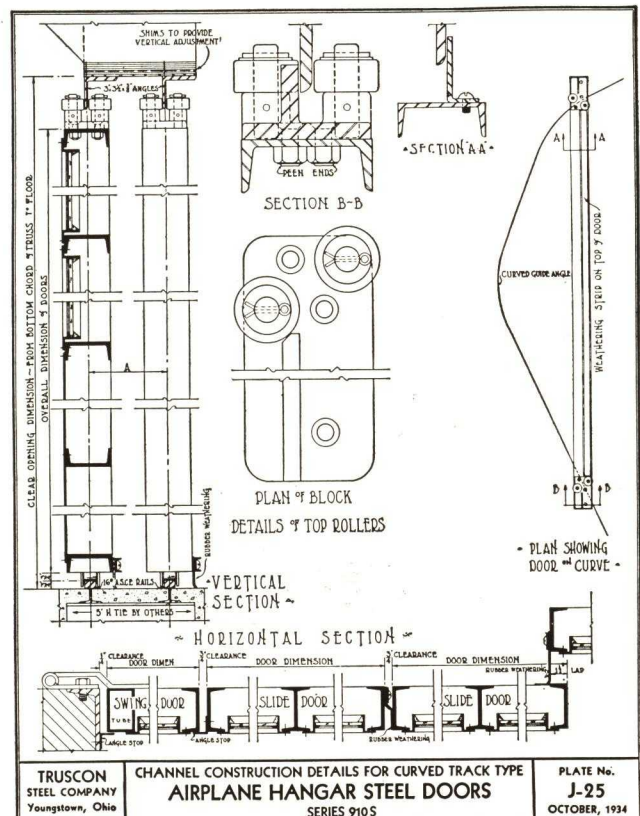
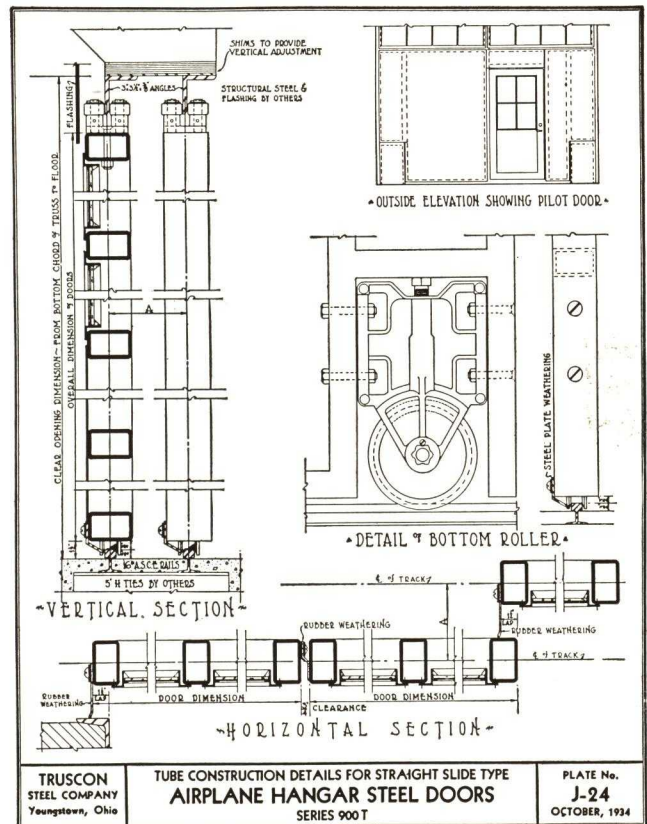
ROUND-THE-CORNER HANGAR DOORS

The above specifications also apply to the "round-the-corner" doors with these exceptions.

1—The bottom rollers must be mounted on roller bearing spindles that will allow them to turn in their housing brackets as the doors follow the track around the curves.

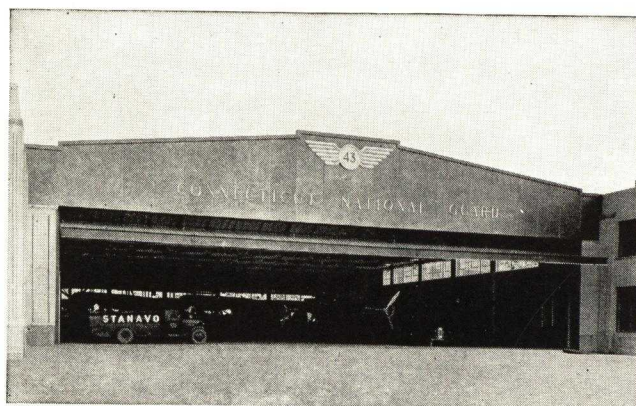
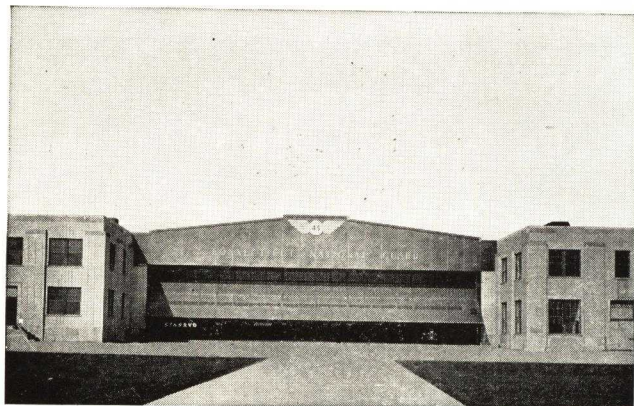
2—The bottom weathering must be canvas insert rubber packing attached to the inside face of the door.

3—In general practice, the tracks are so arranged that it is necessary to use a swing leaf at each jamb approximately 5 ft. 0 in. in width. Before operating slide door it is necessary to open the swing leaves. It is important that the swing leaf be made from tubular members to provide stiffness required for a swing door.



MORGAN DOOR No. 1

UNBRACED CANOPY HANGAR DOOR



THE Morgan Type No. 1 Door is designed especially for all openings not exceeding 26 ft. high and 100 ft. in width. The horizontal components of the wind load, upon the door when it is operating, are carried by a built-up girder across the bottom of the door and rollers to the jambs; for this reason it is only possible to build one operating section for the opening. The door is divided horizontally into two leaves, the top leaf being hinged to the lintel and the bottom one hinged to the

top leaf. As the door is lifted by the cables the door-leaves fold together, the top leaf inside the building behind the lintel and the bottom leaf partly inside and partly outside to form a canopy. The top leaf serves as a baffle to prevent the wind blowing in over the top to damage the roof covering and to prevent heat escaping from the top of the hangar if the door is partially opened.

This door requires a minimum of head room and can be easily installed in hangars constructed with bow string trusses.

CONDENSED SPECIFICATIONS

1 General—All doors shown on drawings shall be of the Morgan Type No. 1, as manufactured by TRUSCON STEEL COMPANY, Youngstown, Ohio. No substitution shall be made without the written consent and approval of the architect.

2 Scope of Work—The door contractor shall furnish the door leaf complete with the counter-weights and operating mechanism, electric motors and controls. Collateral steel, such as machinery, supports, counter-weight supports and towers, also catwalk, to be furnished by structural steel contractor.

3 Construction—(a) The door leaves shall be constructed in panels made up of 4-in. structural members (covered by 13-ga. steel sheets) coped and welded together and in convenient sizes for shipment and erection. The vertical members behind the bottom leaf shall be at least 8 in. deep. The section along the bottom shall be at least 18 in. deep. All members shall be assembled in the field by bolting and where necessary shall be welded.

(b) The upper portion of the door shall be filled with hot rolled steel sash divided into lights as shown on the drawing. The sash shall be arranged for putty glazing with four spring wire glazing clips per light.

(c) Pilot doors, made from 1 3/4 in. x 5 in. x No. 14 ga. tubes with mitered or butted corners shall be fitted into the main doors where shown on the drawing.

(d) The bottom portion of door to a height of approximately 5 ft. 6 in. to be covered with No. 13 ga. sheets.

4 Weathering—The main door shall be provided with metal to metal weathering at the jambs. Three-ply cotton insert rubber packing will be furnished with the door to insure the proper contact between the head of the door and the opening. The floor should be designed to have a 1 in. rise immediately behind the door. The bottom of the doors are held in their closed position by automatic locking bolts fitted to the door. Floor plates for these bolts will be furnished with the door, but must be set in the floor by the general contractor.

5 Operating Mechanism—(a) The operating mechanism shall be designed with a positive driving mechanism. The door shall be suspended on alloy steel wire ropes with self-lubricating hemp center. Each rope shall have an easy accessible threaded adjustment and a graphite bronze bush fitted at its lower end, where it is attached to the door. The upper ends of the rope shall be clamped to a cast iron drum.

(b) The cable drums shall be mounted on and keyed to a steel shaft which runs the full width of the door opening. This shaft shall operate in pressure lubricated pillow blocks which in turn are supported by two longitudinal 8-in. channels running parallel to the shaft. Flexible couplings shall be used to make the joints in the shaft.

(c) The counter-weights shall be located at the jambs of the opening and supported by cables and drums on the main shaft

similar to the door. The counter-weight shall consist of a steel cage into which cast concrete slabs of convenient size and weight can be stacked. The cables supporting the weights must be connected so that each carries its proportional load. The counter-weight guides and guards, along with the jamb roller guides, are to be furnished with the structural steel for the building. The concrete or steel punching for counter-weights will be furnished with the door.

6 Electrical Operator—(a) The main operating shaft will be driven from its center by a roller chain drive from a self-contained gear motor unit. This unit shall consist of high quality alloy steel cut gears mounted on precision ball or roller bearings and enclosed in an oil-tight cast iron case and it shall be reversible. The unit shall be fitted with a motor mounted magnetic brake of a capacity equivalent to the torque of the motor. This brake shall have a hand release which operates in conjunction with the emergency hand-operating clutch lever. An emergency hand chain operator shall be located adjacent to one of the counter-weight enclosures.

(b) A standard 3-pole type magnetic reversing switch shall be furnished for each motor. Positive type "Open" and "Close" hatchway limit switches, along with a safety switch which prevents operation of the door with the motor when the hand-operating clutch is engaged, shall also be furnished.

7 Design Data—The leaves and structural members of the door shall be designed so that the fiber stresses, due to dead load and impact, shall not exceed 18,000 lbs. per sq. in. The impact shall be figured at 25% of the dead load. Stresses, due to wind loads, shall be figured at 24,000 lbs. per sq. in. The door shall be designed to withstand a wind load of 20 lbs. per sq. ft., when closed, and 10 lbs. per sq. ft. when opened to an angle of 45 degrees.

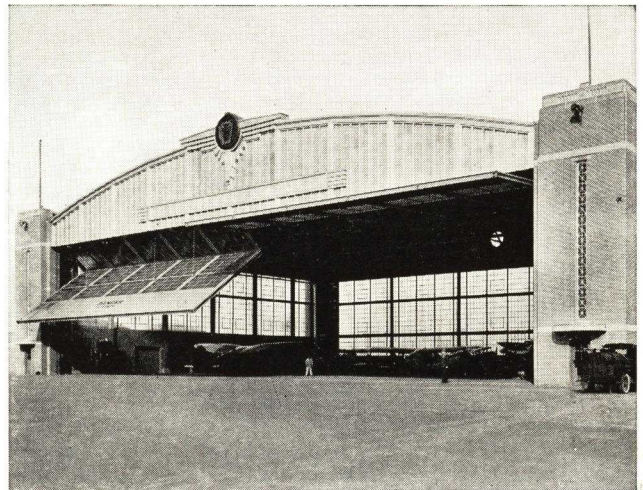
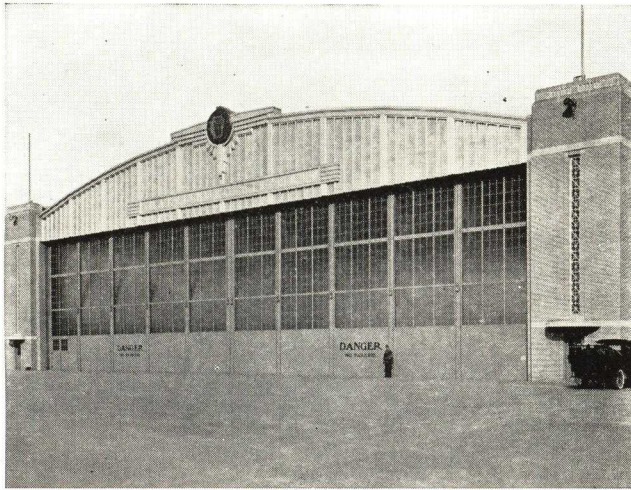
8 Shop Painting—All panels and structural work shall be given a shop coat of the manufacturer's standard metallic primer before shipment. The machinery shall be painted with one coat of gray enamel.

9 Erection—The erection of the door and operating equipment is to be done by the door manufacturer. He shall also set the motors and limit switches and adjust the limit switches after they are wired. The erection of the push-buttons and reversing panel is to be done by the electrical contractor.

10 Electrical Wiring—The electrical contractor shall furnish all conduit and wire and do all the necessary wiring between the motors, control panels and switches. He shall furnish fused type safety switch of the proper capacity on the feed lines ahead of each reversing panel.

11 Glazing—The glass, glazing and putty are to be furnished by the glazing contractor.

MORGAN DOOR No. 2 BRACED CANOPY HANGAR DOOR



THE Morgan Type No. 2 Door is practically the same design as the No. 1 Door but can be used in openings up to and including 36 ft. high. With this door the clear opening width can be unlimited by dividing the door into sections, each of which is independently operated. It is recommended that no

single section exceed 120 ft. in width. This door is designed to withstand a 20-pound wind load in any operating position. The system of bracing used on the inside of the door transmits the wind load from the face of the moving door to the structural frame overhead.

CONDENSED SPECIFICATIONS

1 General—All doors shown on the drawings shall be of the Morgan Canopy Type No. 2 as manufactured by TRUSCON STEEL COMPANY, Youngstown, Ohio. No substitution shall be made without the written consent and approval of the architect.

2 Scope of Work—The door manufacturer shall furnish the doors complete with counter-weights and operating mechanism, electric motors and controls. Collateral steel, such as cable sheaves and track supports, counter-weight supports and towers, also catwalk, to be furnished by structural steel contractor.

3 Construction—(a) The doors shall be constructed of hot rolled shapes, steel panels of 13-ga. patent leveled sheets and steel sash. Sash and panels to be bedded in mastic and welded to frame members.

(b) Doors shall operate in two equal sections. Door facing of each section shall be divided horizontally into not more than two leaves both of which act simultaneously. Door facing shall be reinforced by vertical structural posts spaced as indicated on plans. The vertical posts shall be reinforced by movable structural steel work overhead.

(c) Corners shall be miter cut or coped or butted, reinforced and welded in such a manner that the weld will develop the full strength of sections; weld shall be ground smooth on exposed surfaces.

(d) The upper portion of the door shall be filled with sash sections of Truscon standard members. Steel sash shall be hot rolled sections designed for inside glazing with continuous glazing angles.

(e) Pilot doors, made from 1 3/4 in. x 5 in. x 14 ga. pressed or rolled tubing with mitered or butted corners full welded and finished smooth shall be fitted into the main doors where shown on the drawings.

4 Operating Mechanism—(a) The operating mechanism shall be of the positive drive type, driven and controlled by electrical devices. It shall be mounted on steel supports framed in with the structural portion of the building.

(b) The door leaves will be suspended in the opening by a series of short equal length cables which have a safety factor of at least 5 to 1 over the combined dead load, 25% impact and wind load. They shall operate over cast iron sheaves which are mounted on pressure lubricated precision type ball or roller bearings.

(c) The lifting cables from the door shall be attached to a pair of steel tension bars, which shall carry the combined loads to one side of the door opening. At this point they shall be connected to a counter-weight equivalent to the dead weight of the door by multiple cable suspension.

(d) Drum type control stations shall be located at each jamb, two interiors for each section of the door, all located 4 ft. 6 in. above the floor.

(e) Doors shall be equipped with auxiliary hand-operating device. An electric interlock shall be provided between the hand operator and motor control panel, making it impossible to energize the motor when the hand operator is engaged.

5 Weathering—Weathering shall be as effective as possible. Where practical, flat metal to metal surface contact shall be provided. The door in a closed position shall fit snugly to the building construction at head and sill and clearance apertures shall be tightly sealed. Provision shall be made for expansion and contraction of the structural members and the possibility of building settlement.

6 Hardware—Head and sill shall have fully automatic locking device which shall secure the door positively in closed position, against both internal and external wind pressures. Locking devices shall engage automatically with the mechanical operation of the door.

7 Design Data—The doors shall be designed to withstand not less than 20 pounds per sq. ft. internal or external wind pressure when the door is in its closed position and 10 pounds per sq. ft. in any open position, limiting the fibre stresses due to wind loads to 24,000 pounds per sq. in. Deflection in any member shall not be greater than 1/120th of the span.

8 Erection—The erection of the door and operating equipment to be done by the door manufacturer. He shall also set and adjust limit switches, magnetic brake, motors, etc. The electrical contractor shall furnish all conduit, wire and do all the necessary wiring between the motors, control panels and switches. He shall furnish fused type safety switch of the proper capacity on the feed lines ahead of each reversing panel.

9 Shop Painting—All panels and structural work shall be given a shop coat of the manufacturer's standard metallic primer before shipment. The operating machinery shall be painted with one coat of gray enamel.

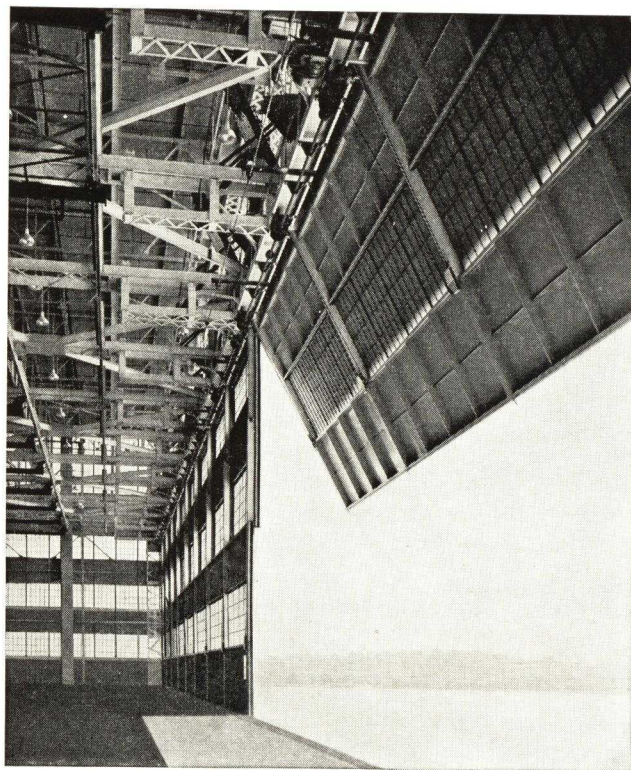
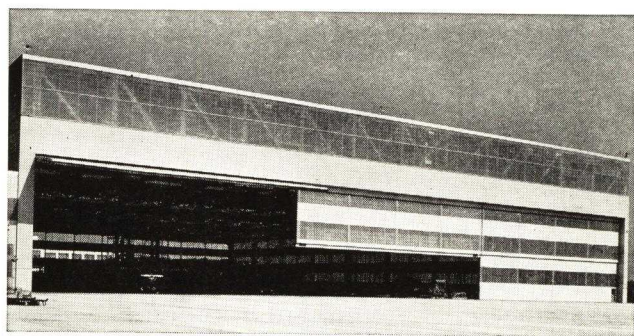
MORGAN DOOR No. 3

SINGLE ACTING TELESCOPIC HANGAR DOOR

MORGAN Type No. 3 is designed and developed for hangars where the door opening is extremely high and wide. This type of door has no practical limits in height and offers many important advantages through its ingenious construction.

The operation of this door is a vertical lift swing movement. The bottom leaf rises vertically until it clears one half of the opening height and then both leaves swing out and up to form a canopy and leave the entire opening unobstructed. The operation of this door can be stopped completely at any stage of its opening, thus permitting the entrance or exit of small planes without opening the door to its extreme height. This not only saves time but prevents complete heat loss during inclement weather. The lower leaf moving upward in a vertical position permits the placing of planes closer to the opening on the apron than is possible with types No. 1 and No. 2.

The clearance lines are close to the door and no part of the door even in operation extends inside the hangar, making space available for the storage of planes close to the door. All operating mechanism is on the inside of the hangar.



CONDENSED SPECIFICATIONS

1 Scope of Work—The door contractor shall include in his work the furnishing of all single acting telescopic doors complete with all operating mechanism, counter-weights, electric motors and controls. Collateral steel, such as machinery supports, shaft supports, hinge pin plates, counter-weight supports and towers, also catwalk and railing, to be furnished by the structural steel contractor.

2 Design Data—Doors shall be constructed to withstand a wind pressure of 20 pounds per sq. ft. when in a closed position and 10 lbs. per sq. ft. in any operating position, without exceeding the fibre stresses herein given, and without the main supporting members deflecting in excess of 1/120th of the span. Fibre stress in main door members, due to dead loads and impact, shall be limited to 18,000 pounds per sq. in. Impact allowance shall not be less than 25% of the dead load. Stresses in main members due to wind, shall be limited to 24,000 pounds per sq. in.

3 Construction—(a) The doors shall be constructed of hot rolled shapes, steel panels and steel sash. Sash and panels to be bedded in mastic and welded to the door framing members.

(b) The top leaf of each door section shall be supported by adequate wide flange beams securely pivoted to the structural work of the building. Provisions shall be made on these beams or arms to receive sliding portion of the bottom leaf of the door and for the necessary hardware and mechanism that occurs above the bottom chord of the truss.

(c) Each of the slides on the bottom leaf of the door shall be constructed of adequate steel members framed together with a 1/4 in. plate. The rollers shall have graphite bronze bushings and run on cold rolled pins mounted on rolled steel brackets. The front of the slides shall be fitted with adjustable steel weather plates.

(d) Automatic floor bolts that lock the doors to the floor at the bottom of each slide of the bottom leaf shall be furnished with the doors. Floor plates shall also be furnished with the doors, but shall be set by others.

(e) Weathering to be as effective as possible.

4 Mechanical Operators—(a) The operating mechanism shall be of such a design as to keep the doors in perfect balance and strong enough to open the doors under the specified wind load. The lifting and swinging movements of the doors are to be accomplished with a system of cables operating over drums and sheaves. This system is duplicated at each arm in such a manner that all the cables attaching to the doors will be of the same length.

(b) The sheaves shall be mounted on precision type ball or roller bearings and fitted with pressure type grease tips.

(c) Cables from the doors shall be moved by a series of drums on line shaft. This shaft shall be continuous for the width of the operating section and carried under an adjustable catwalk behind the front truss. Counterweights are to be furnished with the door.

5 Electric Wiring—(a) The contractor for electric wiring shall bring feed wires from power panel to each door motor, where he shall install a safety type fused disconnect switch of proper capacity. He shall also do all wiring between limit switches and control panels and make service connections.

(b) The safety line switch with the fuses with all wire and conduit necessary to complete the work is to be furnished by the electrical contractor for the building.

6 Motor Drive—The operating line shaft shall be driven from a totally enclosed reduction gear by a standard roller chain drive of sufficient capacity to carry the load from the motor. The reduction gear, high starting torque motor, magnetic brake and hand operating clutch and releases are to be mounted in a self-contained unit in the shop. This unit shall be equipped with an emergency hand chain operator that can be operated from the floor in case of current failure.

7 Shop Painting—Doors shall be given one manufacturer's standard metallic, shop coat of primer before shipment.

A COMPLETE SPECIFICATION WILL BE FURNISHED ON REQUEST

PRESSED STEEL INSERTS

SLOTTED INSERTS

Truscon Slotted Inserts are attached to the forms and are completely embedded in the concrete construction. Only the narrow slot flush with the concrete is seen in the completed work. The bolt can be moved along this slot to any location, allowing wide variation in position. Truscon Slotted Inserts are used with equal success in ceilings, slabs, beams or columns. The anchors are integral with the insert and occur every 6 in. on each side.

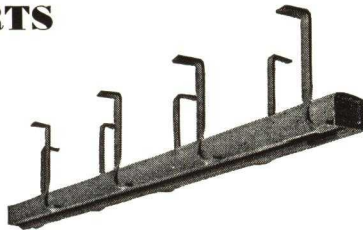
Standard lengths 12, 18, 24, 36, 48 and 60 in. Any desired length or run is obtained by removing end caps and butting the open ends together.



BRICK INSERTS

Truscon Brick Slotted Inserts have all the qualities and properties of Truscon Concrete Slotted Inserts.

The prongs are so bent that they provide positive anchorage of the insert to masonry. They are furnished in standard lengths of 12, 18, 24, 36, 48 and 60 in.



ADJUSTABLE INSERTS

Truscon Adjustable Inserts are made of pressed steel and have the same simple method of application to concrete and adjustment for bolts as the slotted inserts, but without their wide range of adjustability. Carry $\frac{1}{2}$, $\frac{3}{8}$, and $\frac{3}{4}$ in. bolts.

TAPPED INSERTS

Truscon Tapped Inserts are made from pressed steel of highest quality, and furnished tapped for $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$ and $\frac{3}{4}$ in. bolts. Particularly adapted for work where arrangement has been determined before start of construction. Where required, this type of insert can be furnished tapped for $\frac{3}{8}$ or $\frac{1}{2}$ in. pipe.



CARRYING CAPACITIES

Since the supporting capacity of inserts is largely dependent on strength of the concrete and bolts, we cannot guarantee any particular loading. The following working loads have been determined by tests and give a factor of safety of at least four.

Inserts	For average good concrete
Slotted Inserts	2000 lbs. per lin. ft.
Adjustable Inserts: $\frac{1}{2}$ in.	800 lbs. per insert
Adjustable Inserts: $\frac{3}{8}$ and $\frac{3}{4}$ in.	1300 lbs. per insert
Tapped Inserts: All sizes	1500 lbs. per insert

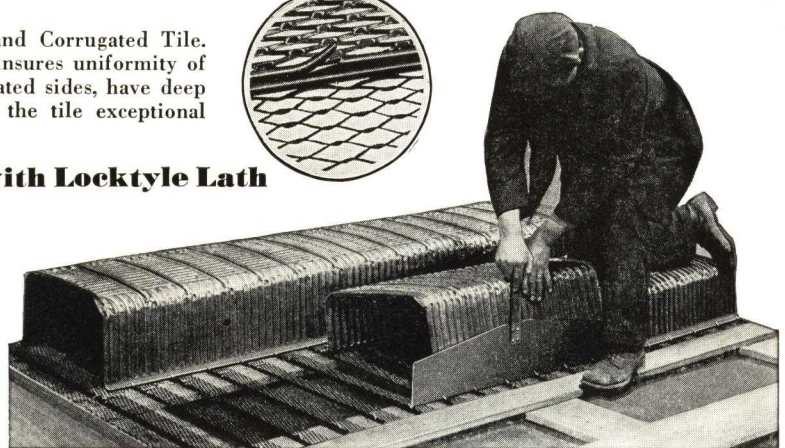
FLORETYPE CONSTRUCTION

PERMANENT STEEL TILE

Truscon Floretype are of two types—Ribbed Tile and Corrugated Tile. Both types are die formed in powerful presses, which insures uniformity of cross section. Ribbed tile in addition to having corrugated sides, have deep stiffening ribs across the top every 5 in. This gives the tile exceptional stiffness.

Properties of Floretype when used with Locktype Lath

	Ribbed Tile	Corrugated Tile
Stand. Depths.....	4, 6, 8, 10, 12 and 14 in.	4, 6, 8, 10, 12, 14 and 16 in.
Stand. Width at base.....	20 in.	20 in.
Special Widths.....	10 and 15 in.	12 and 16 in.
Stand. Length will lay.....	2 ft. 2 in.	2 ft. 10 in.
Half Length will lay.....	1 ft. 1 in.	1 ft. 4 in.
Tapered Tile Length.....	2 ft. 2 in.	2 ft. 10 in.
Width of Tapered Tile Narrow End.....	Nominally 16 in. but can be furnished any width or depth required	16 in.



LOCKTYPE LATH

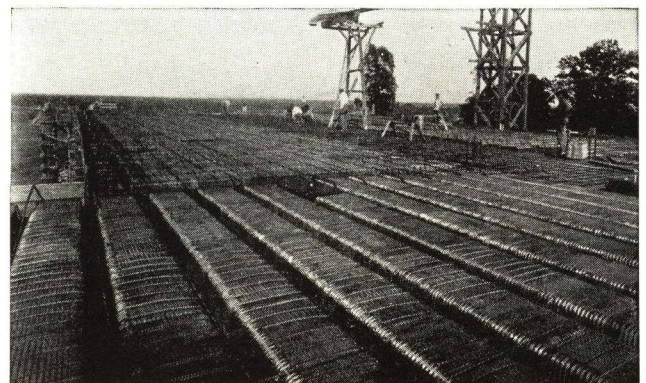
Locktype Lath is a $\frac{3}{8}$ Diamond Ribbed Lath furnished by special fabrication in rolls 100 ft. 0 in. long and 24 in. wide. The lath is furnished in weights of 3.4 lbs. and 4.0 lbs. per sq. yd. in either black or copper bearing steel. The ribs of the lath are pronged to engage the flange of the Floretype.

Advantages of Permanent Tile

- Saves in concrete due to stiffness of the pan.
- Saves in placing costs, less weight per unit and removing of tile after pouring of concrete is eliminated.
- Simplifies form work.
- Saves in placing pipes and conduits.
- Locktype construction is easily and speedily erected. The lath is rolled out on the forms, tacked in place, and the tile slipped into place by means of a special tool. The pressure of the wet concrete on the tile produces tension in the lath, resulting in a drum-like surface for a plaster base.

Advantages of Locktype Lath

- Insures uniform width of joists and positive attachment of ceiling to the structural slab.



- Saves in placing ceiling lath.
- Saves in plastering due to the rigid lath and drum-like surface provided.

METAL LATH PRODUCTS AND ACCESSORIES FOR

HERRINGBONE DOUBLEMESH LATH

The Most Rigid, Yet Smallest Mesh of Any Expanded Lath Made

Doublemesh has the smallest mesh of any expanded lath and at the same time is the most rigid. This rigidity is obtained by a series of parallel reinforcing ribs that run lengthwise of the sheet. The sheets require no stretching and do not sag between supports so that studs may be placed further apart without sacrifice to the strength of the walls.

Because of the design and of the care used in manufacture, Herringbone Doublemesh presents a smooth, even surface with no rough edges to cut the lather's hands or tear his clothes. A trowel of scratch coat goes on easier and reaches further.

Weight per square yard				Sizes of sheets, in.	Sheets per bundle	Yards per bundle
Painted	Galvanized	Copper-bearing	Toncan or Armco Iron			
2.75	...	...	...	24x96	9	16
3.0	...	3.0	...	24x96	9	16
3.4	3.4	3.4	3.4	24x96	9	16
4.0	...	...	...	24x96	9	16



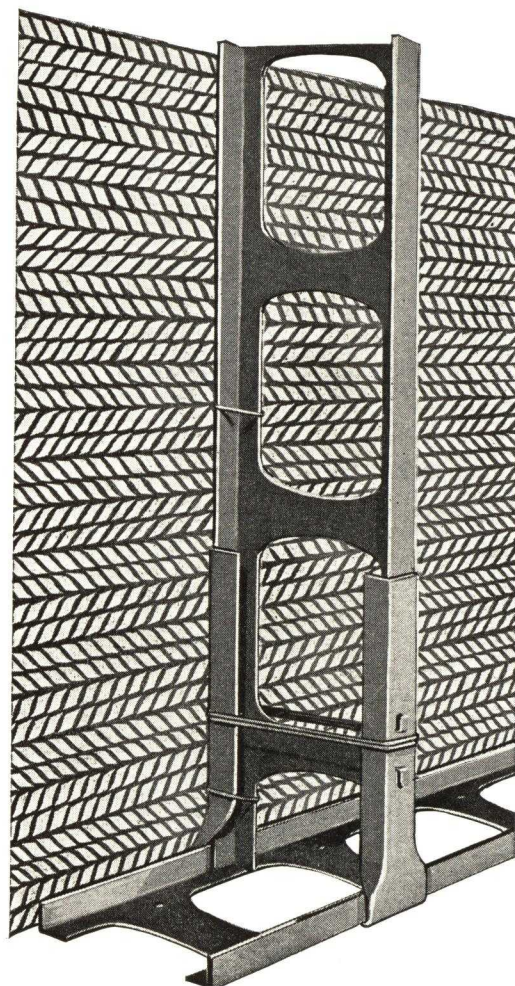
TRUSCON HOLLOW PARTITION STUDS

Truscon Hollow Partition Studs are fire-safe, provide excellent heat insulation, sound resistance and are rodent and termite proof. They will not swell nor warp and will resist impact, vibration or plaster cracking much more effectively than partitions of masonry or gypsum block.

When metal lath is attached to both sides of these studs, an ideal base for plaster is obtained. There is no necessity for cutting expensive chases for electrical conduits or pipes as the design of these studs provides maximum room for their passage without sacrificing the strength of the studs.

Due to the simplification and light weight of units, labor costs are materially reduced. The adaptability of Truscon Studs permits uninterrupted operation of all trades. After the studs are set, plumbing and electrical work can be started immediately. The partition is then lathed and plastered.

Truscon Hollow Partition Studs when plastered, weigh sixteen to twenty pounds per square foot, depending on the thickness of plaster grounds and consequently permit economical structural design without decreasing strength.

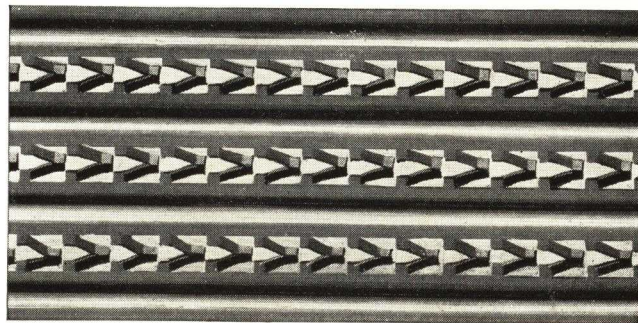


CRACKPROOF, FIRESAFE AND ECONOMICAL PLASTER BASES**"A" METAL LATH****This Rigid, Smooth-Surfaced Sheet Served as Both Plaster Base and Reinforcing**

Truscon "A" Metal Lath is a rigid, smooth surfaced sheet which serves as both plaster base and reinforcing. The mechanical key on "A" Lath is so ingeniously devised that it provides perfect reinforcement and effects a rigidity superior to ordinary types of flat rib lath.

The results of this perfected mechanical key and strong parallel rib of Truscon "A" Metal Lath assures a positive bond which makes it ideal for interior work of all kinds. The mechanical key actually provides for such a quick initial key that the economy of this lath becomes apparent at once.

Although rigid, Truscon "A" Metal Lath is also excellent for most types of form work.



Weight per square yard, lbs.	Sheets, in.	Sheets per bundle	Sq. yds. per Bundle
3.0	24 x96	9	16
3.4	22 7/8 x96	10	17

Furnished in black or copper bearing steel, painted.

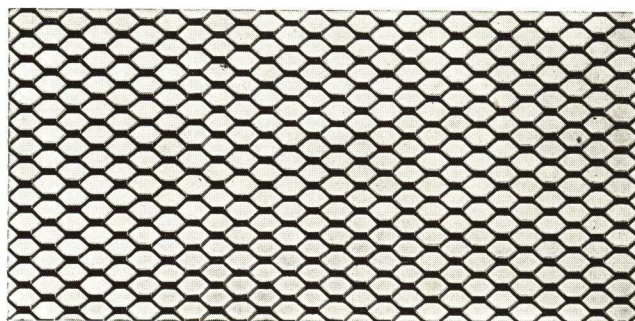
SMALL MESH DIAMOND LATH

PROPERTIES, DIAMOND LATH AND SMALL MESH DIAMOND LATH

Weight yard lbs.	Length sheet, in.	Width sheet, in.	Sq. yds. sheet	Sheets bundle	Sq. yds. bundle	Weight bundle, lbs.
2.2	96	27	2	10	20	44
2.5	96	27	2	10	20	50
3.0	96	27	2	10	20	60
3.4	96	27	2	10	20	68
		Galvanized				
2.5	96	27	2	10	20	50
3.4	96	27	2	10	20	68

Can be furnished in either open hearth or Toncan Iron copper-bearing steel. All material excepting galvanized is painted.

Truscon Diamond Laths are considered the most practical types of diamond lath on the market. Sheets are trimmed exactly 8 ft. 1 in. in length, with edges absolutely straight. The diamonds are small size, pre-

The Most Practical Diamond Lath

venting workmen from wasting materials due to excessive pressure forcing plaster through on back side.

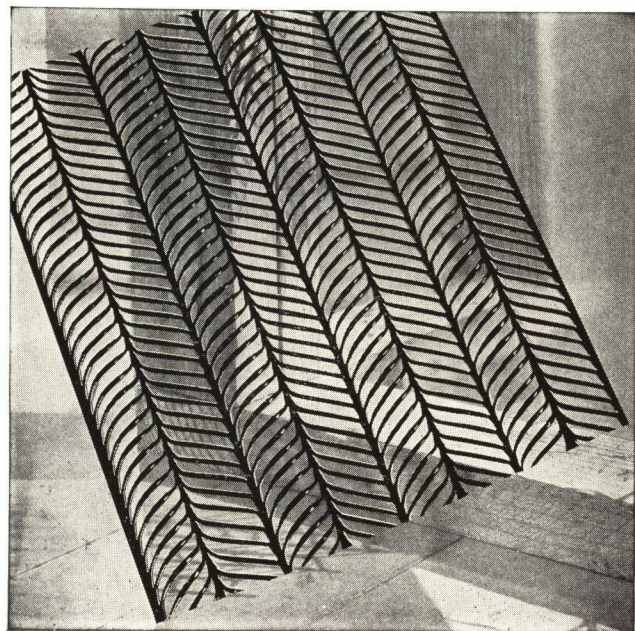
HERRINGBONE RIGID LATH**Same as Herringbone Doublemesh Except Having Longer Corrugations**

This lath has the same general advantages as "Doublemesh," the difference being in the size of the mesh. It has the same rigidity, the same interlocking edges and forms the same remarkable key.

The ribs form "shelves" which hold the plaster from falling in back, so that every bit applied is held in place. There is no waste with this lath. Because of its rigidity it does not sag or "belly" between supports but presents an unyielding surface to the trowel with no depressions.

When used for partitions, either solid or hollow, Herringbone Rigid Lath offers the same construction and erection economies as when used for ceilings. The spacing of the studs may be increased from 16 in. for the 2.5 lb. flat lath to 19 1/2 in. for the 3-lb. Herringbone.

Weight per square yard, lbs.				Sizes of sheets, in.	Sheets per bundle	Yards per bundle
Painted	Galva- nized	Copper- bearing	Toncan or Armco Iron			
2.2	.....	.....	.....	20 1/4 x96	15	22 1/2
2.5	2.5	.....	.....	20 1/4 x96	15	22 1/2
3.0	.....	3.0	.....	20 1/4 x96	15	22 1/2
3.4	3.4	3.4	3.4	20 1/4 x96	15	22 1/2



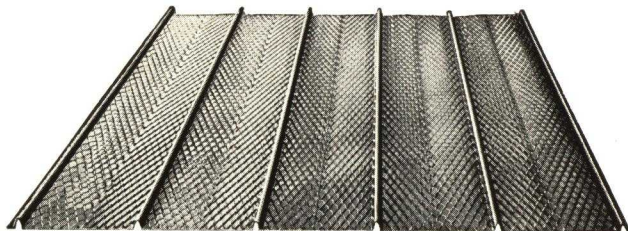
METAL LATH PRODUCTS AND ACCESSORIES (Continued)

3/8" DIAMOND RIB LATH A Self-Furring Lath That Permits Wide Spacing of Supports

PROPERTIES, 3/8" DIAMOND RIB LATH

Weights per sq. yd.		Size of sheets, in.	Ribs spaced c-c, in.	Area of sheets per sq. yd.	Sheets per bundle	Yards per bundle
Painted	Copper bearing					
3.0	3.0	24x96	4.8	1-7/9	9	16
3.4	3.4	24x96	4.8	1-7/9	9	16
4.0	4.0	24x96	4.8	1-7/9	9	16

A self-furring lath with 3/8 in. deep ribs, which permits wide spacing of supports. Used principally as a base for plaster on ceilings, straight-away partition work with channels and for exterior stucco. It is particularly recommended as a base for plaster under steel joists and as a reinforcement for concrete slabs

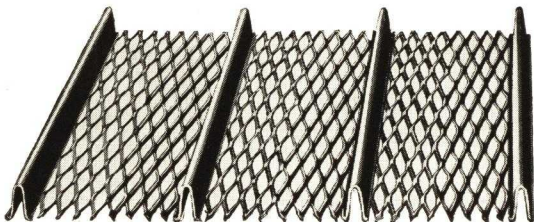


over steel joists. 3/8 in. Diamond Lath is manufactured with the rib integral with the mesh. 3/8 in. deep ribs spaced 4 3/4 in. on centers run full length of the sheet with the distance between the ribs spanned by rows of small size diamonds.

SELF-SENTERING RIB EXPANSION METAL LATH

PROPERTIES OF SELF-SENTERING

Weight per sq. ft. lbs.	Height of Ribs ins.	Ribs Spaced c-c ins.	No. Ribs per Sheet	Width of Sheet ins.	Effective Sectional Area per ft. of width
.50	3/4	3 5/8	9	29	.1440 sq. ins.
.60	3/4	3 5/8	9	29	.1688 sq. ins.
.75	3/4	3 5/8	9	29	.2150 sq. ins.



Self-Sentering is a ribbed expanded metal for concrete reinforcing and miscellaneous firesafe construction. It serves as both form and reinforcement for concrete floor work and as a combined steel lath and studding for walls and partitions.

Self-Sentering is made up of a series of heavy cold-drawn ribs 3/4 in. high, spaced 3 5/8 in. center to center, connected by the most efficient form of expanded metal—the diamond mesh—all cut and drawn from one sheet of steel. Sheets of Self-Sentering are 29 inches wide—the widest of any similar material.

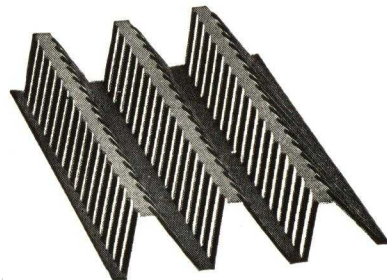
TRUSSIT—A SPECIALIZED BUILDING PRODUCT

Trussit, a specialized building product, designed for the purpose of reinforcing and forming fire-resistive concrete walls and partitions.

The use of Trussit as a reinforcement for solid exterior walls gives a construction in which the reinforcing is centrally located in the wall, producing a slab of uniform strength and homogeneous throughout.

Walls are quickly erected without forms, the cement plaster being applied to the Trussit equally on both sides. Form marks are eliminated and a pleasing effect is produced.

The light weight of Trussit construction makes it desirable for use as curtain walls and it is rapidly replacing the antiquated and unsightly corrugated iron walls and heavy, expensive brick and mass concrete curtain walls.



	Length, ft.	Width, in.	Weight per sq. ft.
Painted.....	8, 10, 12	19	.57, .62 and .83 lbs.
Galvanized.....	8, 10, 12	19	.68, .88 lbs.
Toncan or Armco	8, 10, 12	19	.57, .62 and .83 lbs.

METAL LATH ACCESSORIES



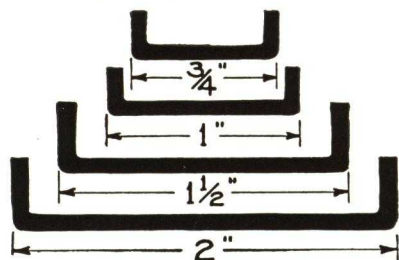
EXPANDED CORNER BEAD GALVANIZED

Expanded corner bead weighs 0.21 pounds per lin. ft. furnished in 6, 7, 8, 9, 10 and 12-ft. lengths, bundled 10 pieces to the bundle. It can be furnished cut from zinc strip if desired.



CORNERITE

Cornerites are used for plaster base at inside corners. Flanges are 4 in. wide, sheets 8 ft. 1 in. long, bundled in lots of 50 pieces or 400 ft. Protected with a coat of black asphalt paint.



COLD ROLLED CHANNELS

Sizes, $\frac{3}{4}$, 1, $1\frac{1}{2}$ and 2 in.
Weight per lineal foot, .276, .332, .442 and .553 lb.
No. 16 gauge (thickness .065 in.).
 $\frac{3}{4}$ and 1 in. shipped packed in bundles of 25 channels, and $1\frac{1}{2}$ and 2 in., 10 in a bundle.
 $\frac{3}{4}$ -in. square channel manufactured from 18 gauge steel.



TIE
WIRE
IN ROLLS



TIE WIRE IN HANKS

TRUSCON TIE WIRE

Truscon Tie Wire is furnished in 16 or 18-gauge galvanized or black wire. Comes in rolls 20 in. in diameter. Also furnished in hanks.



TRUSCON STRIP-ITE

Manufactured from Diamond Lath, furnished in 3 and 6 inch widths, 8 ft. 1 in. long. Shipped in bundles of 25 pieces or 200 linear feet.



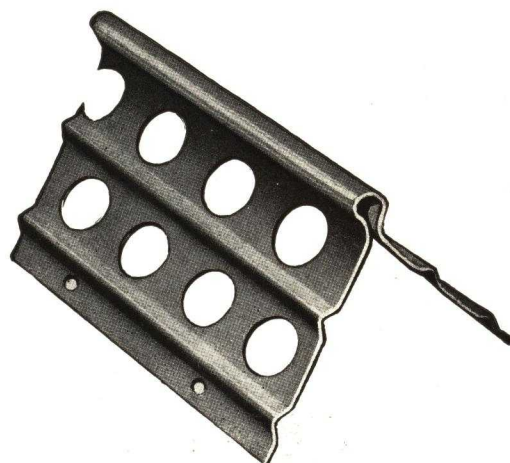
RIB STEEL CORNER BEAD GALVANIZED

Lengths, 6, 8, 9, 10 and 12 ft.
Packed 10 pieces to bundle—10 bundles to crate.
Crate weight, 20 lbs. per 1000 ft. Manufactured from 26 gauge high grade steel.



BULL NOSE CORNER BEAD GALVANIZED

$\frac{3}{4}$ -in. radius. Medium length flange. 24 Gauge.
Shipping weight, approximately 420 lbs. per 1000 ft.
Standard lengths, 6, 7, 8, 9, 10, 11 and 12 ft.



TRUSCON WIDE FLANGED CORNER BEAD — GALVANIZED

Weight, 330 lbs. per 1000 ft. Manufactured from 26-gauge best grade steel and furnished in standard lengths 6, 7, 8, 9, 10 and 12 ft., packed 10 pieces to the bundle.

"O-T" OPEN TRUSS STEEL JOISTS

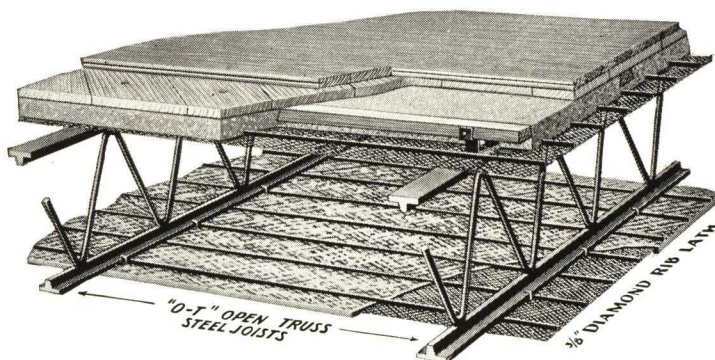
FOR ECONOMICAL AND FIRE RESISTANT FLOORS

DESIGNED and manufactured in accordance with the specifications of the Steel Joist Institute and the Simplified Practice Recommendations (S.P.R. 94-30) on Open Web Steel Joists as issued by the U. S. Department of Commerce, Bureau of Standards.

To meet the demand for economical, light weight and fire resistant floors, Truscon has developed the "O-T" Open Truss Steel Joist which is designed according to the best engineering practice and offers many advantageous and distinctive features. In effect, the entire design is unusually efficient as well as exceptionally economical of materials.

Fundamentally, the Truscon "O-T" Open Truss Steel Joist is a Warren truss having top and bottom chords of wide tee-shaped members to provide the greatest resistance to buckling strains. The bottom tee is continuous to the bearings, where it is welded with the web member and the top chord. Web members are continuous from end to end so that stresses are transmitted perfectly. High pressure electric welding is used to make positive connections at all joints.

The underslung design of the bearing permits maximum headroom under the supporting girders. The open web allows the passage of pipes and conduits.



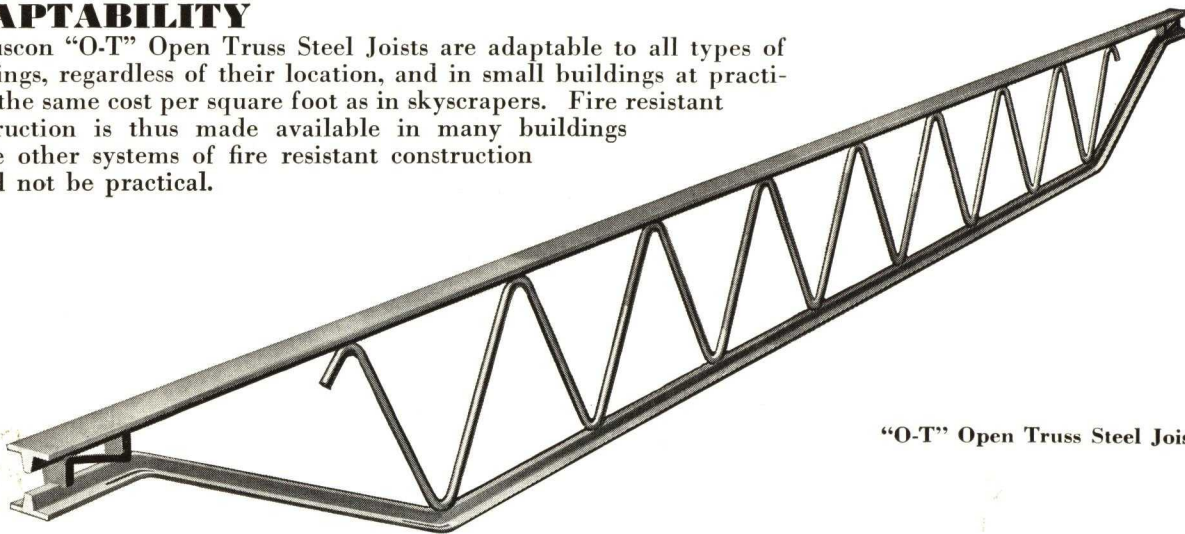
Truscon "O-T" Open Truss Steel Joist Construction

With concrete slab and wood sub and finished floors secured by means of Screeds placed at right angles to the Joists and elevated to provide for concrete underneath.

In practical use Truscon "O-T" Open Truss Steel Joists are very simple to install, being completely shop fabricated and reaching the job ready for placing. Each joist is marked to correspond with the erection diagram, thus greatly simplifying and speeding construction work. Thorough tests under extreme loadings have demonstrated their all-around dependability.

ADAPTABILITY

Truscon "O-T" Open Truss Steel Joists are adaptable to all types of buildings, regardless of their location, and in small buildings at practically the same cost per square foot as in skyscrapers. Fire resistant construction is thus made available in many buildings where other systems of fire resistant construction would not be practical.

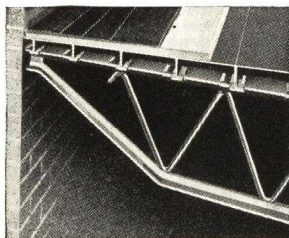


"O-T" Open Truss Steel Joist

DETAILS OF CONSTRUCTION "O-T" JOISTS

Roof Purlins

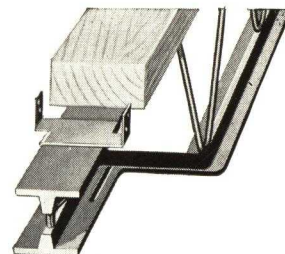
Open Truss Steel Joists have proved to be very economical and practical for use as roof purlins supporting steel deck roofs. The method of attaching the roof to the steel joists is very simple and positive, as shown in illustration.



Roof Purlins

Nailing Screed

Occasionally, it is desired to attach a wood roof deck to Truscon "O-T" Open Truss Steel Joists used as roof purlins. Nailing screeds are required in this construction and they may be attached directly over the joists by means of screed clip as shown in illustration.



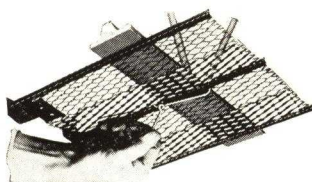
Screed Clip

A MEMBER OF THE STEEL JOIST INSTITUTE

"O-T" STEEL JOIST ACCESSORIES

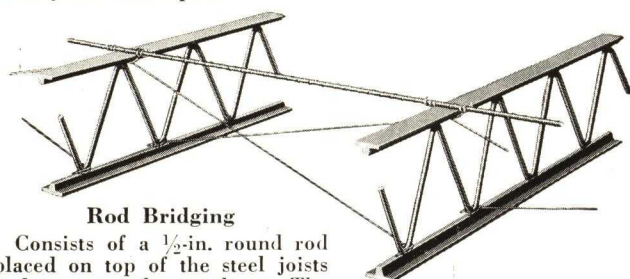


Bottom Chord Extension
Easily attached after the steel joists are in place.



Lath Clips

Made in different sizes to meet the different widths of chord flanges. When attaching the ceiling lath, the clips should straddle the ribs of the lath.

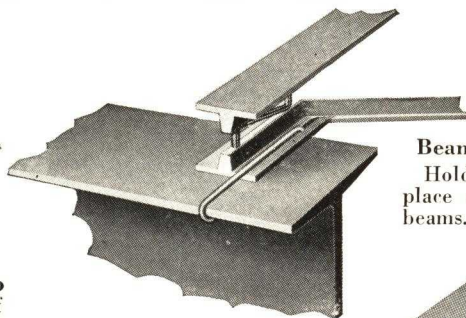


Rod Bridging

Consists of a $\frac{1}{2}$ -in. round rod placed on top of the steel joists and transversely to them. The $\frac{3}{8}$ -in. diagonal members are then applied and wound tightly around the transverse rod and the bottom chords of joists by means of a bridging tool provided for this purpose. This bridging is very efficient and is easily installed.

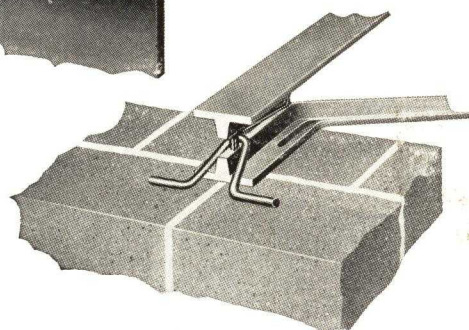
"Underchord" Rod Bridging

"Underchord" Rod Bridging consists of materials exactly the same as those used in Rod Bridging but in addition there is furnished spring wire clips to hold the $\frac{1}{2}$ in. round transverse rod underneath the top chords of the joists, thus leaving the top surface of the joists entirely unobstructed.



Beam Anchor No. 3

Holds the joists in place on structural steel beams.

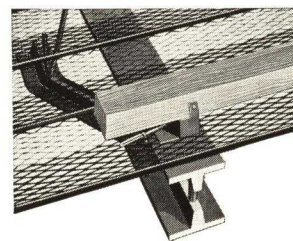


Wall Anchor No. 5

Affords additional bond between floor and wall construction when wall is of such a height or nature as to be not self-sustaining.

Screed Clips

Screed Clips of four standard sizes, used when it is desired to elevate the screeds so that concrete can be poured beneath them. Lath clips of proper size are used to hold the screed clips in place.



SPECIFICATIONS

For "O-T" Open Truss Steel Joist Floor and Roof Construction with Concrete Slab

General—Where Steel Joist floor construction is specified, it shall be understood to mean Truscon "O-T" Steel Joists of the size and spacing as shown on the drawings, together with a structural concrete slab over the joists supported by metal lath firmly attached to the joists.

The Steel Joists shall be made of hot rolled steel shapes fabricated by high pressure electric automatic welding. The web member shall be a continuous plain round bar of constant diameter bent cold. The chords shall be tee-shaped sections, the top chord being straight and the bottom chord bent up to form the bearing. The design and details of all members shall meet the requirements of the Steel Joists Institute Specifications.

Shop Painting—All steel joists shall be spray or dip painted with one shop coat of good metal protective paint.

Slab Reinforcement—The top concrete slab shall be reinforced and supported by $\frac{3}{8}$ in.* Rib Lath weighing not less than 4.0 lbs. per square yard; the lath to be placed with the ribs up and at right angles to the joists. The lath shall be attached to the top of the joists by means of lath clips spaced 8 in. apart. Where the floor finish is other than wood, the structural slab shall be reinforced with a 10-gauge 6x6 in. welded steel fabric.

*For joists spaced over 24 in. apart Diamond Rib (Self-Sentering) Lath must be used weighing .50 lbs. per square foot.

Bearing and Anchorage—Joists shall have a minimum bearing of 4 in. on concrete or masonry and $2\frac{1}{2}$ in. on steel. Every third joist bearing on masonry walls shall be anchored. Joists parallel to walls shall have the top and bottom chords anchored at the line of the rows of bridging. Every joist bearing on structural steel beams shall be fastened by an anchor (or welding).

Bridging—As soon as joists have been erected and before the application of construction loads, joists shall be bridged, with a tension type of rod bridging consisting of a $\frac{1}{2}$ -in. rod placed on top of the joists and transversely to them and supplemented by $\frac{3}{8}$ in. diagonally placed rods securely wound to both the transversely placed rod and the web members where they meet the bottom chord of joist. For spans up to 14 ft. 0 in. one row of bridging is required, two rows between 14 ft. 0 in. and 21 ft. 0 in., and three rows over 21 ft. 0 in.

Ceilings—Where directly attached ceiling occurs, Bottom Chord Extensions shall be provided.

Wood Floors—Where wood floors are specified, screed clips shall be secured to the joists to receive 2x1 in. screeds placed at right angles to the joists and spaced 16 in. apart. The clip shall raise the screed 1 in. above the joists.

Note: The Steel Joists Institute Specification limits the spacing of joists to 24 in. for floors, 30 in. for roofs having a poured concrete slab and 7 ft. for roofs having a steel deck or wood roof.

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"O-T" STEEL JOIST LOADING TABLE **TABLE ONE**

The following table gives the TOTAL safe uniformly distributed load carrying capacities of Truscon "O-T" Open Truss Steel Joists at various spacings.

The weight of DEAD loads must in all cases be deducted to determine the LIVE load carrying capacities of the Joists.

Clear Span	Joist Type	Total Safe Load Pounds	TOTAL SAFE LOADS IN POUNDS PER SQUARE FOOT FOR VARIOUS JOIST SPACINGS																	
			12"	14"	16"	17"	18"	19"	20"	21"	22"	23"	24"	30"	3'-0"	3'-6"	4'-0"	5'-0"	6'-0"	7'-0"
6'-0"	81	3200	530	457	400	376	356	337	320	305	291	278	267	213	178	153	134	106	89	76
7'-0"	81	2810	402	344	301	283	268	254	241	229	219	209	202	160	134	115	101	80	67	57
8'-0"	81	2460	308	264	231	217	205	194	184	176	168	160	154	123	103	88	77	61	51	44
	82	3800	475	407	356	335	316	300	285	271	259	248	238	190	158	136	119	95	79	68
9'-0"	81	2180	243	208	182	171	162	153	145	138	132	127	121	97	81	69	61	48	40	34
	82	3800	422	362	316	298	282	266	254	242	230	220	211	169	141	121	106	84	70	60
10'-0"	81	1970	197	169	148	139	131	125	118	113	108	103	99	79	66	57	50	39	33	28
	82	3500	350	300	263	247	233	221	210	200	191	183	175	140	117	100	88	70	58	50
	102	3800	380	326	285	268	253	240	228	217	207	198	190	152	127	109	95	76	63	54
	103	3900	390	334	292	275	260	246	234	223	213	203	195	156	130	112	98	78	65	56
10'-0"	104	4400	440	377	330	312	293	278	264	252	240	230	220	176	147	126	110	88	73	63
	81	1780	162	139	121	114	108	102	97	92	89	85	81	65	54	46	41	32	.....	.....
	82	3180	289	248	217	205	193	183	174	165	158	151	145	116	97	83	73	58	48	41
	102	3800	346	297	259	244	230	218	208	197	189	180	173	138	115	99	87	69	57	49
11'-0"	103	3900	355	304	266	250	236	224	213	202	194	185	178	142	118	101	89	71	59	50
	104	4400	400	343	300	283	267	253	240	228	218	208	200	160	134	114	100	80	67	57
	81	1635	137	117	102	96	91	86	82	78	74	71	68	55	46	39	34	28	.....	.....
	82	2920	243	208	183	172	162	154	146	139	133	127	122	98	81	70	61	49	40	35
12'-0"	102	3500	292	250	219	206	194	184	175	167	159	152	146	117	97	84	73	58	48	42
	103	3900	325	279	244	230	217	205	195	186	177	170	163	130	109	93	82	65	54	46
	104	4400	367	314	275	259	244	232	220	210	200	191	183	147	122	105	92	73	61	52
	123	4400	367	314	275	259	244	232	220	210	200	191	183	147	122	105	92	73	61	52
12'-0"	124	4600	384	329	288	271	256	242	230	219	209	200	192	153	128	110	96	76	64	55
	125	5000	417	358	312	294	278	263	250	238	228	218	208	167	139	119	104	83	69	59
	126	5400	450	386	338	318	300	284	270	257	246	235	225	180	150	129	113	90	75	64
	81	1510	116	100	87	82	78	73	70	66	63	61	58	46	39	33	29	.....	.....	.....
13'-0"	82	2690	207	177	155	146	138	131	124	118	113	108	103	83	69	59	52	41	34	29
	102	3230	248	213	187	176	166	157	149	142	136	130	124	99	83	71	62	49	41	35
	103	3900	300	257	225	212	200	190	180	172	164	157	150	120	100	86	75	60	50	43
	104	4400	338	290	254	239	225	214	203	193	184	177	169	135	113	97	85	67	56	48
13'-0"	123	4400	338	290	254	239	225	214	203	193	184	177	169	135	113	97	85	67	56	48
	124	4600	354	303	265	250	236	224	212	202	193	185	177	142	118	101	89	71	59	50
	125	5000	384	330	288	272	256	243	231	220	210	201	192	154	129	110	96	77	64	55
	126	5400	415	356	312	293	277	262	249	237	226	217	208	166	139	119	104	83	69	59
14'-0"	81	1400	100	86	75	71	67	63	60	57	55	52	50	40	34	29	.....	.....	.....	.....
	82	2500	178	153	134	126	119	113	107	102	98	93	89	71	60	51	45	35	30	.....
	102	3000	214	184	161	152	143	135	129	123	117	112	107	86	72	62	54	43	36	31
	103	3900	278	239	209	197	186	176	167	159	152	145	139	111	93	80	70	55	46	40
14'-0"	104	4400	314	270	236	222	210	199	189	180	172	164	157	126	105	90	79	63	52	45
	123	4380	313	268	235	221	209	198	188	179	171	163	156	125	105	90	78	62	52	45
	124	4600	328	282	246	232	219	208	197	188	179	171	164	131	110	94	82	65	55	47
	125	5000	357	306	268	252	238	226	214	204	195	187	179	143	119	102	90	71	59	51
14'-0"	126	5400	386	331	289	272	257	244	232	220	210	201	193	154	129	110	97	77	64	55
	145	5800	414	355	311	292	276	262	248	237	226	216	207	166	138	119	104	83	69	59
	146	6200	443	380	332	313	296	280	266	253	242	231	222	177	148	127	111	88	74	63
	147	6800	486	416	364	343	324	307	292	278	265	254	243	194	162	139	122	97	81	69
15'-0"	81	1310	87	75	66	62	58	55	52	50	48	46	44	35	.....	.....	.....	.....	.....	.....
	82	2330	155	133	116	110	104	98	93	89	85	81	78	62	52	44	39	31	.....	.....
	102	2810	187	161	141	132	125	118	112	107	102	98	94	75	63	54	47	38	31	.....
	103	3640	243	208	182	172	162	153	146	139	133	127	122	97	81	69	61	49	41	35
15'-0"	104	4400	293	252	220	207	196	185	176	168	160	153	147	117	98	84	73	59	49	42
	123	4090	272	234	204	192	182	172	163	156	148	142	136	109	91	78	68	55	46	39
	124	4600	307	263	230	217	204	194	184	175	167	160	153	123	102	88	77	61	51	44
	125	5000	333	286	250	235	222	210	200	191	182	174	167	133	111	96	84	67	56	48
15'-0"	126	5400	360	308	270	254	240	227	216	206	196	188	180	144	120	103	90	72	60	52
	145	5800	387	332	290	273	258	244	232	221	211	202	193	155	129	111	97	78	64	56
	146	6200	413	354	310	292	276	261	248	236	225	216	207	165	138	118	104	83	69	59
	147	6800	454	389	340	320	302	286	272	259	248	237	227	181	151	130	114	91	75	65

For floor construction, joists should not be spaced over 24 in. o. c.

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"O-T" STEEL JOIST LOADING TABLE TABLE ONE (CONTINUED)

Clear Span	Joist Type	Total Safe Load Pounds	TOTAL SAFE LOADS IN POUNDS PER SQUARE FOOT FOR VARIOUS JOIST SPACINGS																		
			12"	14"	16"	17"	18"	19"	20"	21"	22"	23"	24"	30"	3'-0"	3'-6"	4'-0"	5'-0"	6'-0"	7'-0"	
16'-0"	81	1230	77	66	58	54	51	49	46	44	42	40	38	31							
	82	2190	137	117	103	97	91	86	82	78	75	71	68	55	46	39	34				
	102	2630	164	141	123	116	110	104	99	94	90	86	82	66	55	47	41	33			
	103	3420	213	182	160	150	142	134	128	122	116	111	106	85	71	61	53	43	35	30	
	104	4170	260	223	195	184	173	164	156	149	142	136	130	104	87	74	65	52	43	37	
	123	3840	240	206	180	170	160	152	144	137	131	125	120	96	80	69	60	48	40	34	
	124	4600	287	246	216	203	192	182	172	164	157	150	144	115	96	82	72	58	48	41	
	125	5000	312	268	234	221	208	197	187	178	170	163	156	125	104	89	78	63	52	44	
	126	5400	337	289	253	238	225	213	202	193	184	176	169	135	113	97	85	68	57	48	
	145	5800	363	311	272	256	242	229	218	208	198	189	182	145	121	104	91	73	61	52	
	146	6200	387	332	290	274	258	245	233	222	212	202	194	155	129	111	97	78	64	56	
	147	6800	425	364	319	300	283	268	255	243	232	222	213	170	142	122	107	85	71	61	
	166	6400	400	343	300	282	266	253	240	228	218	208	200	160	133	114	100	80	67	57	
	167	7200	450	386	338	318	300	284	270	257	246	235	225	180	150	129	113	90	75	64	
17'-0"	102	2470	145	125	109	103	97	92	87	83	79	76	73	58	48	42	36	29			
	103	3220	189	162	142	134	126	120	114	108	103	99	95	76	63	54	47	38	32		
	104	3920	230	197	173	162	153	145	138	132	126	120	115	92	77	66	58	46	38	33	
	123	3610	212	182	159	150	142	134	127	121	116	111	106	85	71	61	53	43	35	30	
	124	4510	265	227	199	187	177	168	159	152	145	139	133	106	88	76	66	53	44	38	
	125	5000	294	252	220	208	196	186	177	168	161	154	147	118	98	84	74	59	49	42	
	126	5400	318	272	238	224	212	201	191	182	173	166	159	127	106	91	80	64	53	45	
	145	5800	342	292	256	241	228	215	205	195	186	178	171	137	114	98	86	69	57	49	
	146	6200	365	313	273	258	243	230	219	209	199	191	183	146	122	105	92	73	61	52	
	147	6800	400	343	300	282	267	253	240	229	219	209	200	160	134	115	100	80	67	57	
	166	6400	376	323	282	266	251	238	226	215	205	197	188	151	126	108	94	76	63	54	
	167	7200	424	363	318	299	283	268	255	242	231	221	212	170	142	121	106	85	71	60	
	18'-0"	102	2330	129	111	97	92	86	82	78	74	71	68	65	52	43	37	32			
		103	3040	169	145	127	119	113	107	101	97	92	88	85	68	56	48	42	34		
104		3710	205	177	155	146	138	130	124	118	113	108	103	83	69	59	52	41	34	30	
123		3410	189	163	142	134	126	120	114	108	103	99	95	76	63	54	47	38	32	27	
124		4260	236	203	178	167	158	150	142	135	129	124	119	95	79	68	59	47	39	34	
125		5000	278	238	208	196	185	175	167	159	152	145	139	111	93	79	70	56	46	40	
126		5400	300	257	225	212	200	190	180	172	164	157	150	120	100	86	75	60	50	43	
145		5780	321	275	240	227	214	203	193	184	175	168	161	129	107	92	81	65	54	46	
146		6200	344	295	259	243	230	218	207	197	188	180	172	138	115	99	86	69	58	49	
147		6800	378	324	284	267	252	239	227	216	206	197	189	151	126	108	95	76	63	54	
166		6400	356	305	267	251	237	225	213	203	194	186	178	143	119	102	89	72	60	51	
167		7200	400	343	300	282	267	253	240	229	219	209	200	160	134	115	100	80	67	57	
19'-0"		102	2210	116	100	87	82	78	74	70	66	63	61	58	47	39	33	29			
		103	2880	151	130	114	107	101	96	91	87	83	79	76	61	51	43	38	30		
	104	3510	184	159	139	131	123	117	111	106	101	97	93	74	62	53	46	37	31		
	123	3230	170	146	128	120	113	107	102	97	93	89	85	68	57	49	42	34	28		
	124	4040	212	183	160	150	142	135	128	122	116	111	106	85	71	61	53	43	35		
	125	4990	263	225	197	186	175	166	158	150	143	137	132	105	88	75	66	53	44	38	
	126	5400	284	244	214	201	190	180	171	162	155	148	142	114	95	81	71	57	47	41	
	145	5480	288	247	217	204	193	183	173	165	158	151	145	115	96	83	72	58	48	41	
	146	6200	326	280	245	230	218	206	196	187	178	170	163	131	109	93	82	65	55	47	
	147	6800	358	307	269	253	239	226	215	205	195	187	179	143	120	102	90	72	60	51	
	166	6400	337	289	253	238	225	213	202	193	184	176	168	135	112	97	84	68	56	49	
	167	7200	379	325	284	268	253	239	227	217	207	198	190	152	127	108	95	76	64	54	
	20'-0"	102	2100	105	90	79	74	70	66	63	60	57	55	53	42	35	30				
		103	2730	137	117	102	96	91	86	82	78	75	71	68	55	46	39	34			
104		3340	167	143	125	118	111	105	100	95	91	87	84	67	56	48	42	33			
123		3060	153	131	115	108	102	97	92	88	84	80	77	61	51	44	38	31			
124		3830	192	164	144	135	128	121	115	109	104	100	96	77	64	55	48	38	32		
125		4740	237	203	178	168	158	150	142	135	129	124	119	95	79	68	59	47	40	34	
126		5400	270	232	203	191	180	171	162	154	148	141	135	108	90	77	68	54	45	39	
145		5200	260	223	195	184	174	164	156	149	142	136	130	104	87	74	65	52	43	37	
146		6200	310	266	232	219	207	196	186	177	169	162	155	124	103	89	78	62	52	44	
147		6800	340	292	255	240	227	215	204	195	186	178	170	136	113	97	85	68	56	49	
166		6400	320	275	240	226	213	202	192	183	175	167	160	128	106	92	80	64	53	46	
167		7200	360	309	270	254	240	228	216	206	197	188	180	144	120	103	90	72	60	52	

For floor construction, joists should not be spaced over 24 in. o. c.

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"O-T" STEEL JOIST LOADING TABLE TABLE ONE (CONTINUED)

Clear Span	Joist Type	Total Safe Load Pounds	TOTAL SAFE LOADS IN POUNDS PER SQUARE FOOT FOR VARIOUS JOIST SPACINGS																	
			12"	14"	16"	17"	18"	19"	20"	21"	22"	23"	24"	30"	3'-0"	3'-6"	4'-0"	5'-0"	6'-0"	7'-0"
21'-0"	123	2920	139	119	104	98	93	88	83	79	76	73	70	56	46	40	35			
	124	3650	174	149	130	123	116	110	104	99	95	91	87	70	58	50	43	35	29	
	125	4510	215	184	161	152	143	136	129	123	117	112	107	86	72	61	54	43	36	31
	126	5400	257	220	193	182	172	162	154	147	140	134	129	103	86	73	64	52	43	37
	145	4950	236	202	177	166	157	149	142	135	129	123	118	94	79	67	59	47	39	34
	146	6200	295	253	222	209	197	187	177	169	161	154	148	118	99	84	74	59	49	42
	147	6800	324	277	243	229	216	205	194	185	177	169	162	129	108	93	81	65	54	46
	166	6400	305	261	229	215	203	193	183	174	166	159	153	122	102	87	77	61	51	44
167	7200	313	294	257	242	229	217	206	196	187	179	172	137	115	98	86	69	58	49	
22'-0"	123	2790	127	109	95	90	85	80	76	73	69	66	63	51	42	36	32			
	124	3480	158	136	119	112	105	100	95	91	86	83	79	63	53	45	40	32		
	125	4300	196	168	147	138	130	124	117	112	107	102	98	78	65	56	49	39	32	
	126	5300	241	207	181	170	161	152	145	138	132	126	121	97	80	69	60	48	40	34
	145	4730	215	185	162	152	144	136	129	123	117	112	108	86	72	61	54	43	36	31
	146	6200	282	242	212	199	188	178	169	161	154	147	141	111	94	80	70	56	47	40
	147	6800	309	265	232	218	206	195	185	177	168	161	154	123	103	88	77	62	52	44
	166	6400	291	250	218	206	194	184	175	166	159	152	146	116	97	83	73	58	48	42
167	7200	327	280	245	231	218	206	196	187	178	171	164	131	109	93	82	65	54	47	
23'-0"	123	2670	116	100	87	82	77	73	70	66	63	61	58	46	39	33	29			
	124	3330	145	124	109	102	97	92	87	83	79	76	72	58	48	41	36	29		
	125	4120	179	154	134	126	119	113	107	102	98	94	90	72	60	51	45	36	30	
	126	5060	221	189	165	155	147	139	132	126	120	115	110	88	74	63	55	44	37	31
	145	4520	197	169	147	139	131	124	118	112	107	103	98	79	66	56	49	39	33	28
	146	5940	258	221	194	182	172	163	155	147	141	135	129	103	86	74	65	52	43	37
	147	6800	296	254	222	209	197	187	178	169	161	154	148	118	99	84	74	59	49	42
	166	6400	278	238	209	197	186	176	167	159	152	145	139	111	93	80	70	56	46	40
167	7200	313	268	235	221	209	198	188	179	171	163	157	125	104	90	79	62	53	45	
24'-0"	123	2550	106	91	80	75	71	67	64	61	58	55	53	42	35	30				
	124	3190	133	114	100	94	89	84	80	76	73	69	67	53	44	38	33			
	125	3950	164	141	124	116	110	104	99	94	90	86	82	66	55	47	41	33		
	126	4860	202	174	152	143	135	128	121	116	110	105	101	81	68	58	51	41	34	
	145	4340	180	155	135	127	120	114	108	103	99	94	90	72	60	52	45	36	30	
	146	5690	237	203	178	168	158	150	142	135	129	124	119	95	79	68	59	47	40	34
	147	6800	283	242	212	200	189	179	170	162	155	148	142	113	94	81	71	57	47	41
	166	6400	267	228	200	188	178	168	160	152	145	139	133	107	89	76	67	53	44	38
167	7200	300	257	225	212	200	190	180	171	164	157	150	120	100	85	75	60	50	43	
25'-0"	145	4160	166	142	125	117	111	105	100	95	91	87	83	66	56	48	42	33		
	146	5450	218	187	163	154	145	137	131	125	119	114	109	87	73	62	55	44	36	31
	147	6560	262	225	197	185	175	166	157	150	143	137	131	105	88	75	66	53	44	38
	166	6180	247	212	186	175	165	156	148	141	135	129	124	99	82	71	62	49	41	35
	167	7200	288	247	216	204	192	182	173	165	157	150	144	115	96	82	72	58	48	41
26'-0"	145	4000	154	132	115	108	102	97	92	88	84	80	77	61	51	44	38	31		
	146	5250	202	173	152	143	135	128	121	115	110	105	101	81	67	58	51	40	34	
	147	6300	243	208	182	171	162	153	146	138	132	127	121	97	81	69	61	49	41	35
	166	5950	229	196	172	162	153	145	137	131	125	119	115	92	76	65	57	46	38	33
	167	7200	277	237	208	196	184	175	166	158	151	145	139	111	92	79	69	55	46	40
27'-0"	145	3850	143	122	107	101	95	90	86	82	78	75	71	57	48	41	36	29		
	146	5050	187	160	140	132	125	118	112	107	102	98	94	75	62	53	47	37	31	
	147	6070	225	193	169	159	150	142	135	129	123	117	112	90	75	64	56	45	37	32
	166	5730	212	182	159	150	141	134	127	121	116	111	106	85	71	61	53	43	35	30
	167	6940	257	220	193	181	171	162	154	147	140	134	128	103	86	74	64	51	43	37
28'-0"	145	3720	133	114	100	94	89	84	80	76	72	69	66	53	44	38	33			
	146	4880	174	149	131	123	116	110	105	100	95	91	87	70	58	50	44	35	29	
	147	5850	209	179	157	147	139	132	125	120	114	109	105	84	70	60	52	42	35	30
	166	5520	197	169	148	139	131	124	118	113	107	103	99	79	66	56	49	39	33	28
	167	6690	239	205	179	169	159	151	143	137	130	125	119	96	80	68	60	48	40	34
29'-0"	166	5340	184	158	138	130	123	116	111	105	100	96	92	74	61	53	46	37	31	
	167	6460	223	191	167	157	148	141	134	127	122	116	111	89	74	64	56	45	37	32
30'-0"	166	5150	172	147	129	121	114	109	103	98	94	90	86	69	57	49	43	34		
	167	6240	208	178	156	147	139	131	125	119	113	108	104	83	69	59	52	42	35	30
31'-0"	166	4990	161	138	121	114	107	102	97	92	88	84	81	64	54	46	40	32		
	167	6050	195	167	146	138	130	123	117	111	106	102	98	78	65	56	49	39	32	
32'-0"	166	4840	151	130	113	107	101	96	91	86	82	79	76	60	50	43	38	30		
	167	5860	183	157	137	129	122	116	110	105	100	96	92	73	61	52	46	37	31	

For floor construction, joists should not be spaced over 24 in. o. c.

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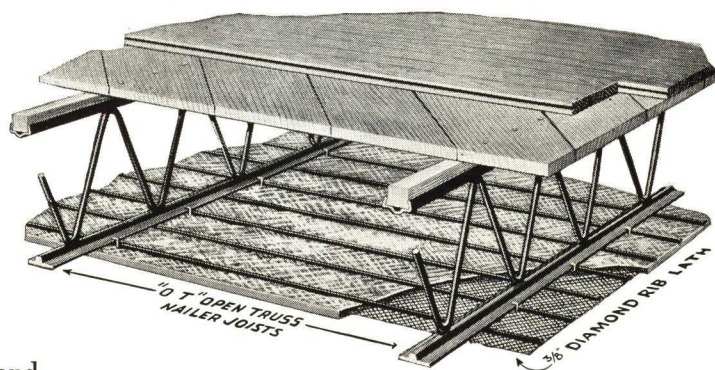
OPEN TRUSS NAILER JOISTS

TO make available for homes, apartments, stores and other light occupancy buildings the advantage of permanent construction at a cost comparable to wood has been the basic idea in the development of Nailer Joists.

In them are incorporated the basic features of Truscon "O-T" Open Truss Steel Joists, so extensively used in important buildings throughout the country. Unusual strength and rigidity result from their superior design and construction. Easy installation follows a complete and accurate fabrication in the Truscon plant.

Wide, specially formed members for top and bottom chords impart stiffness to the Nailer Joists and keep them true to line. The continuous steel web member is securely welded to the chords.

The end construction—a vital point in steel joist design—is unusually strong and rigid. Bearings for the joists are wide and ample. The underslung design at the supports not only insures stability of the joists during installation but provides additional head room under the supporting girders.



Their open web permits the passage of pipes and conduits in any direction through the floor construction without requiring the cutting of joists or a suspended ceiling. Steel Joists eliminate the settlement due to shrinkage and consequent separation of base-board and floor, and its tendency to cause plaster cracking.

ADVANTAGES OF NAILER JOISTS

Truscon Nailer Joists reach the job ready for placing without cutting or fitting. The wood flooring is nailed directly to the wood nailing strips which are securely attached to the top chords of the joists.

The light weight of nailer joist construction lessens the time and labor required for erection and also saves materials in the supporting framework and foundations. Every detail of joists and attachments has been perfected by practical experience to simplify installation and assure dependable results.

With a metal lath plastered ceiling attached to the lower chord of the joists, the construction provides fire-safety to a substantial degree, preventing the spread of fire from below.



With Truscon Nailer Joists available it is no longer necessary, from either a practical or economical standpoint, to use wood joist construction in any building.

SPECIFICATIONS

General—Where Nailer Joist floor construction is specified, it is understood to mean Truscon "O-T" Nailer Joists of the size and spacing as shown on the drawings, together with a wooden floor over the joists and, unless otherwise specified, a metal lath and plaster ceiling directly beneath the joists.

The Nailer Joists shall be made of rolled steel shapes fabricated by high pressure electric automatic welding. The web member shall be a continuous plain round bar of constant diameter bent cold. The top chord shall be straight and the bottom chord bent up to form the bearing. The design and details of all members shall meet the requirements of the Steel Joist Institute Specifications. The wood nailer strip shall not be considered in determining the carrying capacity of the joist.

Nailer Strip—The wood nailer strip shall be treated with a moisture-proofing solution to prevent its absorption of moisture. It shall be held securely on top of the top chord by pressure embedment of the flanges of the top chord into its sides.

Painting—All Nailer Joists shall be spray or dip painted with one shop coat of good metal protective paint.

Bearing and Anchorage—Joists shall have a minimum bearing of 4 in. on concrete or masonry and $2\frac{1}{2}$ in. on steel.

Every third joist bearing on masonry walls shall be anchored. Joists parallel to walls shall have the top and bottom chords anchored at the line of the rows of bridging. Every joist bearing on structural steel beams shall be fastened by an anchor (or welding).

Bridging—As soon as joists have been erected and before the application of construction loads, joists shall be bridged with a tension type of "underchord" rod bridging consisting of a $\frac{1}{2}$ in. rod placed underneath the top chords of the joists and transversely to them and held in place by means of spring clips engaging the rod and the web members at a panel point. This transverse rod to be supplemented by $\frac{1}{8}$ in. diagonally placed rods securely wound to both the transversely placed rod and the web members where they meet the bottom chord of joist. For spans up to 14 ft. 0 in. one row of bridging is required; two rows between 14 ft. 0 in. and 21 ft. 0 in.; and three rows over 21 ft. 0 in.

Ceilings—Where directly attached ceiling occurs, Bottom Chord Extensions shall be provided.

Note: The spacing of the Nailer Joists must not be more than the safe span of the flooring over the joists.

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"O-T" NAILER JOIST LOADING TABLE TABLE TWO

The following table gives the TOTAL safe uniformly distributed load carrying capacities of Truscon "O-T" Open Truss Nailer Joists at various spacings.

The weight of DEAD loads must in all cases be deducted to determine the LIVE load carrying capacities of the joists.

Clear span	Joist type	Total safe load pounds	Total safe load in pounds per square foot for various joist spacings																	
			12"	14"	16"	17"	18"	19"	20"	21"	22"	23"	24"	30"	3'-0"	3'-6"	4'-0"	5'-0"	6'-0"	7'-0"
8'-0"	80W	3100	388	332	291	274	258	245	233	221	211	202	194	155	129	111	97	78	65	55
9'-0"	80W	3100	344	295	258	243	230	218	207	197	188	180	172	138	115	98	86	69	57	49
10'-0"	80W	3100	310	266	233	219	207	196	186	177	169	162	155	124	103	89	78	62	52	44
11'-0"	80W	2818	256	220	192	181	171	162	154	146	140	134	128	102	85	73	64	51	43	37
12'-0"	80W	2583	215	185	161	152	144	136	129	123	117	112	108	86	72	62	54	43	36	31
	100W	3111	259	222	194	183	173	164	156	148	141	135	130	104	86	74	65	52	43	37
	120W	4000	333	286	250	235	222	211	200	190	182	174	167	133	111	95	83	67	56	48
13'-0"	80W	2385	183	158	138	130	122	116	110	105	100	96	92	73	61	52	46	37	31	26
	100W	2872	221	190	166	156	147	140	133	126	121	115	110	88	74	63	55	44	37	32
	120W	3744	288	247	216	203	192	182	173	165	157	150	144	115	96	82	72	58	48	41
14'-0"	80W	2214	158	136	119	112	105	100	95	90	86	83	79	63	53	45	40	32	26	21
	100W	2667	190	163	143	135	127	120	114	109	104	99	95	76	64	54	48	38	32	26
	120W	3476	248	213	186	175	166	157	149	142	135	130	124	99	83	71	62	50	41	35
	121W	4600	329	282	246	232	219	208	197	188	179	171	164	131	110	94	82	66	55	47
15'-0"	80W	2067	138	118	103	97	92	87	83	79	75	72	69	55	46	39	34	27	22	18
	100W	2489	166	143	124	117	111	105	100	95	91	87	83	66	55	47	42	33	27	22
	120W	3244	216	185	162	153	144	137	130	124	118	113	108	87	72	62	54	43	36	31
	121W	4600	307	263	230	216	204	194	184	175	167	160	153	123	102	88	77	61	51	44
16'-0"	80W	1938	121	104	91	85	81	76	73	69	66	63	61	48	40	35	31	25	20	16
	100W	2333	146	125	109	103	97	92	87	83	80	76	73	58	49	42	37	30	24	19
	120W	3042	190	163	143	134	127	120	114	109	104	99	95	76	63	55	48	38	32	26
	121W	4600	288	246	216	203	192	182	173	164	157	150	144	115	96	82	72	58	48	41
17'-0"	100W	2196	129	111	97	91	86	81	77	74	71	68	65	52	43	37	32	26	21	17
	120W	2863	168	144	126	119	112	106	101	96	92	88	84	67	56	48	42	34	28	23
	121W	4600	271	232	203	191	180	171	163	155	148	141	135	108	90	77	68	54	45	39
	141W	4600	271	232	203	191	180	171	163	155	148	141	135	108	90	77	68	54	45	39
18'-0"	100W	2074	115	99	86	81	77	73	69	66	63	60	58	46	38	33	28	22	18	14
	120W	2704	150	129	113	106	100	95	90	86	82	78	75	60	50	43	38	30	24	19
	121W	4444	247	212	185	174	165	156	148	141	135	129	124	99	82	71	64	49	41	35
	141W	4600	296	220	192	180	171	162	154	146	139	133	128	102	85	73	64	51	43	37
	161W	5481	305	261	228	215	203	192	183	174	166	159	152	122	102	87	76	61	51	44
19'-0"	100W	1965	103	89	78	73	69	65	62	59	56	54	52	41	34	30	25	20	16	13
	120W	2561	135	116	101	95	90	85	81	77	74	70	67	54	45	39	34	27	22	18
	121W	4211	222	191	166	156	148	140	133	127	121	116	111	89	74	64	56	44	37	32
	141W	4600	242	208	182	171	161	153	145	138	132	126	121	97	81	69	61	48	40	35
	161W	5193	273	234	205	193	182	173	164	156	149	143	137	109	91	78	68	55	46	39
20'-0"	100W	1867	93	80	70	66	62	59	56	53	51	49	47	37	31	27	22	18	14	11
	120W	2433	122	105	91	86	81	77	73	70	67	64	61	49	41	35	30	24	19	15
	121W	4000	200	171	150	141	133	126	120	114	109	104	100	80	67	57	50	40	33	27
	141W	4567	228	196	171	161	152	144	137	130	124	119	114	91	76	65	57	46	38	33
	161W	4933	247	212	185	174	165	156	148	141	135	129	123	99	82	70	62	49	41	35
21'-0"	120W	2317	110	94	83	78	73	69	66	63	60	57	55	44	37	32	27	22	18	14
	121W	3810	181	156	136	128	121	114	109	104	99	95	91	72	60	52	45	36	30	25
	141W	4349	207	177	155	146	138	131	124	118	113	108	104	83	69	59	52	41	35	30
	161W	4698	224	192	168	158	149	141	134	128	122	117	112	90	75	64	56	45	37	32
22'-0"	120W	2212	101	86	75	71	67	64	60	57	55	52	50	40	34	29	24	19	15	12
	121W	3636	165	142	124	117	110	104	99	94	90	86	83	66	55	47	41	33	27	22
	141W	4152	189	162	142	133	126	119	113	108	103	99	94	76	63	54	47	38	32	26
	161W	4485	204	175	153	144	136	129	122	117	111	106	102	82	68	58	51	41	34	28
23'-0"	120W	2116	92	79	69	65	61	58	55	53	50	48	46	38	31	27	22	18	14	11
	121W	3478	151	130	113	107	101	96	91	86	82	79	76	60	50	43	38	30	24	19
	141W	3971	173	148	130	122	115	109	104	99	94	90	86	69	58	49	43	35	28	23
	161W	4290	187	160	140	132	124	118	112	107	102	97	93	75	62	53	47	37	31	26
24'-0"	120W	2028	85	72	63	60	56	53	51	48	46	44	42	34	28	24	19	15	12	9
	121W	3333	139	119	104	98	93	88	83	79	76	73	70	56	46	40	35	28	22	17
	141W	3806	159	136	119	112	106	100	95	91	87	83	79	63	53	45	40	32	26	21
	161W	4111	171	147	128	121	114	108	103	98	93	89	86	69	57	49	43	34	28	23
25'-0"	141W	3653	146	125	110	103	97	92	88	84	80	76	73	58	49	42	37	30	24	19
	161W	3947	158	136	119	112	105	100	95	90	86	83	79	63	53	45	40	32	26	21
26'-0"	141W	3513	135	116	101	95	90	85	81	77	74	71	68	54	45	39	34	27	22	17
	161W	3795	146	125	110	103	97	92	88	83	80	76	73	58	49	42	37	30	24	19
27'-0"	141W	3383	125	107	94	88	83	79	75	71	68	65	63	50	42	36	31	25	20	15
	161W	3654	135	116	102	96	90	85	81	77	74	71	68	54	45	39	34	27	22	17
28'-0"	141W	3262	117	100	88	82	78	74	70	67	64	61	58	47	39	33	28	22	17	13
	161W	3524	126	108	95	89	84	80	76	72	69	66	63	50	42	36	32	26	21	16
29'-0"	161W	3402	117	100	88	83	78	74	70	67	64	61	59	47	39	34	28	22	17	13
30'-0"	161W	3289	110	94	83	77	73	70	66	63	60	57	55	44	37	32	26	21	16	12
31'-0"	161W	3183	103	88	77	72	69	65	62	59	56	54	51	41	34	30	24	19	14	10
32'-0"	161W	3083	96	82	72	68</														

For floor construction, joists should not be spaced over 24 in. o. c.

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"CLERESPAN" JOISTS

TOTAL SAFE UNIFORM LOAD TABLE

The following tables give the total safe uniformly distributed load carrying capacities of Truscon "Clerespan" Joists in pounds per lineal foot of span.

Truscon "Clerespan" Joists when employed in floor construction can be used advantageously in buildings for all types of occupancy regardless of their location. In many types of buildings their use will automatically eliminate all columns from the structure with the exception of those in the outer walls. Greater floor areas are thus provided without obstructing columns than has ever heretofore been accomplished. When used in roof construction "Clerespan" Joists meet every requirement of every type of building.

"Clerespan" Joists made of hot rolled structural steel shapes, are designed in accordance with standard engineering practice. Top chords are designed for bending between panel points as well as direct compression.

"Clerespan" Joists all have a camber built in them. They are fabricated by welding in a modern shop noted for its welding equipment and developments in automatic welding.

"Clerespan" Joists possess unusual lateral stiffness. This is due to the high radius of gyration about the vertical axis.

"Clerespan" accessories, such as anchors, lath clips, screed clips, bearing plates, etc., are similar to those used with open truss joists. Diagonal bracing or bridging is provided by hot-rolled angles. Lines of bracing are about 10 ft. apart.

Notes Regarding Table

The weight of dead loads must in all cases be deducted to determine the live load carrying capacities which must be reduced for concentrated loads.

When holes are required in top or bottom chords the carrying capacities must be reduced in proportion to reduction of chord areas.

Figures printed in columns to right of heavy vertical line are for roof construction only.

Loads below horizontal zig-zag line are limited by end reaction.

Illustrations below show "Underslung" Clerespan with top chord parallel to bottom. However, they can also be made with square ends, and with square ends the top chord can be parallel to bottom chord or pitched in one or two directions.

The carrying capacities of "Clerespan" with top chords pitched, is determined by the nominal depth of the "Clerespan" Joists at the center of the span.



Joist Types	Weight Lbs./Ft.	Max. End Reaction	Clear Opening or Net Span															
			25'-0"	26'-0"	27'-0"	28'-0"	29'-0"	30'-0"	31'-0"	32'-0"	33'-0"	34'-0"	35'-0"	36'-0"				
18" Depths	181	11	3,775	302	285	269	252	236	221	208	196	184	174	165	156			
	182	12	4,213	337	320	298	277	259	242	226	212	200	188	178	168			
	183	13	4,700	376	356	337	319	302	283	265	248	234	220	208	196			
	184	15	5,625	450	422	392	364	340	317	297	278	262	247	233	220			
	185	17	6,113	489	462	437	414	392	366	343	322	303	285	269	254			
	186	19	6,966	557	536	516	480	448	418	392	368	346	326	307	291			
	187	21	7,279	582	560	539	520	502	470	442	415	391	369	349	330			
	188	23	7,635	611	587	566	545	527	509	478	449	423	399	377	357			
	189	25	8,144	650	626	603	582	561	542	525	509	479	452	426	404			
	1810	27	8,531	682	656	632	609	588	568	550	533	517	487	460	434			
1811	29	8,768	701	674	649	626	605	584	566	548	531	516	501	473				
1812	32	9,288	743	714	688	663	640	619	598	580	563	546	531	516				
20" Depths	201	11	3,625	250	238	226	215	203	192	182	172	163	155	148	141			
	202	12	4,031	278	267	253	237	223	210	198	187	177	168	160	152			
	203	13	4,510	311	296	282	269	257	246	232	219	208	197	187	178			
	204	15	5,409	373	354	332	312	293	276	261	246	233	221	210	199			
	205	17	5,858	404	385	367	350	334	319	301	284	269	255	242	230			
	206	19	7,091	489	464	439	412	387	365	344	325	308	292	277	264			
	207	21	7,560	521	504	479	456	433	409	387	366	347	330	314	299			
	208	23	7,984	550	532	515	499	471	444	420	398	377	358	340	324			
	209	25	8,517	587	568	549	532	516	501	474	449	426	404	385	366			
	2010	27	8,995	619	598	580	562	544	528	514	487	462	438	416	395			
2011	29	9,366	642	620	600	582	564	547	532	517	503	477	453	431				
2012	32	9,880	681	658	637	617	598	581	564	549	534	520	493	469				
2013	34	10,023	691	668	647	626	607	590	573	557	542	528	514	489				
2014	36	10,660	735	710	688	665	646	627	608	592	576	561	547	533				
22" Depths	221	11	3,498	212	203	194	186	178	169	161	154	147	140	134	128			
	222	12	3,911	237	227	218	207	196	186	176	168	160	152	145	139			
	223	13	4,340	263	252	242	232	223	214	206	196	187	178	170	162			
	224	15	5,214	316	302	288	273	258	245	233	221	210	200	191	183			
	225	17	5,643	342	328	315	302	290	279	268	255	242	231	220	210			
	226	19	6,446	415	396	379	360	341	323	307	292	278	265	252	241			
	227	21	7,442	451	431	412	394	378	361	344	327	312	298	285	272			
	228	23	8,481	514	486	460	436	414	393	374	356	340	324	311	299			
	229	25	8,855	537	521	506	484	464	443	421	401	383	365	349	334			
	2210	27	9,380	568	552	536	521	507	481	458	436	416	397	379	362			
2211	29	9,750	590	574	557	542	527	513	500	476	454	433	413	395				
2212	32	10,360	628	609	592	575	560	545	531	518	494	471	450	429				
2213	34	10,558	640	621	603	587	571	556	541	528	515	491	468	447				
2214	36	10,987	666	646	625	610	594	578	563	549	536	523	511	488				
24" Depths	242	12	3,774	204	197	190	183	175	167	159	152	145	139	133	128			
	243	13	4,200	227	219	211	203	196	189	183	176	170	162	156	149			
	244	15	5,069	274	263	253	242	233	220	209	200	191	183	176	168			
	245	17	5,458	295	284	274	264	255	246	238	229	220	211	202	194			
	246	19	6,642	359	345	331	318	305	290	277	264	253	242	232	222			
	247	21	7,215	390	374	360	346	333	321	309	296	283	271	260	250			
	248	23	8,288	448	427	406	387	369	353	337	322	309	296	284	272			
	249	25	8,862	479	460	442	426	409	394	379	363	347	333	320	307			
	2410	27	9,937	537	523	498	475	453	432	413	395	378	363	348	334			
	2411	29	10,360	560	545	531	518	494	471	450	431	413	395	379	364			
2412	32	10,773	582	567	552	539	526	513	490	469	449	430	413	396				
2413	34	11,073	598	583	568	554	540	527	515	492	470	450	431	413				
2414	36	11,543	624	608	592	577	563	550	537	525	513	491	470	451				
26" Depths	264	15	4,920	240	232	223	216	208	201	193	185	178	171	165	159			
	265	17	5,310	259	250	242	234	227	220	213	206	199	191	184	178			
	266	19	6,478	316	304	294	283	273	263	252	242	232	223	214	206			
	267	21	7,011	342	330	319	308	297	287	278	269	259	249	240	231			
	268	23	8,057	393	380	364	348	333	319	307	294	283	272	262	252			
	269	25	8,631	421	406	392	378	365	353	342	330	318	306	295	284			
	2610	27	9,984	487	466	445	426	408	392	376	361	347	334	321	309			
	2611	29	10,563	514	503	484	465	445	427	410	393	378	364	350	337			
	2612	32	11,000	537	524	512	500	483	465	446	428	411	396	381	367			
	2613	34	11,543	563	550	537	525	513	491	470	451	432	415	399	384			
2614	36	12,032	587	573	560	547	535	523	512	491	471	452	435	418				
28" Depths	284	15	4,815	214	207	200	194	187	182	175	169	162	156	151	145			
	285	17	5,153	229	223	216	210	204	198	190	184	177	171	165	160			
	286	19	6,323	281	272	263	254	247	239	232	223	214	206	199	192			
	287	21	6,840	304	294	285	276	268	259	252	244	237	230	222	215			
	288	23	7,875	350	338	326	315	303	292	281	271	261	252	243	235			
	289	25	8,415	374	362	351	340	329	317	306	295	284	273	264	256			
	2810	27	9,765	437	423	407	397	372	358	345	332	320	309	297	287			
	2811	29	10,463	465	449	434	420	405	390	376	362	349	337	325	314			
	2812	32	11,183	497	481	465	450	436	422	409	394	379	366	353	341			
	2813	34	12,190	542	530	509	488	468	449	432	416	400	385	371	358			
2814	36	12,495	555	543	532	521	510	489	470	452	436	420	404	390				
30" Depths	304	15	4,704	192	187	181	176	171	166	161	156	151	145	140	136			
	305	17	5,023	205	200	194	188	182	175	170	164	159	154	149	144			
	306	19	6,174	252	245	237	231	224	218	211	206	199	192	186	180			
	307	21	6,689	273	265	257	250	243	236	230	223	217	211	205	199			
	308	23	7,718	315	305	296	287	278	269	259	250	242	234	227	219			
	309	25	8,232	336	326	316	307	299	291	282	275	267	259	251	243			
	3010	27	9,555	374	367	357	347	337	328	319	310	301	292	283	275			
	3011	29	10,241	418	405	393	381	370	359	347	335	324	313	303	293			
	3012	32	10,952	447	433	420	408	396	385	374	363	352	340	329	319			
	3013	34	12,103	494	479	464	447	430	415	400	386	372	359	347	336			
3014	36	12,825	523	513	498	483	468	451	435	420	405	391	378	366				
32" Depths	328	23	7,553	285	277	270	263	255	249	241	233	226	219	212	206			
	329	25	8,056	304	296	288	280	273	266	259	252	244	236	229	223			
	3210	27	9,381	354	344	334	325	315	305	295	286	277	268	260	253			
	3211	29	10,044	373	368	358	348	339	330	321	311	302	293	284	277			
	3212	32	10,733	405	394	383	373	363	353	343	333	323	313	303	295			
	3213	34	11,819	446	433	422	410	398	385	372	360	348	337	326	316			
	3214	36	12,720	480	467	454	442	430	418	404	391	379	366	355	344			

STEELDECK ROOFS

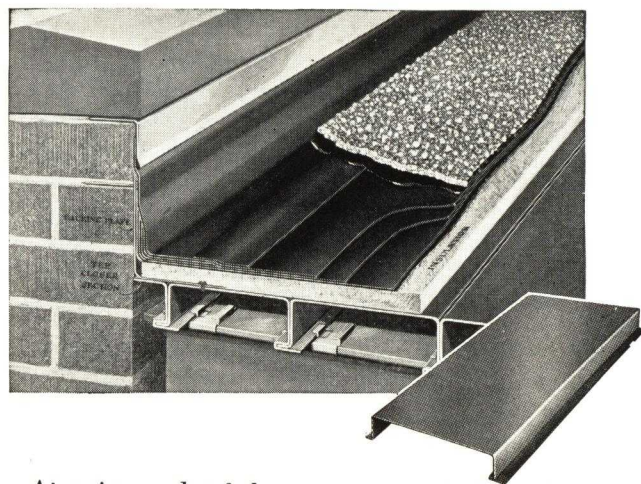
STEELDECK Roofs, insulated to any degree of efficiency and waterproofed, are of a broad and general usefulness. They are particularly adaptable to theatres, gymnasiums, schools, auditoriums, public halls and industrial buildings requiring large floor areas free from supports and obstructions. Steel-decks are strips of copper-bearing steel of standardized lengths and widths, with ribs formed longitudinally in the plates. The ribs are on the underside of the plates and the top is a smooth level surface to receive insulation and waterproofing. They can be used to advantage on straightway, flat, pitched and curved roofs (minimum radius of 60 ft.).

FERROBORD ROOF

The Ferrobord type of Truscon Steeldeck is a roof so formed that each sheet firmly interlocks with the adjoining sheets to form a continuous deck over the entire roof.

Truscon Ferroboard can be formed of either 18 or 20 gauge copper bearing or electro-galvanized strip steel. Each sheet is 6 in. wide with vertical flanges along the sides.

Ferrobord is applied directly to the roof supporting steel and is securely fastened to the structural members either by clipping or by welding each vertical rib to the purlins.

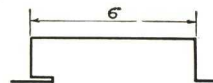


Abutting ends of sheets are securely joined and stiffened by a butt joint clip, presenting a smooth surface to which the insulation and built-up roofing are applied.

Ferrobord is adaptable to flat or pitched roofs or curved roofs, having a minimum radius of 60 ft.

The fabricated sheets receive a shop coat of gray paint.

Curving Ferrobord — Ferrobord may be curved to minimum radius of 60 ft. 0 in. in the shop or 115 ft. 0 in. in the field.



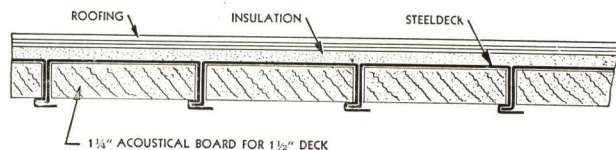
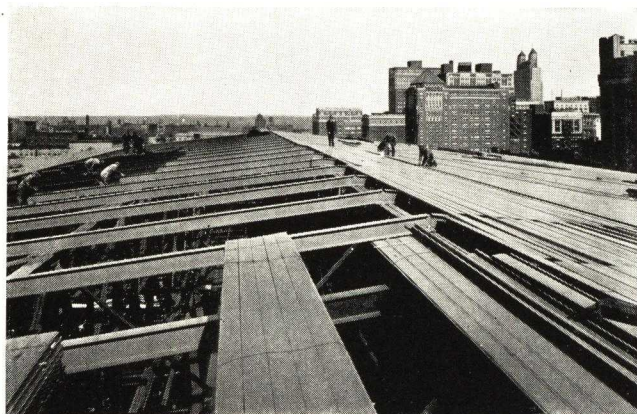
STEELDECK FERROBORD

Gauge	Dimens., in.		Mom. of Inertia per ft. width	Sec. Modulus per ft. width	Table of Safe Loads in Lbs. per Sq. Ft.*												
	Depth	Width			4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"
18	1¼	6	.190	.205	154	121	97	73	56	44	35	29					
20	1¼	6	.148	.160	120	94	75	57	44	33	25						
18	1½	6	.294	.268	201	159	129	106	87	69	55	45	37	31			
20	1½	6	.228	.208	156	123	100	83	68	53	43	35	29				
18	1¾	6	.425	.337	253	200	162	134	112	95	79	64	53	44	37	32	
20	1¾	6	.329	.261	196	155	125	104	87	74	61	50	41	34	29	27	

*Loads shown in above table include 5.0 lbs. dead load for deck plates, insulation and roofing.

FERROCOUSTIC ROOFDECKS

Ferrocoustic Roofdecks provide all the advantages of Steeldeck with the additional feature of acoustical correction for auditoriums, large rooms, gymnasiums and similar places.



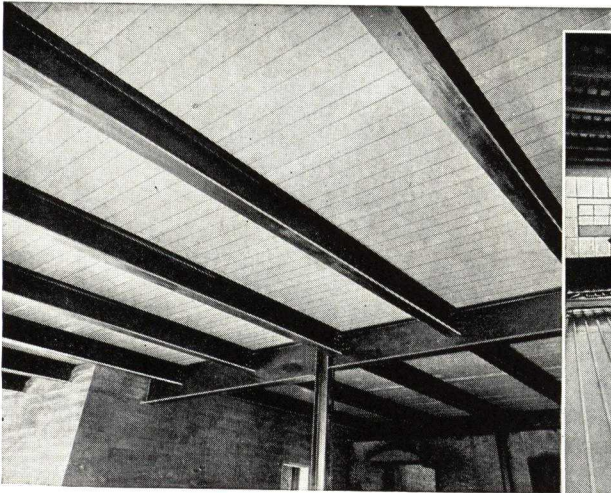
FERROBORD, 6 in. wide, with acoustical treatment, consists of panels of any commercial acoustical board fitted between the ribs of these roofdecks. The flanges of the ribs form a positive mechanical support. These ribs are 1 1/4, 1 1/2 and 1 3/4 in. deep, allowing 1, 1 1/4 and 1 1/2 in. of acoustical treatment to be used. Sheets with acoustical board inserted are welded to purlins, eliminating metal clips and adding strength to the construction.

The Ferrobord construction with the Ferrocoustic treatment also makes an excellent, light-weight, quiet floor construction of minimum thickness when surfaced with cement, magnesite, rubber tile, linoleum or other materials, for its structural design enables it to carry unusually heavy loads.

FERROBORD FLOOR FORMS

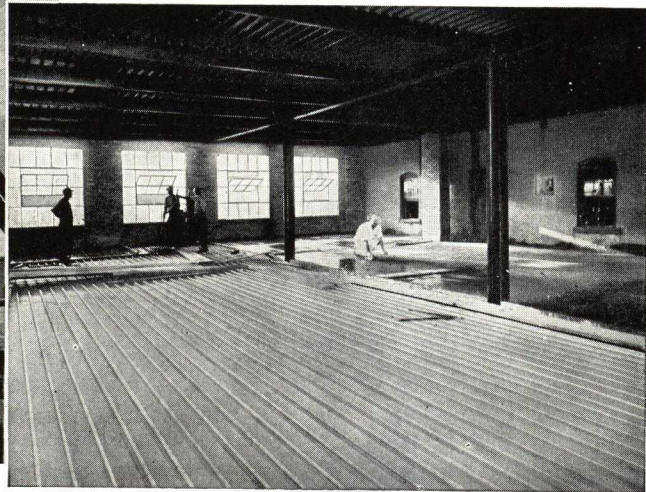
IN many buildings where heavy duty concrete floors are to be installed and where it is not intended to install ceilings, Truscon Ferrobord, in strips 6" wide with 1½" ribs, are ideal as a concrete form. Ferrobord strips are welded to structural supports with ribs

up and all form work, ordinarily necessary for the floor slab is eliminated. The bottom of this type of construction, as seen from the floor below, is a smooth surface easily cleaned and preventing dropping of concrete dust.



Underside presents clean and neat appearance.

Concrete is quickly and easily poured.



SAFE LIVE LOAD TABLES (lbs. per sq. ft.)

Clear Span	20 Ga. 1½ In. Ferrobord			18 Ga. 1½ In. Ferrobord			Allowed Stresses
	3" Slab	3½" Slab	4" Slab	3" Slab	3½" Slab	4" Slab	
3-6	510	651	769	525	643	757	Steel20,000 lbs. per sq. in.
4-0	468	564	666	455	557	656	Concrete . . . 800 lbs. per sq. in.
4-6	412	497	586	400	490	577	Shear 40 lbs. per sq. in.
5-0	353	442	523	356	437	515	n=15
5-6	285	397	471	306	392	463	Bond 80 lbs. per sq. in.
6-0	233	329	427	251	355	421	on perimeter of rib.
6-6	193	273	361	208	296	385	Safe loads are figured for
7-0	160	229	305	174	249	331	simple, clear spans.
7-6	135	194	259	146	211	282	Negative reinforcing listed be-
8-0	114	165	221	124	180	242	low will develop $\frac{wl^2}{24}$
8-6	97	141	190	105	153	208	Mesh will develop a negative
9-0		121	165	89	133	180	moment of $\frac{wl^2}{24}$ and will also
9-6		104	142		115	156	provide a minimum of 0.18%
10-0			123		99	136	temperature reinforcing.
10-6			107		85	119	
11-0						104	

Values above upper zigzag line are determined by shear.
Values below lower zigzag line give excessive deflection.

Negative Reinforcing and Temperature Steel

Slab	Using Bars			Using Mesh	
	Temperature Steel	Negative Reinforcing		Neg. Reif. and Temp. Steel	
		20 Ga. 1½"	18 Ga. 1½"	20 Ga. 1½"	18 Ga. 1½"
3"	¾" Φ @ 18"	¾" Φ @ 9"	¾" Φ @ 9"	6 x 12 1/1	6 x 12 1/1
3½"	¾" Φ @ 16"	¾" Φ @ 8½"	¾" Φ @ 8"	6 x 12 0/0	6 x 12 0/0
4"	¾" Φ @ 14"	¾" Φ @ 8"	¾" Φ @ 7½"	4 x 4 2/6	4 x 4 2/6

Maximum Spans to Support Wet Concrete
(Use temporary supports under Ferrobord on longer spans)

Slab	20 Ga. 1½"	18 Ga. 1½"
3"	5'-11	6'-6
3½"	5'-9	6'-4
4"	5'-8	6'-2

TRUSCON

EXECUTIVE OFFICES AND MAIN PLANT, YOUNGSTOWN, OHIO

FACTORIES: CLEVELAND, OHIO • LOS ANGELES, CAL. • WALKERVILLE, ONT., CANADA

PRESSED STEEL DIVISION, 6100 TRUSCON AVENUE, CLEVELAND, OHIO

FOREIGN TRADE DEPARTMENT, CHRYSLER BUILDING, 405 LEXINGTON AVENUE, NEW YORK, N. Y.

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CHICAGO, ILL., 201 No. Wells Street
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COLUMBUS, OHIO, 1000-04 Atlas Building

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DENVER, COLO., 820 12th Street
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DETROIT, MICH., 615 Wayne Street

ERIE, PA., 623 Virginia Avenue

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GREENSBORO, N. C., 935 Jefferson Standard Building

HARRISBURG, PA., 600 No. Second Street
HOUSTON, TEXAS, 823 M. & M. Building

INDIANAPOLIS, IND., 805 Union Title Building

JACKSONVILLE, FLA., 504-6 Hildebrandt Building

KANSAS CITY, MO., 1009 Baltimore Avenue
KNOXVILLE, TENN., 705 General Building

LITTLE ROCK, ARK., 603 Professional Building
LOS ANGELES, CALIF., 5480 E. Slauson Avenue
LOUISVILLE, KY., 622 So. Fifth Street

MEMPHIS, TENN., 586 Shrine Building
MIAMI, FLA., 811 Florida National Bank Building
MILWAUKEE, WIS., 6111 Plankinton Building
MINNEAPOLIS, MINN., 738 Baker Building

NASHVILLE, TENN., 801 Nashville Trust Building
NEWARK, N. J., 605 Broad Street
NEW HAVEN, CONN., P. O. Box 1556
NEW ORLEANS, LA., 1143 Canal Bank Building
NEW YORK, N. Y., 155 E. 44th Street
NORFOLK, VA., 22nd and Manteo Streets

OKLAHOMA CITY, OKLA., 1 Northwest First Street
OMAHA, NEB., 851 Insurance Building

PEORIA, ILL., 330 Central National Bank Building
PHILADELPHIA, PA., 906 Architects Building
PHOENIX, ARIZ., 222 Luhrs Building
PITTSBURGH, PA., 2544 Oliver Building
PORTLAND, ORE., 2139 No. Kerby Avenue

RICHMOND, VA., 222 E. Broad Street

ST. LOUIS, MO., 1005 St. Louis Mart Building
SALT LAKE CITY, UTAH, 1526 So. West Temple Street
SAN ANTONIO, TEX., 909 Builder's Exchange Building
SAN FRANCISCO, CALIF., 604 Mission Street
SCRANTON, PA., 203 Colfax Avenue
SEATTLE, WASH., 907 Lloyd Building
SYRACUSE, N. Y., 642 Gurney Building

TOLEDO, OHIO, 220 Richardson Building
TULSA, OKLA., 1400 South Boston

WASHINGTON, D. C., 700 Investment Building

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WINDOWS

by

VENTO

VENTO WELDED STEEL WINDOWS BY VENTO STEEL PRODUCTS COMPANY

MUSKEGON MICHIGAN

THE COMPANY

For sixteen years THE VENTO STEEL PRODUCTS COMPANY have been manufacturing Electric Arc Welded steel windows, having pioneered numerous developments within the industry. Modern plant and equipment, a thoroughly experienced Engineering Department; and a production staff of window craftsmen, are devoted to the manufacture of steel window products of genuine merit.

THE PRODUCT

Domestic steel—Full weight and depth of sections—arc welded where required for additional strength.

Vento window products include types for all purposes of industrial, residential or public construction and embrace the

entire range of casement and industrial window groups. Individual catalogs are available on each.

THE ORGANIZATION

In addition to an experienced corps of thoroughly trained field representatives, distribution facilities are maintained in principal cities; and the Company's erection organization will undertake complete installation contracts when required. A competent Engineering staff is at the service of Vento clients.

"WINDOWS BY VENTO"

is definite assurance of the very highest quality of steel window construction.

SPECIFICATIONS—VENTO CASEMENTS

The following specification notes will be useful to specification writers, covering all types of Vento Steel Casements

- 1. GENERAL:** All steel casements shown on drawings shall be of the (Insert whether DeLuxe, Simplex or Economy residence type) or (casements, projected casements or combination casements of the intermediate section type) as manufactured by the VENTO STEEL PRODUCTS COMPANY of Muskegon, Michigan, or equal.
- 2. MATERIAL:** Frame and ventilator sections shall be hot-rolled new Billet steel providing two point weathering contact between ventilator and frame. Corners of frame and ventilator sections to be mitred and welded, all welds being ground to a smooth finish. All steel hardware parts shall be heavily cadmium plated before painting.
- 3. HARDWARE:** Provide (standard medium statuary finish or full polished bronze) hardware according to manufacturers' standards for the type of window above specified. (Include here whether quadrant or rotary type underscreen operator desired.) All side hung swing leaves shall open on heavy, extended cleaning hinges solidly welded or riveted to casement frame.

NOTE: Add following specifications if sill or transom units are used. Hardware for tilt-in sill units to match hardware of other casements. Transom units shall be equipped with push type locking bar.

- 4. SCREENS FOR CASEMENTS WITH UNDER-SCREEN OPERATORS:** Provide $\frac{5}{8}$ " flat tubular frame screens for all ventilator openings. Frame to be made of electro galvanized steel solidly welded and finished with baked-on enamel. Screen cloth shall be 16-mesh antique bronze wire.

HINGED SCREENS FOR CASEMENTS WITHOUT UNDERSCREEN OPERATORS: Supply stand-


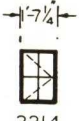
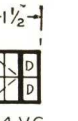

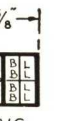




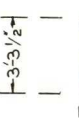





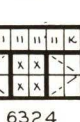
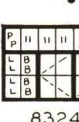
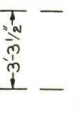

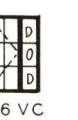

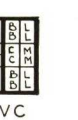

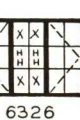
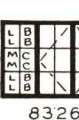

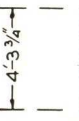







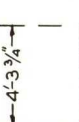









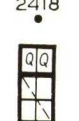







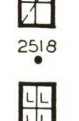

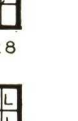




ard Vento Side Hinged Screens with $\frac{5}{8}$ " tubular steel frame, frame to be made of electro galvanized steel with baked enamel finish. Screen cloth to be of 16-mesh antique bronze wire.

NOTE: SCREENS: Aluminum, bronze or stainless steel screen frames can be supplied on order. Screen cloth can be bronze, aluminum or Inconel metal, the latter being generally used with stainless steel screens under atmospheric conditions of considerable corrosion.

- 5. SHADING:** All casements shall be drilled to receive shade brackets. Shade brackets furnished under another heading.
- 6. MASTIC:** Provide sufficient mastic cement for embedding casements. (Pointing and caulking, if desired, by others.)
- 7. ANCHORS:** Specifications should state which of the several alternative methods of anchorage are required: Viz.: Wood screws, continuous fin anchors (for solid masonry) or Redwood Surrounds. Anchorage materials will be supplied in accordance with this specification.
- 8. GLAZING:** Provide necessary spring wire glazing clips. (Glass, putty and glazing under separate heading.)
- 9. ERECTION:** Casements shall be set in accordance with the manufacturer's instructions (or by manufacturer's erection forces if desired).
- 10. PAINT:** Casements shall receive coat of manufacturer's standard paint applied at the factory before shipment.

VENTO RESIDENCE CASEMENTS

STANDARD TYPES AND SIZES

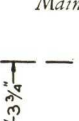


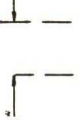
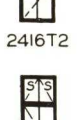




 1212	 2214	 4214 VC	 4224	 6214 VC	 6224 VC	 6224	 8224 VC	 2222
 1312	 2314	 4314 VC	 4324	 6314 VC	 6324 VC	 6324	 8324 VC	
 1313	 2316	 4316 VC	 4326	 6316 VC	 6326 VC	 6326	 8326 VC	 2323
 1413	 2416	 4416 VC	 4426	 6416 VC	 6426 VC	 6426	 8426 VC	
 1414	 2418	 4418 VC	 4428	 6418 VC	 6428 VC	 6428	 8428 VC	 2424
 1514	 2518	 4518 VC	 4528	 6518 VC	 6528 VC	 6528	 8528 VC	
 1614	 2618	 4618 VC	 4628	 6618 VC	 6628 VC	 6628	 8628 VC	

Non-vented or fixed units can be furnished in same sizes as shown here.









Handing of casements is determined by location of hinges. Viewed from outside, right-hand casements being hinged at right; left-hand being hinged at left.

TRANSOM TYPE COMBINATIONS

Main vents side hinged. Transoms swing out.

 2416T2	 4416 VC T2	 4426 T4
 2518T2	 4518 VC T2	 4528 T4
 2618 T4	 4618 VC T4	 4628 T8


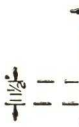
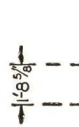
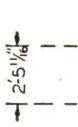
TRANSOM TYPE WINDOWS

 21	 41	 61	 81
 2214 TH	 4224 TH	 6214 TH-VC	
	 4214 TH-VC		

NOTE

Sizes given are exact sash sizes, 1/8" must be allowed on all sides for sash clearance. If more than one type is used in the same opening add 1/4" to the sum of the sash sizes for each mullion or transom used to determine the overall sash size.

CURVED HEAD TRANSOMS

 CH-1	 CH-2	 CH-4	 CH-6
---	---	---	---

ARCHITECTURAL PROJECTED WINDOWS

FOR SCHOOLS, OFFICES AND COMMERCIAL BUILDINGS, INSTITUTIONAL STRUCTURES AND ALL MAJOR CONSTRUCTION

This is a high-grade, heavy section, projected window, the ventilator movement being through the medium of heavy bronze adjustable friction shoes riding in guides concealed in the weathering.

Supplied for either inside or outside putty glazing or inside angle glazing. See section details page 5.

Hardware is fully Polished Solid Bronze. Adjacent ventilators are provided with combination latch and strike.

Either equal or unequal leg frame sections are available. The equal leg construction is recommended for schools and other installations where simplicity of interior trim details is desired. Only a single rebate in the masonry is necessary and the interior trim can be carried direct to the window frame itself. The use of this equal leg section makes an exceedingly strong and rigid window construction.

Unusual attention is given to the assembly of these windows to insure perfect operation. Welded in jig frames; proper alignment, tight weathering, and thorough rigidity become inbuilt features of this Vento line.

Mullions, where required, are supplied with heavy plate covers.

Windows are given one coat of priming paint before shipping.

SPECIFICATIONS

Architectural projected windows where shown on the drawings shall be those as manufactured by the VENTO STEEL PRODUCTS COMPANY, Muskegon, Michigan, or equal, and shall be of the sizes and types as shown.

MATERIALS: Frame members shall be heavy specially designed—(equal or unequal)—leg section, allowing $\frac{3}{8}$ " continuous anchorage. The muntins to be special formed T sections. Vertical mullions where indicated are to be manufacturer's standard hot rolled T sections with formed Steel Mullion Covers.

CONSTRUCTION:

NOTE: Specify here whether windows are to be designed for inside or outside putty glazing or inside angle glazing.

Frames and ventilators shall be assembled by tenoned, riveted and welded joints. Continuous two point contact weathering shall be provided between ventilators and frames.

Venilators to be accurately supported on solid steel arms and bronze adjustable friction shoes, the latter riding vertically in concealed guides.

Window manufacturer shall furnish necessary clips, anchors and bolts for window installation.

NOTE: Steel specification should refer to such punching as is necessary for the attachment of structural clips.

HARDWARE: All hardware shall be solid bronze full polished. Open-out ventilators within reach of manual operation to be equipped with Vento standard bronze ring type cam handle. Open-out vents beyond reach of manual operation shall additionally be equipped with pull down pole head ring.

Open-in ventilators shall be equipped with handle and keeper, all hardware to match in design and finish. Where such vents are beyond reach of manual operation, hardware to be bronze spring catch for pole operation.

ERECTION: All windows to be set plumb and true in prepared openings; and to be properly aligned and securely anchored prior to glazing.

NOTE: Mention in masonry specification that all openings are to be accurately constructed in accordance with manufacturer's details and also mention that all mortar, grouting and pointing shall be done by the masonry contractor after the windows are set.

NOTE: Mention under structural steel specification, where required, that all structural work forming a part of the window framing is to be provided by the steel contractor and punching in same to be in accordance with window manufacturer's details.

PAINTING: All windows to receive one shop coat of window manufacturer's standard shop paint.

NOTE: Windows should be given a field coat of paint after erection but before glazing, the final field coat not to be applied until putty has thoroughly set.

GLASS AND GLAZING:

NOTE: Glass and glazing are not a part of the window contract. The following, however, may be noted.

Specify glass thickness. Single strength glass is not recommended. Specify a high grade steel window putty. Do not permit wood sash putty to be used.

For putty glazing specify that glass shall be bedded and the putty applied in a neat and clean cut manner.

For angle glazed windows specify that the glass shall be set in bed putty and held by glazing angles.

SCREENS:

NOTE: Vento standard flat screens can be applied to the outside of architectural projected windows with project-in ventilators. No change in hardware is necessary.

Screening project-out vents with inside flat screens requires under-screen hardware, which when specified is supplied in bronze.

STANDARD TYPES AND SIZES

Windows of the type illustrated can be supplied in widths varying by 6" from the minimum to maximum limits indicated.

COLUMN-1		COLUMN-2		COLUMN-3	
	1'-6" 3'-6"		4'-0" 4'-0" 4'-0"		4'-0" 7'-0" 7'-0"
TYPE	A	TYPE	MA	TYPE	I
	1'-0" 3'-0"		1'-0" 3'-0"		1'-0" 3'-0"
TYPE	B	TYPE	MB	TYPE	J
	3'-0" 6'-0"		3'-0" 6'-0"		3'-0" 6'-0"
TYPE	C	TYPE	MC	TYPE	K
	3'-0" 6'-0"		3'-0" 6'-0"		3'-0" 6'-0"
TYPE	D	TYPE	MD	TYPE	L
	4'-6" 7'-0"		4'-6" 7'-0"		4'-6" 7'-0"
TYPE	E	TYPE	ME	TYPE	M
	4'-6" 7'-0"		4'-6" 7'-0"		4'-6" 7'-0"
TYPE	F	TYPE	MF	TYPE	N
	6'-6" 9'-0"		6'-6" 9'-0"		6'-6" 9'-0"
TYPE	G	TYPE	MG	TYPE	O
	6'-6" 9'-0"		6'-6" 9'-0"		6'-6" 9'-0"
TYPE	H	TYPE	MH	TYPE	P
	8'-0" 10'-6"		8'-0" 10'-6"		8'-0" 10'-6"

WINDOWS OF EACH TYPE ILLUSTRATED CAN BE SUPPLIED IN HEIGHTS VARYING BY 6" FROM THE MINIMUM AND MAXIMUM LIMITS INDICATED FOR EACH TYPE

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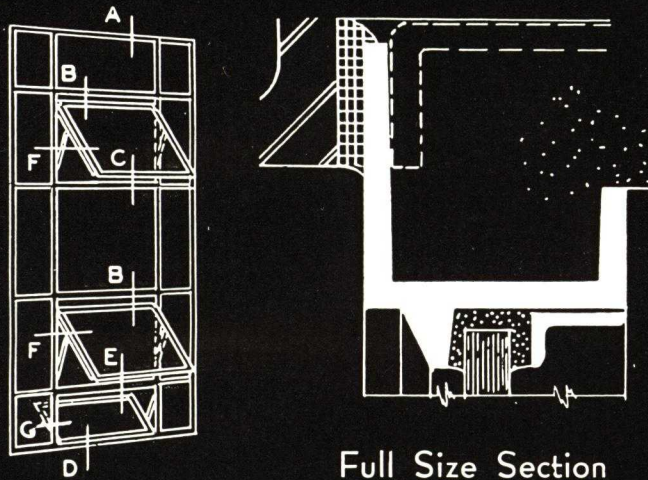
ARCHITECTURAL PROJECTED WINDOWS

ASSEMBLY AND INSTALLATION DETAILS

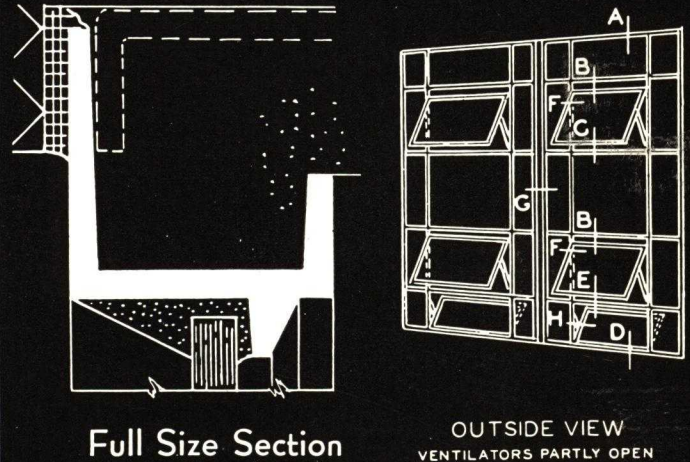
Full size sections at top show both inside angle glazing and outside putty glazing.
Installation and section assemblies below apply to either.

DETAILS INDICATE RECOMMENDED CAULKING POINTS
WHERE SUCH IS REQUIRED OR SPECIFIED

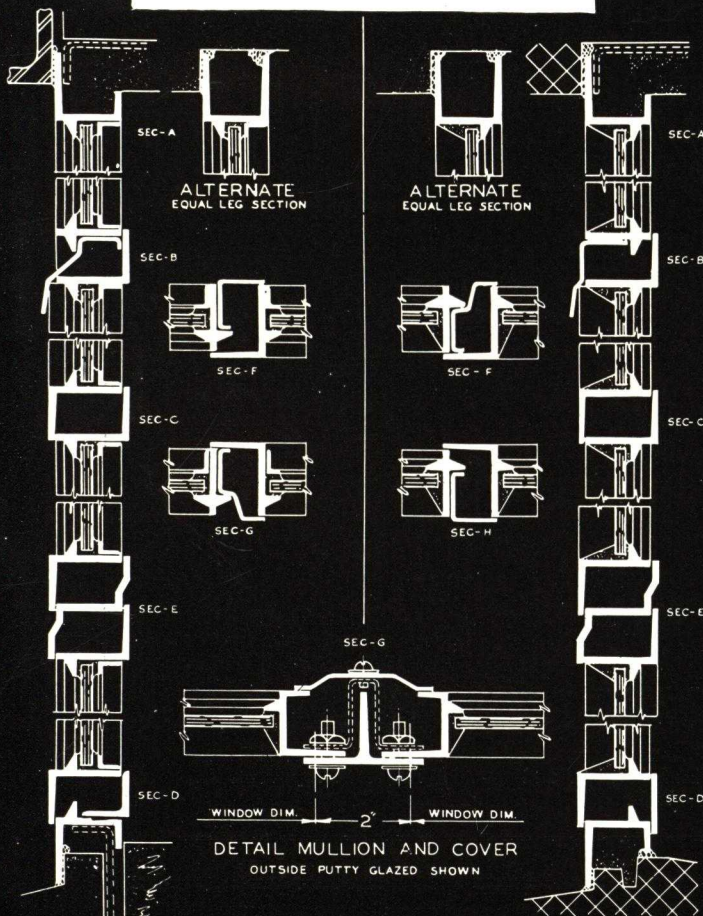
Glazed Inside



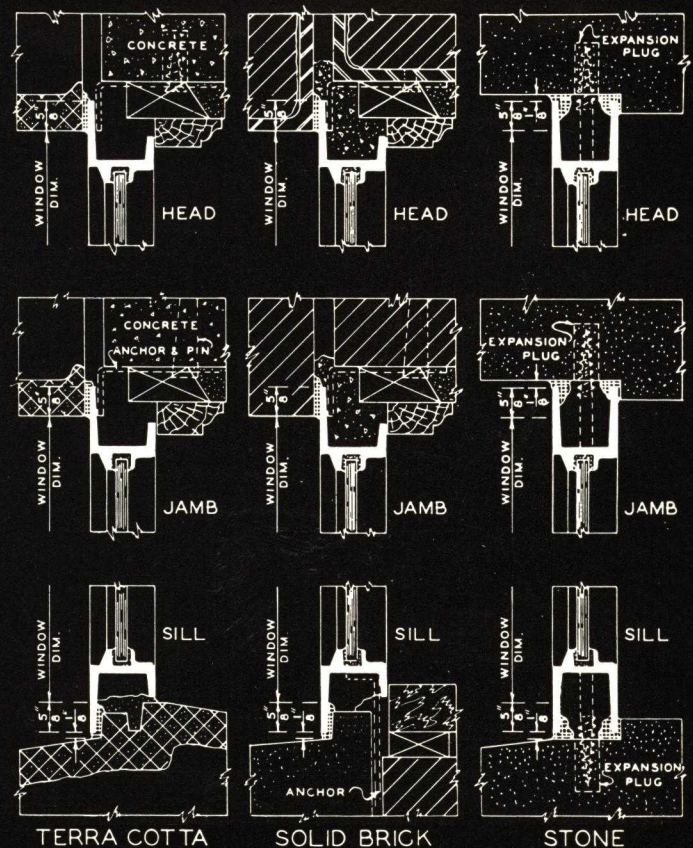
Putty Glazed Outside



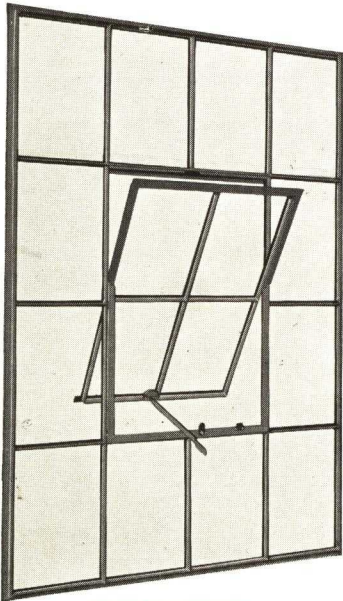
ASSEMBLY DETAILS



INSTALLATION DETAILS



INDUSTRIAL AND COMMERCIAL STEEL WINDOWS



PIVOTED

These windows are made of full 1 3/8-inch section under air hammer assembly and arc welding. Rigid, strong and durable.

Pivoted ventilators have concealed hinges.

Projected vents have adjustable friction through the medium of sliding bronze shoes.

Standard hardware is solid bronze semi-finished, and rust proofed steel fittings.

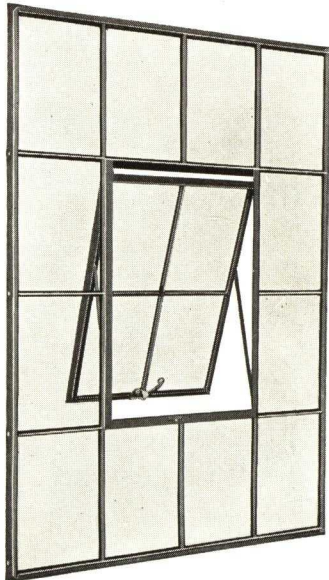
Standard window finish is a high-grade brown oxide paint. Other finishes available on special order.

Flat screens supplied for both pivoted and projected windows. Pivoted windows to be screened require special preparation and special hardware. Projected windows with inward opening vents when screened show greater economy.

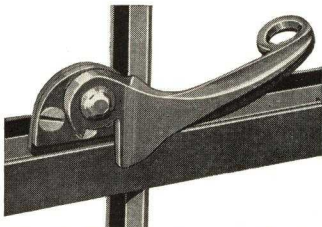
Vento Windows are welded insuring perfect alignment. Vento welded construction retains this alignment permanently.

The initial assembly of frame members is by tenon construction. These tenons are securely air hammered. Following the jig assembly, MAIN JOINTS are welded.

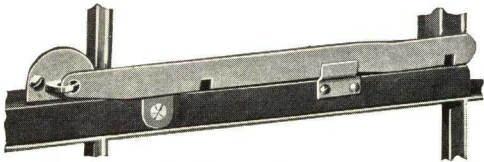
The Vento welding process, developed in our own shops, accomplishes a clean, smooth joint that does not interfere with glass or glazing, yet actually fuses the metal together.



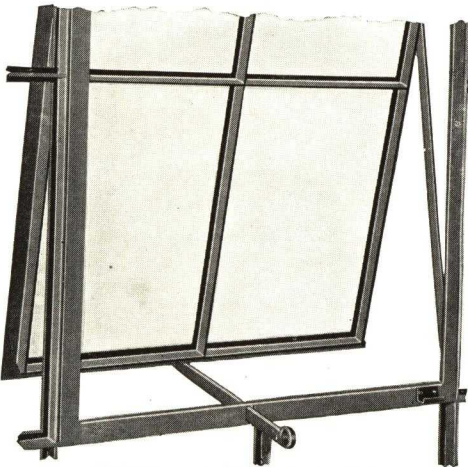
PROJECTED



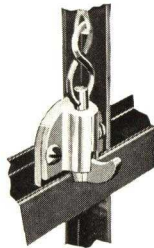
Optional Gravity Type Self-acting Cam Handle Hardware No. 604



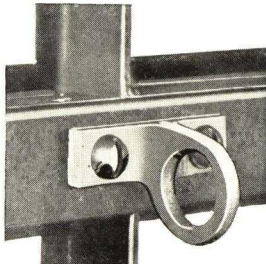
Lock Bar No. 505 in Closed Position



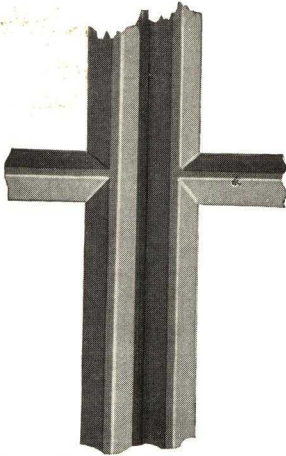
Underscreen Bar-lock No. 800



Optional Sill Catch and Chain Hardware No. 719. Head Idler Roller No. 703 is part of this hardware

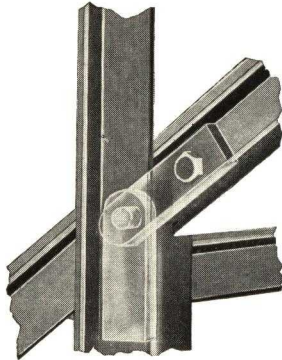


Pull-down Head Ring No. 652



Front View of Hinge. Note the Neat Tight and Weatherproof Assembly

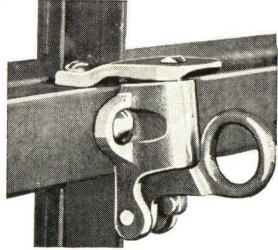
Hinges are entirely concealed and of the strongest possible construction being made of 1/8" plate steel. Hinge pins are of heavy solid bronze.



Open Position of Ventilator Showing Concealed Hinge Construction



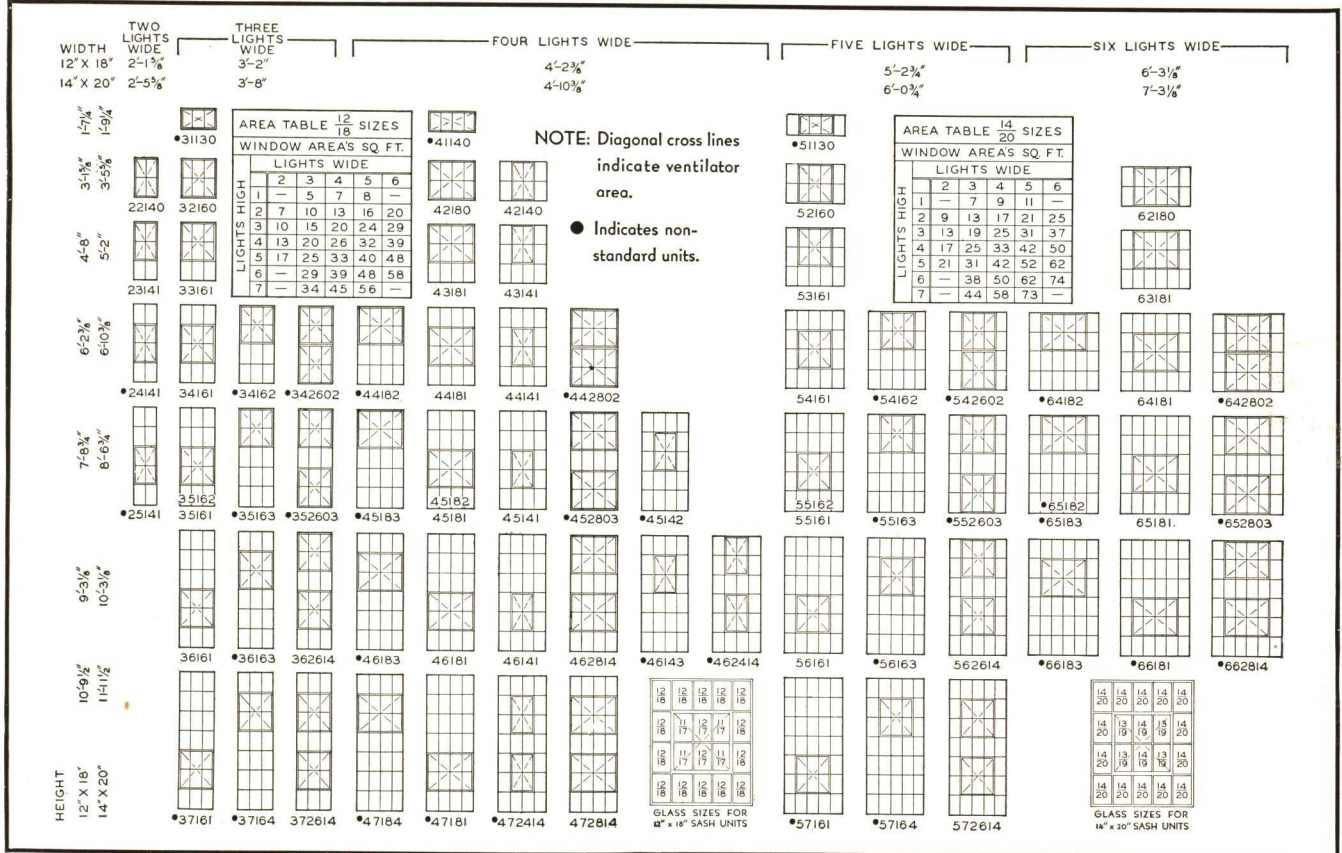
Inside View of Hinge. Surface is Entirely flush and Tight



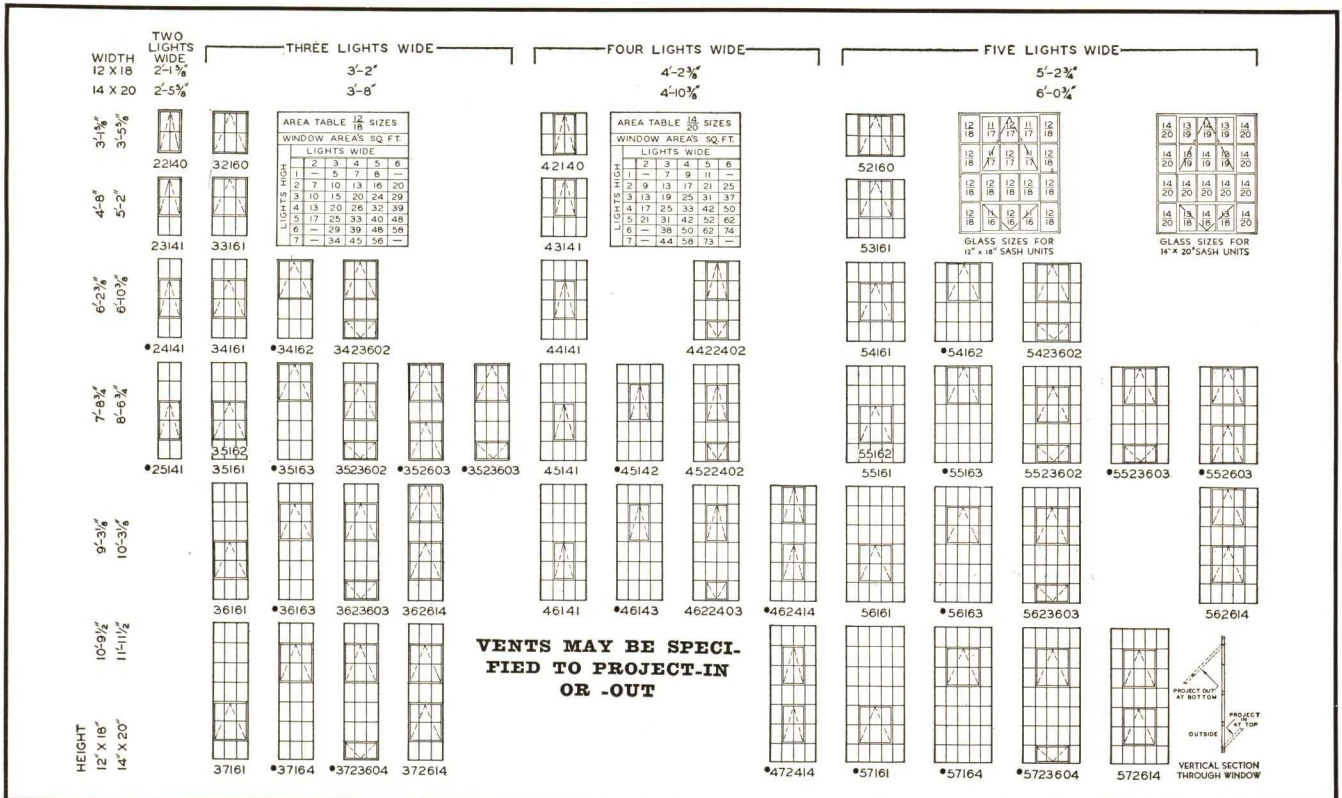
Head Catch No. 717 for Project-in Top Vents

INDUSTRIAL AND COMMERCIAL STEEL WINDOWS

PIVOTED VENTILATORS . . . STANDARD TYPES AND SIZES



PROJECTED VENTILATORS . . . STANDARD TYPES AND SIZES



INDUSTRIAL AND COMMERCIAL STEEL WINDOWS

FIXED WINDOWS-CURVED TRANSOMS

WIDTH	2'-1 1/8"	3'-2"	4'-2 3/8"	5'-2 3/4"	6'-3 1/8"
12 X 18	2'-1 1/8"	3'-2"	4'-2 3/8"	5'-2 3/4"	6'-3 1/8"
14 X 20	2'-5 5/8"	3'-8"	4'-10 3/8"	6'-0 1/4"	7'-3 5/8"

HEIGHT	12 X 18	14 X 20
1'-7 1/4"	•31	•41
3'-1 1/8"	•22	•62
4'-8"	33	•63
6'-2 3/8"	34	•64
7'-8 3/8"	35	•65
9'-3 1/8"	36	•66
10'-9 1/2"	37	•57

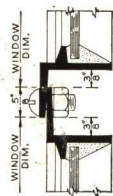
CURVED HEAD TRANSOMS
NON-VENTILATING

12'X18' 14'X20'
W-6'3 1/8" W-7'3 1/8" W-8'11 1/4" W-9'10 3/8" W-10'11 1/4" W-11'11 1/4" W-12'11 1/4" W-13'11 1/4" W-14'11 1/4" W-15'11 1/4" W-16'11 1/4" W-17'11 1/4" W-18'11 1/4" W-19'11 1/4" W-20'11 1/4"

Standard curved transoms up to six lights wide are made to fit rectangular units with which they are used.

Curved units over six lights wide are used over multiple combinations of rectangular sash, requiring the use of vertical and horizontal mullions.

Single units up to six lights wide can be bolted vertically together as shown in detail below. Larger openings require mullions. This applies to either curved units over rectangular or two rectangular units together.



NOTE

In ordering windows use the symbol numbers given in the diagrams above, preceded by the glass size (12" x 18" or 14" x 20").

EXPLANATION OF SYMBOLS

Circle Head units are designated by the letter S
Camber Head units are designated by the letter C
The first numeral is lights wide, the second lights high

W—width A—height at center
B—height at side R—radius

UNDERWRITERS' Labeled
Windows Can Be Supplied

Maximum width for single window openings are 8' 6"; height 12' 0".

Maximum area fixed units 80 square feet. Maximum area Vented units 75 square feet.

Maximum vent area area per window 40 square feet.

Maximum number of vents—3 per window.

Units in multiple openings must not exceed 7' 0" in width.

Maximum exposed glass area per light 350 square inches.

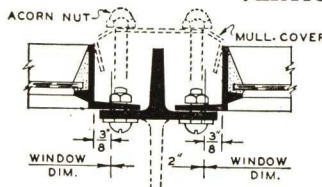
Combinations of Standard Sizes
Widths of Openings

12" x 18" Glass	NO. OF LIGHTS PER UNIT	Total Number of Lights	14" x 20" Glass
WIDTHS OF OPENINGS	Position of each number indicates position of unit in opening	Total Number of Mullions	WIDTHS OF OPENINGS
2' 1 1/8"	1	2	2' 5 5/8"
3' 2"	1	3	3' 8"
4' 2 3/8"	1	4	4' 10 3/8"
5' 2 3/4"	1	5	5' 10 3/8"
6' 3 1/8"	1	6	6' 13 1/8"
6' 6"	2	3, 3	7' 6"
8' 6 3/4"	2	4, 4	9' 10 3/4"
10' 10 3/4"	3	3, 3, 3	11' 4"
12' 12 1/2"	2	5, 5	12' 3 1/2"
10' 10 3/4"	3	3, 4, 3	12' 6 3/8"
11' 10 3/4"	3	3, 5, 3	13' 8 3/4"
11' 10 3/4"	3	4, 3, 4	13' 8 3/4"
12' 8 1/4"	2	6, 6	14' 8 1/4"
12' 11 1/8"	3	4, 4, 4	14' 11 1/8"
13' 11 1/2"	3	4, 5, 4	16' 1 1/2"
13' 11 1/2"	3	5, 3, 5	16' 1 1/2"
14' 11 7/8"	3	4, 6, 4	17' 3 7/8"
14' 11 7/8"	3	5, 4, 6	17' 3 7/8"
15' 2 3/4"	4	3, 4, 4, 3	17' 6 3/8"
16' 0 1/4"	3	5, 5, 5	18' 6 1/4"
16' 0 1/4"	3	6, 3, 6	18' 6 1/4"
17' 0 5/8"	3	5, 6, 5	19' 8 5/8"
17' 0 5/8"	3	6, 4, 6	19' 8 5/8"
17' 3 1/2"	4	4, 4, 4, 4	19' 11 1/2"
18' 1"	3	6, 5, 6	20' 11"
19' 1 3/8"	3	6, 6, 6	22' 1 3/8"
19' 4 1/4"	4	3, 6, 6, 3	22' 4 1/4"
19' 4 1/4"	4	4, 5, 5, 4	22' 4 1/4"
20' 7 1/2"	5	5, 3, 3, 3, 5	23' 9 1/2"
21' 5"	4	5, 5, 5, 5	24' 9"
21' 5"	4	4, 6, 6, 4	24' 9"
21' 7 7/8"	5	4, 4, 4, 4, 4	24' 9"
22' 8 1/4"	5	4, 4, 5, 4, 4	26' 2 1/4"
22' 8 1/4"	5	3, 5, 5, 5, 3	26' 2 1/4"
23' 5 1/2"	4	5, 6, 6, 5	27' 1 3/4"
23' 8 5/8"	5	5, 4, 4, 4, 5	27' 4 5/8"
23' 11 1/2"	6	3, 4, 4, 4, 4, 3	27' 7 1/2"
24' 9"	5	4, 5, 5, 5, 4	28' 7"
25' 6 1/2"	4	6, 6, 6, 6	29' 6 1/2"
25' 9 3/8"	5	3, 6, 6, 6, 3	29' 9 3/8"
26' 0 1/4"	6	4, 4, 4, 4, 4, 4	30' 0 1/4"
26' 9 3/4"	5	5, 5, 5, 5, 5	30' 11 3/4"
27' 10 1/8"	5	5, 5, 6, 5, 5	32' 2 1/8"
28' 1"	6	5, 4, 4, 4, 4, 5	32' 5"
28' 1"	6	3, 5, 5, 5, 5, 3	32' 5"
28' 10 1/2"	5	6, 5, 5, 5, 6	33' 4 1/2"
29' 10 7/8"	5	5, 6, 6, 6, 5	34' 6 7/8"
30' 1 3/4"	6	4, 5, 5, 5, 5, 4	34' 9 3/4"
30' 11 1/4"	5	6, 6, 5, 6, 6	35' 9 1/4"

Heights of Openings

12" x 18" Glass	14" x 20" Glass
Lights High	Lights High
1	1' 9 1/4"
2	3' 5 5/8"
3	5' 2"
4	6' 10 3/4"
5	8' 6 3/4"
6	10' 3 1/8"
7	11' 11 1/2"

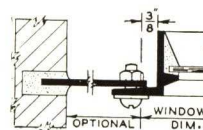
VERTICAL MULLIONS



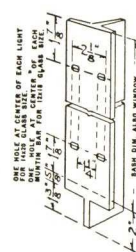
For units 5 lights high or less, stem may be turned in or out. For units over 5 lights high stem to be turned out.

Cover plate as dotted can be furnished when required.

Note: Double mullions furnished with windows 7 lights high.



Detail above shows use of jamb plates to adapt standard windows to opening larger than window dimensions.



Standard mullion cutting and punching.

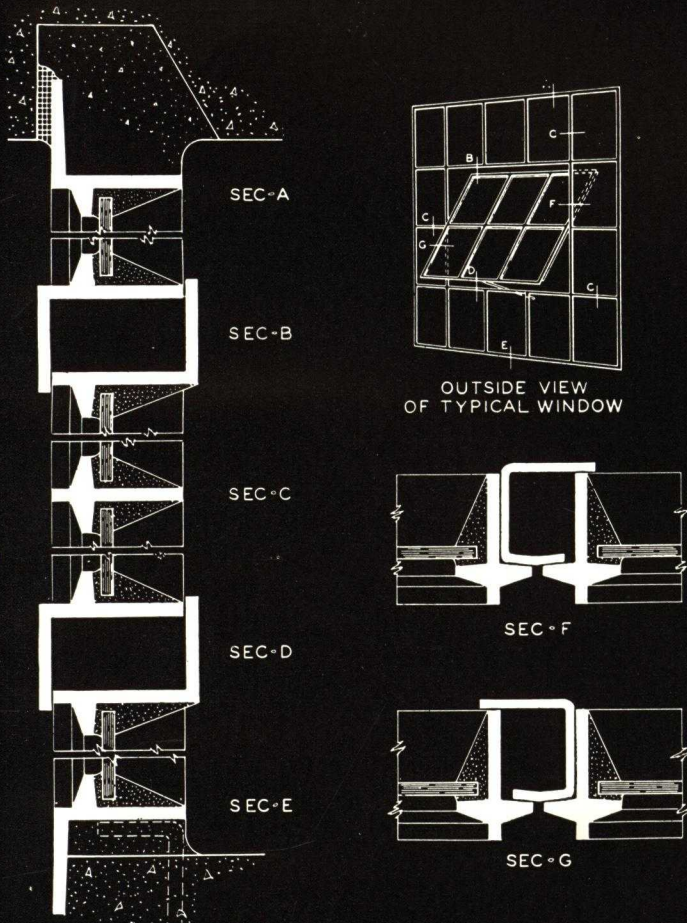
Standard "T" mullions shown at above right are cut off at top, level with sash dimension. At bottom, the flanges project 3/8" beyond sash dimension and the stem or web 2" beyond sash dimension. This is to allow suitable anchorage.

INDUSTRIAL AND COMMERCIAL STEEL WINDOWS

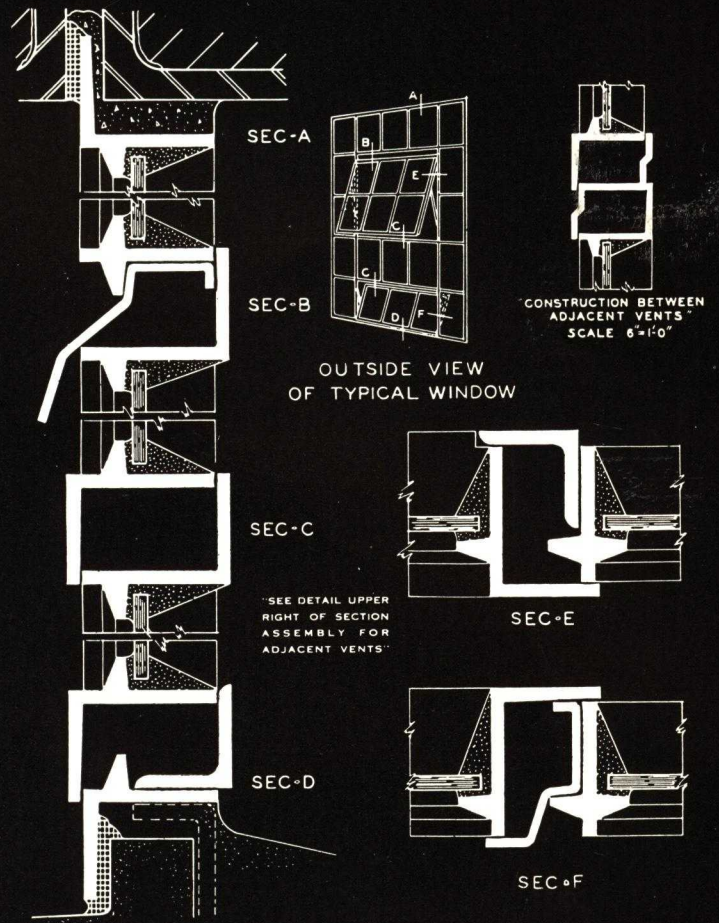
SECTION ASSEMBLY DETAILS

NOTE: Major sections are identical

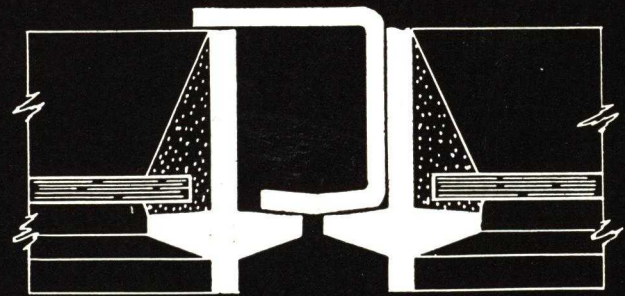
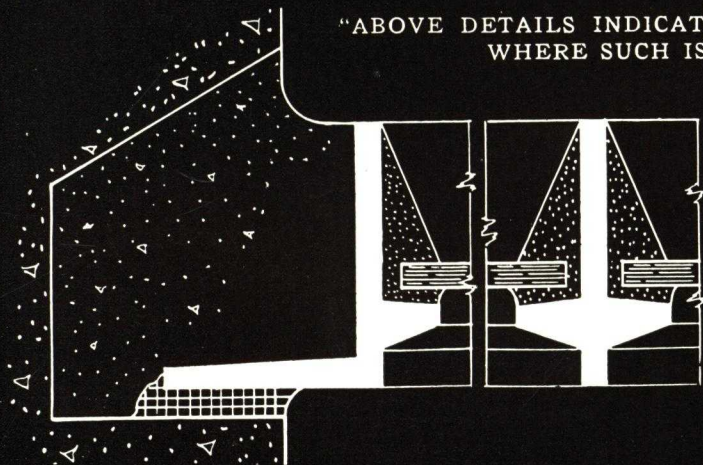
Pivoted Windows



Projected Windows



"ABOVE DETAILS INDICATE RECOMMENDED CAULKING POINTS WHERE SUCH IS REQUIRED OR SPECIFIED"



Full Size Sections - - Inside Putty Glazed

Full Size Sections- Inside Putty Glazed

PREMIER STEEL BASEMENT WINDOWS

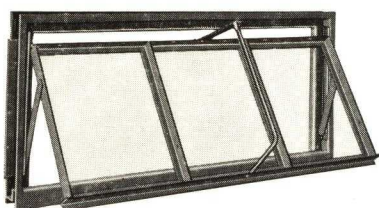


First Open Position Giving Overhead Ventilation With Air Currents Deflected Up and Over Without Direct Draft

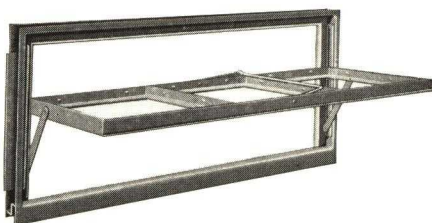
- HEAVY DUTY CHANNEL FRAME
- ELECTRICALLY WELDED THROUGHOUT
- VERSILATOR OPERATION (Patented)
- PUTTYLESS GLAZING
- DOUBLE CONTACT WEATHERING
- WATERTIGHT : : : WEATHERPROOF
- PATENTED LOCKING BAR OPERATES WINDOW FROM BOTTOM

Versilator Operation.

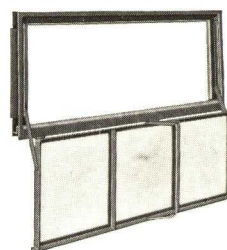
An exclusive design feature of Vento PREMIER windows. This simple and reliable device gives either overhead or direct ventilation in any selected degree, with positive automatic locking at each stage. Sash is instantly removable from frame in any position.



Intermediate Top Hung Position. Both Top and Bottom Ventilation With Downward Deflection

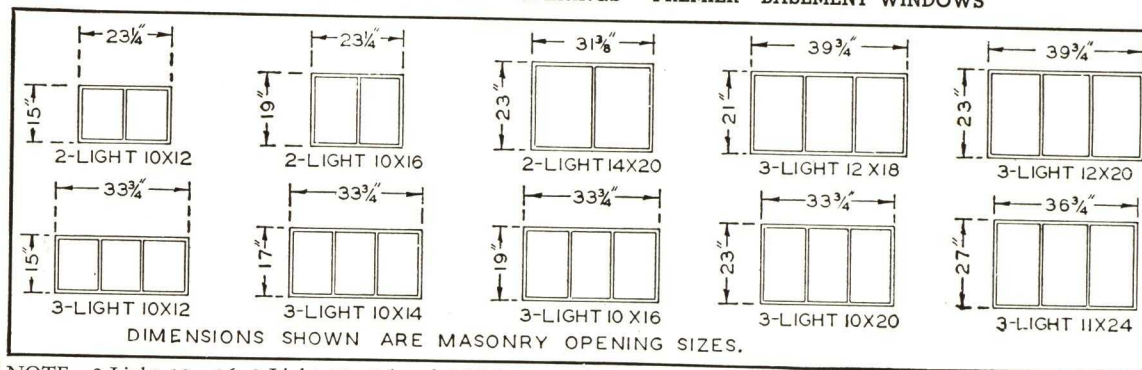


Merely Raising the Sash From the Intermediate Position Locks the Window in Fully Open Position. No Ceiling Hook Required

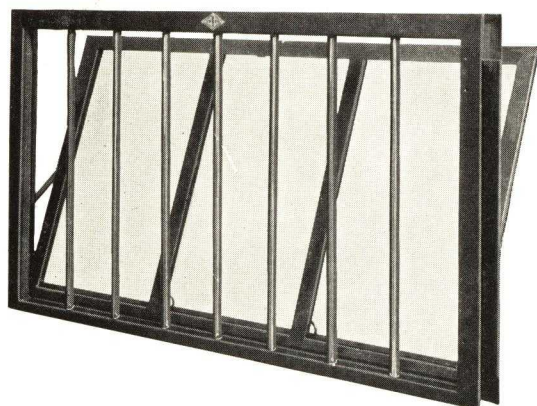


Sash Lifts Off Sill and Hangs Down Inside the Wall Giving Full Opening for Use as a Coal Window or Other Purposes

WINDOW SIZES AND MASONRY OPENINGS—"PREMIER" BASEMENT WINDOWS



NOTE—2-Light 10 x 16, 3-Light 10 x 14 and 3-Light 11 x 24 are non-stock sizes.

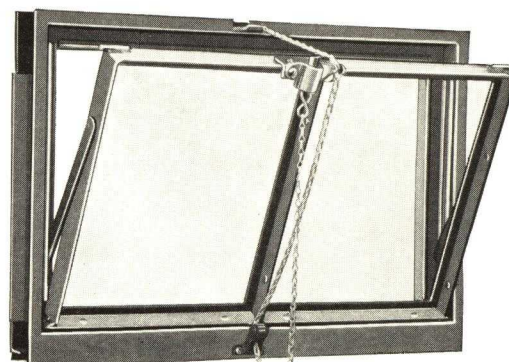


BARRED WINDOWS

For efficient protection 1/2-in. bars are welded into frame. Recommended for cellars and rear or alley elevations of commercial buildings

SCREENS, SCREEN GUARDS AND STORM SASH STOCKED FOR ALL WINDOW SIZES

Basement windows can be mullioned together for installation under show windows, above shelving or over laundry tubs.



CHAIN OPERATORS

For high installations. Recommended for locations too high for manual operation

Simple and effective. Windows will be specially prepared at the factory for this operation

OTHER VENTO PRODUCTS

INTERMEDIATE SECTION CASEMENTS

VENTO INTERMEDIATE WINDOWS in weight of section, care in manufacture, hardware details and finish make this line worthy of the finest structure. Bronze hardware is standard for all intermediate section types and a wide range of standard sizes are available.

This window is recommended for the finer homes. Furnished in both screened and non-screened type.

PROJECTED AND COMBINATION CASEMENTS

are especially suited for the better class of school, institutional, commercial, and public construction.

CUSTOM-BUILT CASEMENTS of heavy section are also available. Full data on request.

TOP HUNG CONTINUOUS WINDOWS FOR HEAVY INDUSTRIAL CONSTRUCTION

Continuous windows are made in units up to 20 ft. in length in multiples of 2 ft. Heights are standard at 3 ft. 0 in., 4 ft. 0 in., 5 ft. 0 in., and 6 ft. 0 in.

This type of window lends itself to many forms of truss and structural design. Our engineering department will gladly submit special layouts to clients' requirements.

Separate catalogs furnished on request.

MECHANICAL OPERATORS

Mechanical Operators for group control of Commercial and Industrial windows are largely designed and supplied to job requirements.

Our Engineering Department will be glad to assist you with your problems. Catalogs available upon request.

INDUSTRIAL DOORS

VENTO INDUSTRIAL DOORS are suitable for industrial buildings, service departments of commercial buildings and

institutions. Swing and slide types are available in a wide range of sizes to meet most conditions. Stiles and rails are made of 14-gauge pressed steel tubing, all corners neatly fitted and solidly welded. Standard pressed steel door frames are available for swing doors. The corners are heavily reinforced and prepared for hardware. Doors can be fitted with cylinder lock or lever latch hardware as required. Upper door panel may be open for glass or solid steel panels as desired.

SECURITY AND PROTECTION WINDOWS

Vento manufactures a complete range of Security and Protection windows. These windows are specially designed, standard and stock types. The heavy welded construction provides adequate protection under ordinary circumstances for commercial and semi-detention purposes.

Separate catalog furnished upon request.

AREAWAY AND UTILITY WINDOWS

The Vento Areaway Window is specially designed for basement areaway openings. Made of the same construction as our commercial projected windows but in one special size—an economical window.

The Vento Utility Window similar in construction to the Areaway Window. Ideal for use for private garages, laundries, service stations and other small commercial structures. Made in two standard sizes, both of which fit concrete block construction.

BARN WINDOWS

The Vento Barn Window was specially designed for use in barns and other farm buildings. Made in two standard sizes to fit concrete block construction. Furnished with special side shields which deflect the air currents upward and away from stock. Ventilator equipped with patented locking bar giving controlled ventilation.

Catalog on request.

• • •

COAL CHUTES

Vento Coal Chutes are made of heavy, all-steel construction, completely welded. Made and stocked in five standard sizes for installation in walls of homes and commercial buildings. Equipped with strong spring lock and chain. Available with all-steel or glass paneled doors. Special grade line chutes made in two standard sizes for commercial buildings.



LIONEL VALLAS

Manufacturers of Hollow Metal Windows

2846-50 West Lake Street

CHICAGO, ILL.

FOR HOLLOW METAL DOORS SEE FILE INDEX

LIONEL DOUBLE HUNG HOLLOW METAL WINDOWS

Lionel

Construction and Materials

Sash, muntins, and frames may be either 18, 16, or 14 gauge hot galvanized steel.

Sills may be either 14 or 12 gauge hot galvanized steel.

Muntin bars may be $1\frac{3}{4}$ in. or $1\frac{1}{8}$ in. wide.

Sash are hung on galvanized steel or bronze chain passing over large cadmium plated sheaves with bronze bearings. Weights are sectional unit cast iron.

Note—Placing sheaves in the jamb face permits having larger sheaves, centered over the sash and weights, and a more shallow head member.

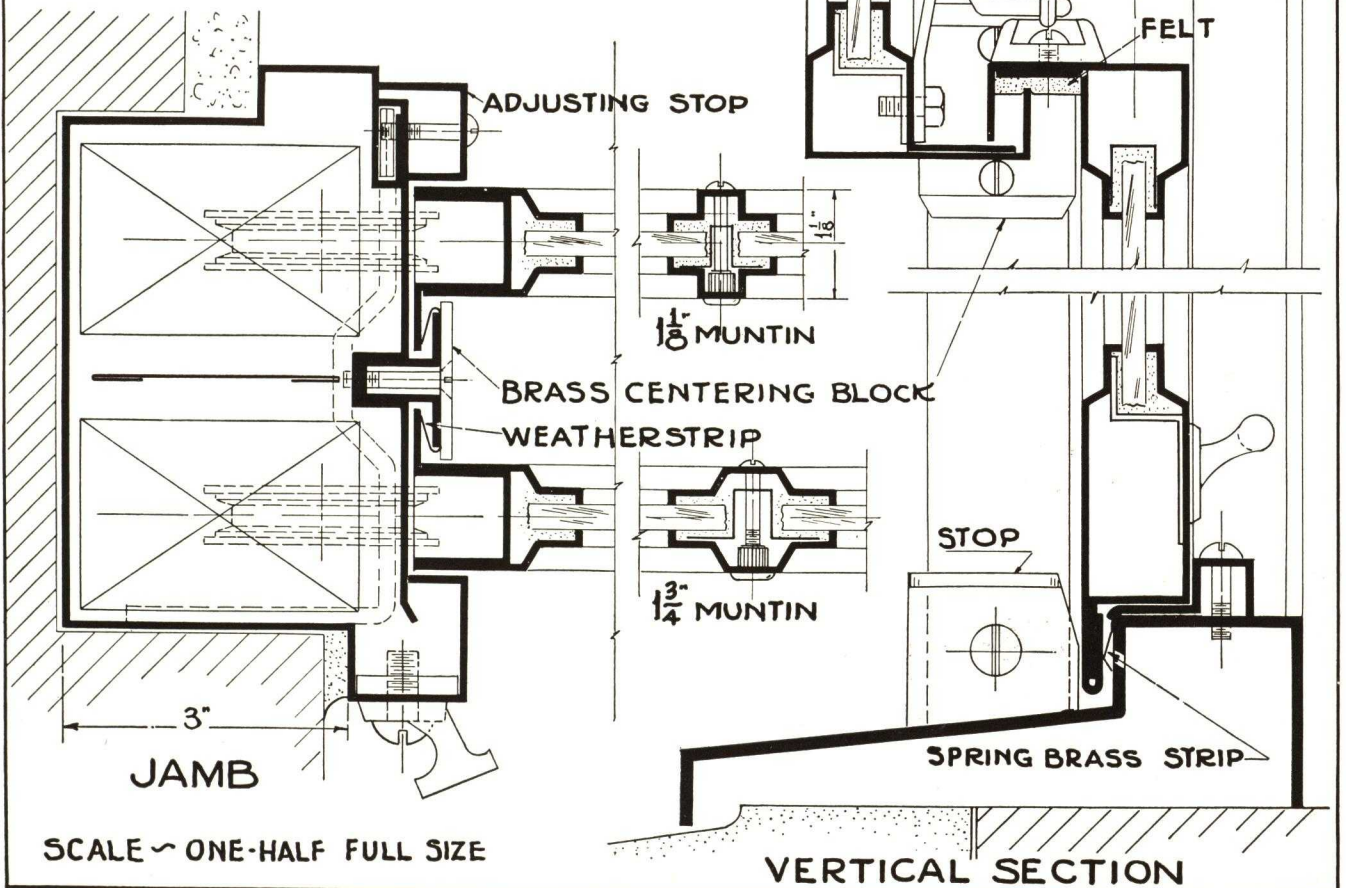
Lionel Hollow Metal windows are weatherstripped around the entire perimeter of each sash. Attention is called to the drive knurls which are definitely located at each screw in the muntin bars; this feature eliminates the possibility of lost or misplaced clips.

All parts receive one coat of best grade priming paint baked on inside and outside before delivery.

Underwriters' Windows

Windows are labeled only when constructed of 16 gauge steel sash, frame, etc., and having 12 gauge steel sill.

We also build Hollow Metal pivoted, hinged, casement and stationary windows or combinations of these types with mullions.



WILLIS MANUFACTURING COMPANY

Double Hung Metal Windows, Tin Clad Fire Doors, Skylights and Ventilators
GALESBURG, ILL.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

WILLIS PARAMOUNT DOUBLE HUNG METAL WINDOWS

In the development of the Willis Paramount Double Hung Metal Window, the essentials of design, durability, easy operation, weather tightness, and finish, have all been given careful consideration with the result that they are readily adaptable to the modern trends of architectural designs, without sacrificing the necessary essentials of strength and integral weathering.

In our designs, we have embodied the essentials necessary to insure efficient and continuous service, adopting as our standard, materials, which years of experience have proven to be most efficient.

Prominent Features

Riveted Frames—The frames are solidly riveted together, with rivets countersunk, and reinforcing at each corner, insuring rigidity and perfect alignment and, when finished, they will not get out of square.

Removable Jamb Strips—Tie plates are riveted securely to the frame to which the jamb strips are screwed fast, allowing quick removal of the sash and convenient access to the weights. Jamb strips are formed on rolling machines, which

results in perfectly true grooves in which the sash flanges engage, giving a *Double Weathering*, and providing a frictionless surface in which the sash travels.

Heavy, Rigid Sills—The sills are of No. 16 gauge as standard, but No. 12 or No. 14 gauge can be furnished when desired. This gauge of metal gives the sills stiffness and prevents bowing or bending. The sill is solidly riveted to the frame and soldered in all exposed joints. All flat spots are eliminated, thus leaving no surfaces for the collection of moisture or dirt.

Screen Reveal—The design of the frame and head allows for a simple and easy attachment of screens when desired. Screens of any standard make can be applied for all or part of the opening.

Weight Pockets—The weight pockets are deep and spacious, to allow for ample balancing of the sash and to prevent any chance of friction in opening and closing the window. Division strips are provided between the weights, to prevent interference in operation.

Hardware—The hardware is of solid bronze, or malleable

WILLIS PARAMOUNT 20-14 DOUBLE HUNG PLATE TYPE METAL WINDOW

Materials—All parts are of gauges and sizes as shown on detail drawings. Sills are of No. 16 ga. galv. steel as standard (No. 12 or 14 ga. when specified). Jamb and head members are of No. 20 ga. galv. steel and sash are of No 14 ga. steel. All parts are fabricated from "Prime" sheets.

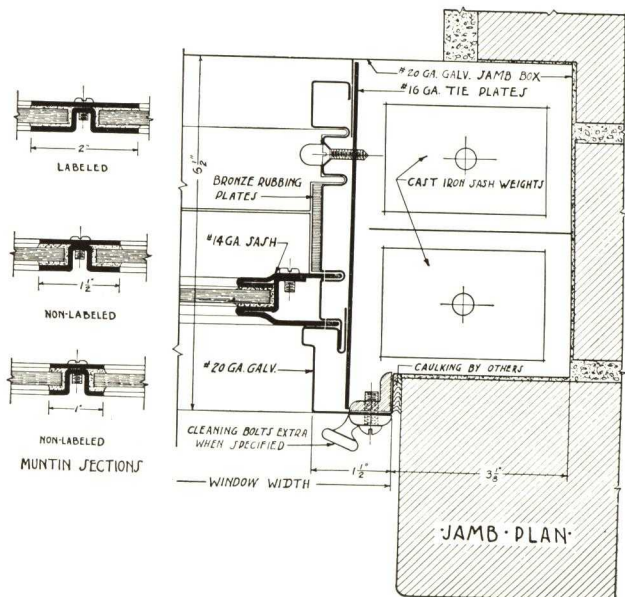
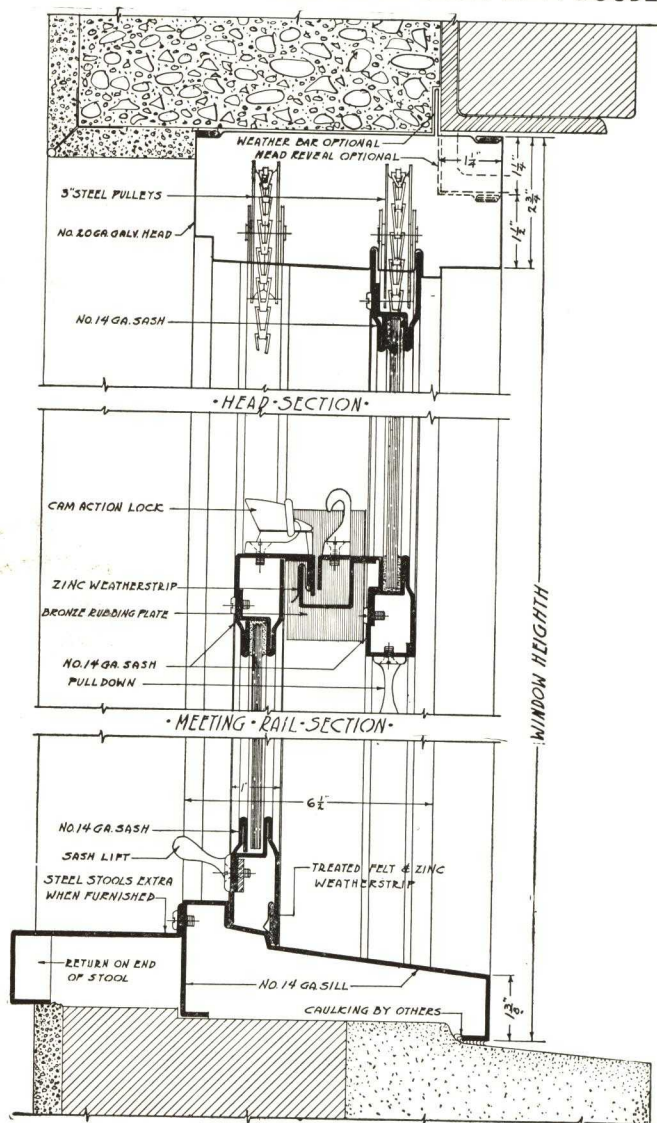
Pulleys have 3 in. pressed steel wheels with bronze bushings on $\frac{3}{8}$ in. turned steel axles, and No. 14 ga. steel housings. Pulleys are removable.

Chain used is No. 130 with sherardized finish as standard.

Finish Hardware is solid bronze or iron, bearing any plating desired. Each window is equipped with one cam-action lock, two bar lifts, and one outside pull down, or pole socket of our standard design.

Solid bronze rubbing plates are attached to the running stiles at each end of the meeting rails.

Sash weights are cast iron, in sizes to properly counterbalance the sash.



iron plated (Malleable Iron Locks must be used on labeled windows). Pulleys are of pressed steel and bronze bushed with sherardized finished chain as standard. Reinforcing plates are used in fastening the pulls and locks, insuring rigidity and strength. Cleaners' bolts are extra when furnished.

Assembly—Frame members are assembled with butt joints, riveted or welded together by means of heavy backing plates at the joints.

Sash members are mitered and welded at the corners, with no open joints.

Glazing strips are attached with screws, as shown on detail.

The Removable Jamb Running Stile is in one piece, extending from sill to head and is held in place by three screws only,

WILLIS PARAMOUNT 20-24 DOUBLE HUNG HOLLOW METAL TYPE WINDOW

Materials—All parts are of gauges and sizes as shown on detail drawings. Sills are of No. 16 ga. galv. steel as standard (No. 12 or 14 ga. when specified). Jamb and head members are of 20 ga. galv. steel, and sash are of No. 24 ga. galv. steel. All parts are fabricated from "Prime" sheets.

Pulleys have 3 in. pressed steel wheels with bronze bushings on $\frac{3}{8}$ in. turned steel axles, and No. 14 ga. steel housings. Pulleys are removable.

Chain used is No. 130 with sherardized finish, as standard.

Finish Hardware is solid bronze or iron, bearing any plating desired. Each window is equipped with one cam-action lock, two bar lifts, and pole socket of our standard design.

Sash weights are cast iron, in sizes to properly counterbalance the sash.

Assembly—Frame members are assembled with butt joints, riveted or welded together by means of heavy backing plates at the joints.

Sash members have offset lap joints and are riveted and soldered at the corners, with no open joints.

on windows up to 7 ft. 3 in. high, and four screws, on windows over 7 ft. 3 in. high. No screws are exposed to the weather.

Weatherproofing—Consists of a zinc interlocking strip at the meeting rail, a combination zinc and waterproofed felt strip at the sill, and by double contact, through rolled grooves, at the head and jambs.

Finish—All parts receive one coat of best grade metal priming paint inside and outside, at the factory.

Underwriters' Labels—When required, windows may bear the labels of the National Board of Fire Underwriters. Labeled windows cannot exceed 6 feet in width nor 10 feet in height, nor have more than 720 square inches of exposed glass area in each light. The 2 in. muntin bars, and malleable iron locks, are required to meet the Underwriters' specifications.

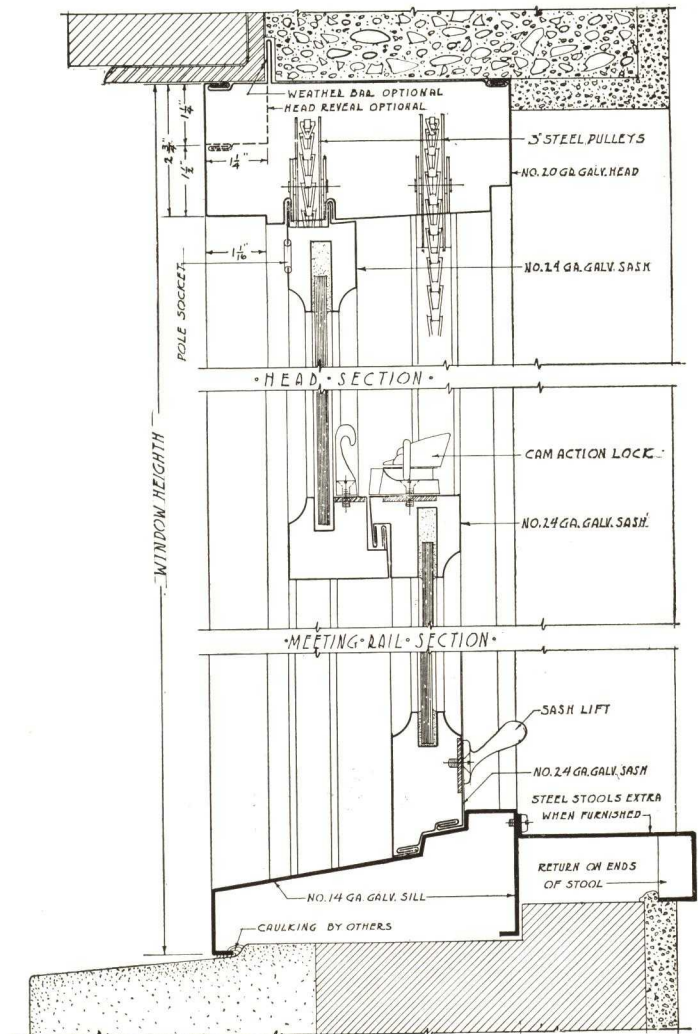
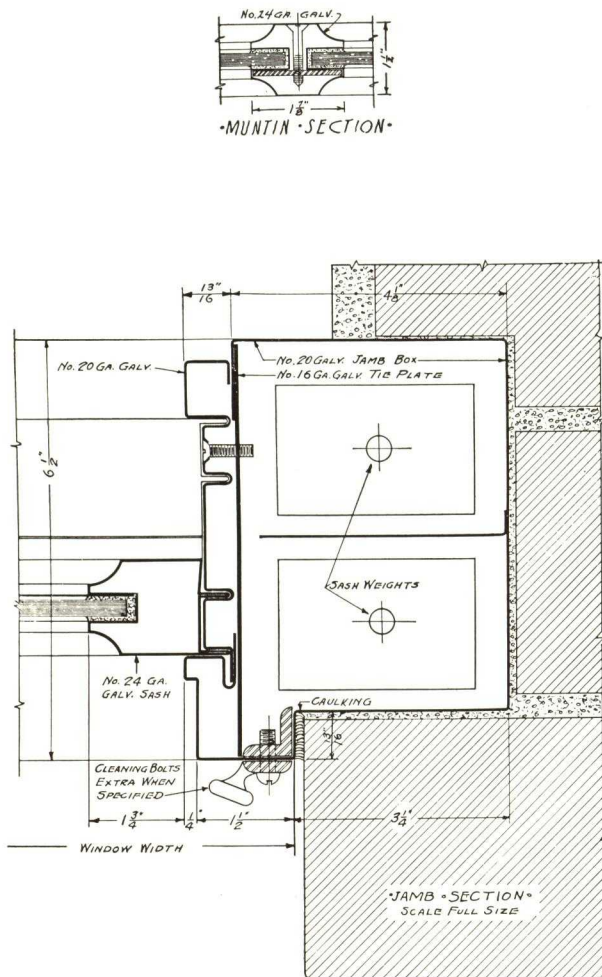
Muntin caps are attached with screws, as shown on detail.

The Removable Jamb Running Stile is in one piece, extending from sill to head, and is held in place by three screws only, on windows up to 7 ft. 3 in. high, and four screws, on windows over 7 ft. 3 in. high. No screws are exposed to the weather.

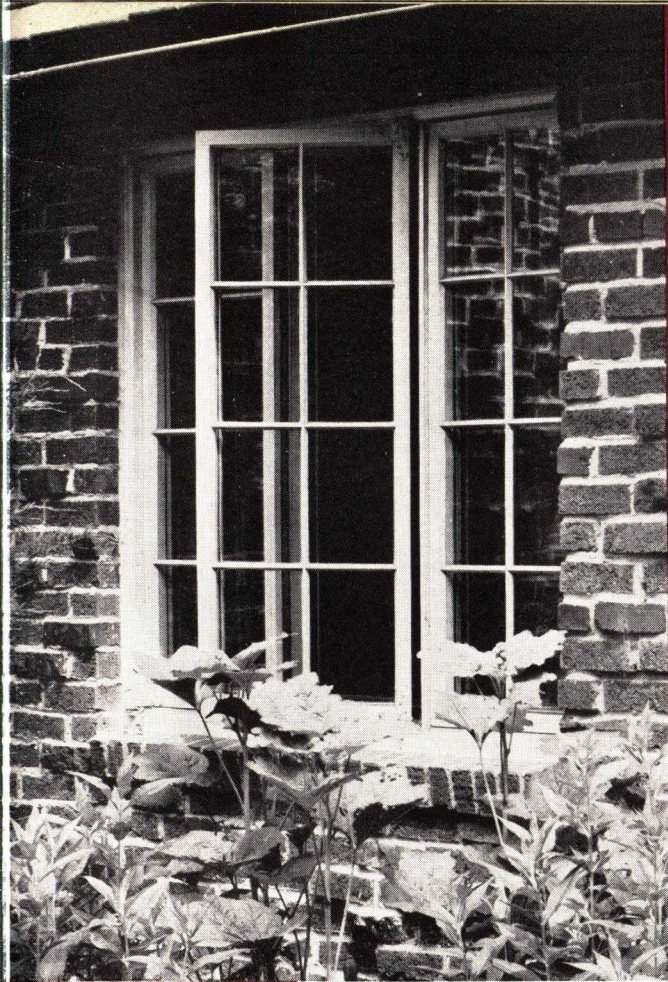
Weatherproofing—Consists of interlocking members at the meeting rail, double contact at the sill, and by double grooves and fins at the head and jambs.

Finish—All parts receive one coat of best grade metal priming paint inside and outside, at the factory.

Underwriters' Labels—When required, windows may bear the labels of the National Board of Fire Underwriters. Labeled windows cannot exceed 6 ft. in width nor 10 ft. in height, nor have more than 720 sq. in. of exposed glass area in each light. The $1\frac{1}{8}$ in. muntin bars, and malleable iron locks, are required to meet the Underwriters' specifications.



MEMORANDA



Andersen COMPLETE WINDOW UNITS



• **CASEMENT
WINDOWS** •

NARROWLINE
DOUBLE-HUNG
WINDOWS •

• **BASEMENT
WINDOWS** •

ANDERSEN CORPORATION
BAYPORT, MINNESOTA

ANDERSEN CASEMENT WINDOW

A Complete Unit Including

FRAME • SASH • HARDWARE • SCREEN • DOUBLE GLASS
WEATHER STRIPPED • FACTORY FITTED • TREATED

THE ANDERSEN CASEMENT is an improved wood casement window that successfully combines the advantages of weathertight wood construction with the beauty of modern, narrow line design. It harmonizes pleasingly with all types of architecture and gives added charm and value to any building in which it is used.

Effective weatherstripping, double glazing, and leak-proof frame construction make the Andersen Casement Window exceptionally leakproof and weathertight and **especially suited to the requirements of air conditioning** and gas or electric heat.

Now you can have the full benefit of casement ventilation without any of the usual drawbacks. The Andersen Casement is convenient and easy to operate. It is exceptionally weathertight. It is simple in construction and easy to install. It is well proportioned and unusually attractive in appearance.

In no other casement, wood or metal, will you find all these distinctive features. It will pay you to examine them.

LEAKPROOF FRAME—Made of clear Pine, chemically preserved, with the Andersen Leakproof Locked Sill Joint, weathertight wide blind stop and mortar clinch grooves. Narrow mullion posts, transom bar and exterior moulding provide modern lines and permit large glass area. Standard design is suitable for all types of wall construction and any kind of interior and exterior wall finish.

Inside wood stops, mullion casings, and transom bar casings of pine or hardwoods are included.

IMPROVED SASH—New design prevents sticking or binding and provides two point contact. Factory fitted and glazed with A quality flat drawn glass. Made of clear Pine chemically preserved, with exposed end wood eliminated by improved reinforced joints. Dividing or muntin bars are either solid aluminum (Style A), which are easy to clean and require no finishing, or attractively designed wood (Style W). Sash with horizontal muntin bars only or with special leaded glass panels can be furnished on order.

WEATHERTIGHT—Andersen weatherstrips insure a tight seal under most severe weather conditions. This improved weatherstrip is an outstanding development in casement construction.

Infiltration tests made at the University of Wisconsin show an air leakage of only 2.5 cubic feet per hour per foot of sash perimeter with a wind velocity of 10 miles per hour.

The American Society of Heating and Ventilating Engineers in a recent bulletin reports an infiltration of

15.5 cubic feet for the average weatherstripped double hung window under the same conditions. Note also how the above figure compares with similar tests made on other casements as reported in the 1937 Guide of the Society.

COMPLETE HARDWARE—New . . . improved design. Easy to install. Includes:

Extension Hinges—Cadmium plated steel with brass bearings.

Under Screen Sash Operators—Choice of two designs. Illustrated on page 2.

Worm Gear Type—With solid bronze housing and handle.

Bar Type—Steel, bronze finish over cadmium plating.

Locking Latch—Solid bronze handle. Closes sash tightly; locks it securely. Independent of screen. Automatic ejection of sash insures easy opening.

Hardware with all parts made of solid bronze can be furnished on special order.

INSIDE SCREEN—Fitted and ready to slip in place with spring bolt fasteners attached. Solid aluminum frame with 16 mesh aluminum wire cloth or wood frame (Pine) with 18 mesh bronze wire.

REMOVABLE DOUBLE GLAZING—Fits on the inside of the sash. Has an aluminum frame and spring metal seal. Glazed with DSA labeled glass. Easily and quickly slipped in place or removed from the inside. May be left in place the year round. Reduces heat loss by radiation 60 per cent. *Controls condensation.* Particularly suited to meet the requirements of air conditioning both in winter and summer.

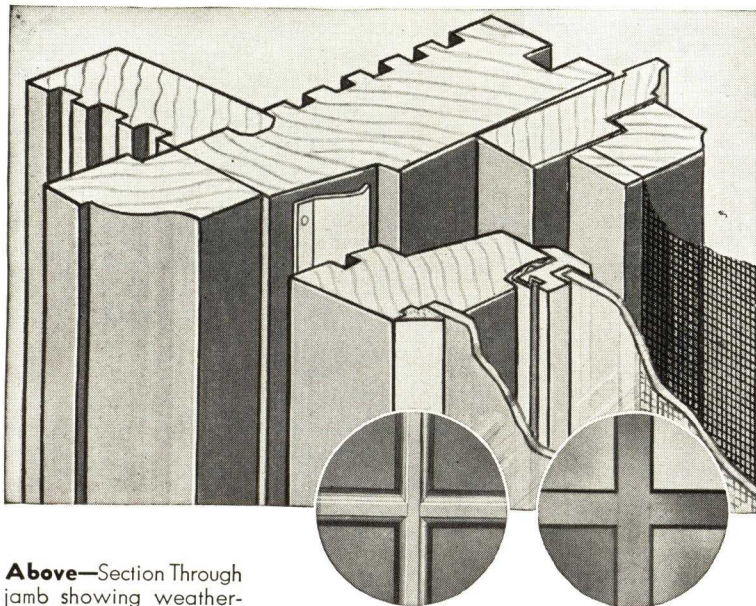
TREATED WOOD—All wood parts of frame and sash are protected against decay and termites with a tested chemical preservative recommended as one of the best available by wood treating authorities. The toxic agent used gives positive protection against termites and a high resistance to decay, rendering the treated wood exceptionally durable.

Protection against moisture during construction and before painting and added protection thereafter is also afforded by this treatment.

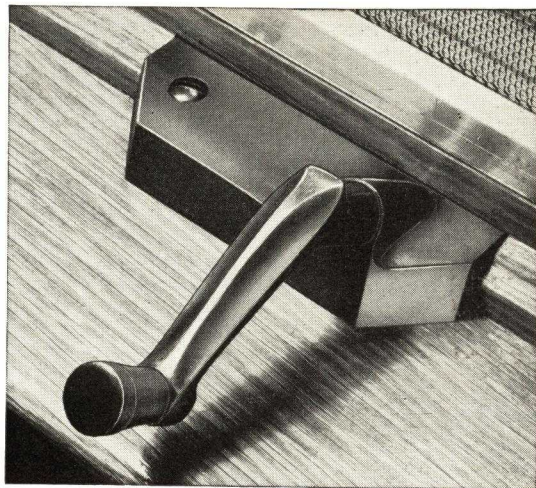
The wood is not discolored and any customary finish can be applied.

Complete technical information will be furnished on request.

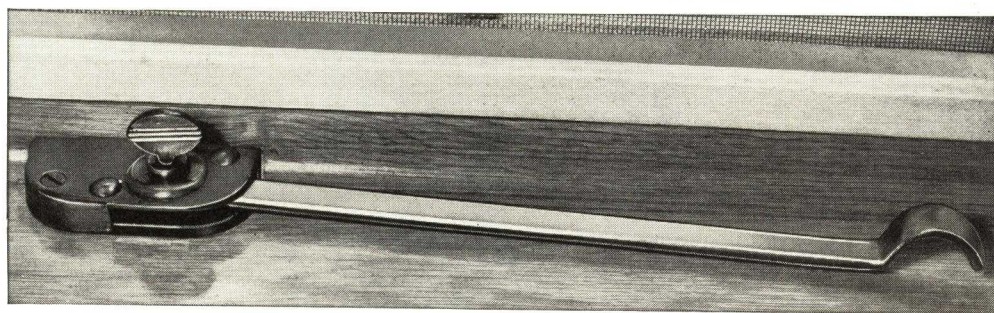
Andersen Corporation
ANDERSEN CASEMENT WINDOW
Outstanding Features



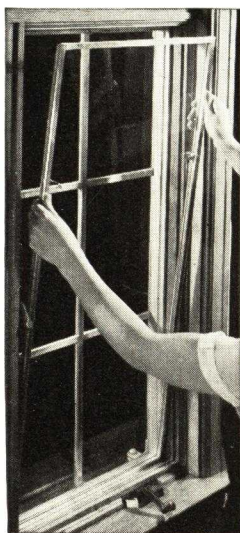
Above—Section Through jamb showing weather-strip, removable double glazing on the inside of the sash, and wood frame screen. Note the special design of frame and sash that eliminates sticking and binding, also the anchor strip and mortar clinch grooves to insure weathertight joining with wall in either frame or masonry construction. Inserts in circles show, left, the wood muntin bar and, right, the aluminum muntin bar.



Worm Gear Sash Operator—Solid bronze handle and case. Adjusts and automatically locks sash in any position. Powerful and easy to operate. Independent of screen. Does not interfere with drapes, shades or Venetian Blinds. Note aluminum frame screen.



Bar Sash Operator—Bronze finish over cadmium plating. Works easily and smoothly. Holds sash securely in any position. A very satisfactory low priced operator. Note wood frame screen in this illustration.

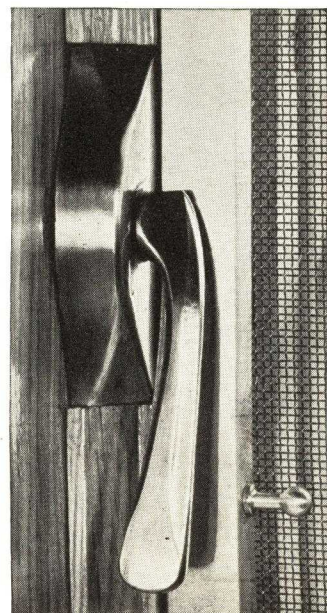


Left—the Double Glass is easily and quickly slipped in place or removed for cleaning. No tools are required.

Right—Extension Hinges permit the easy cleaning of outside glass from the inside.



Right—Sash Lock pulls the sash completely shut and locks it securely when closed without opening or removing the screen. Also forcibly ejects the sash when opened.



Nationally Distributed Through Lumber and Millwork Dealers

Andersen Corporation

ANDERSEN CASEMENT WINDOW

Typical Installations

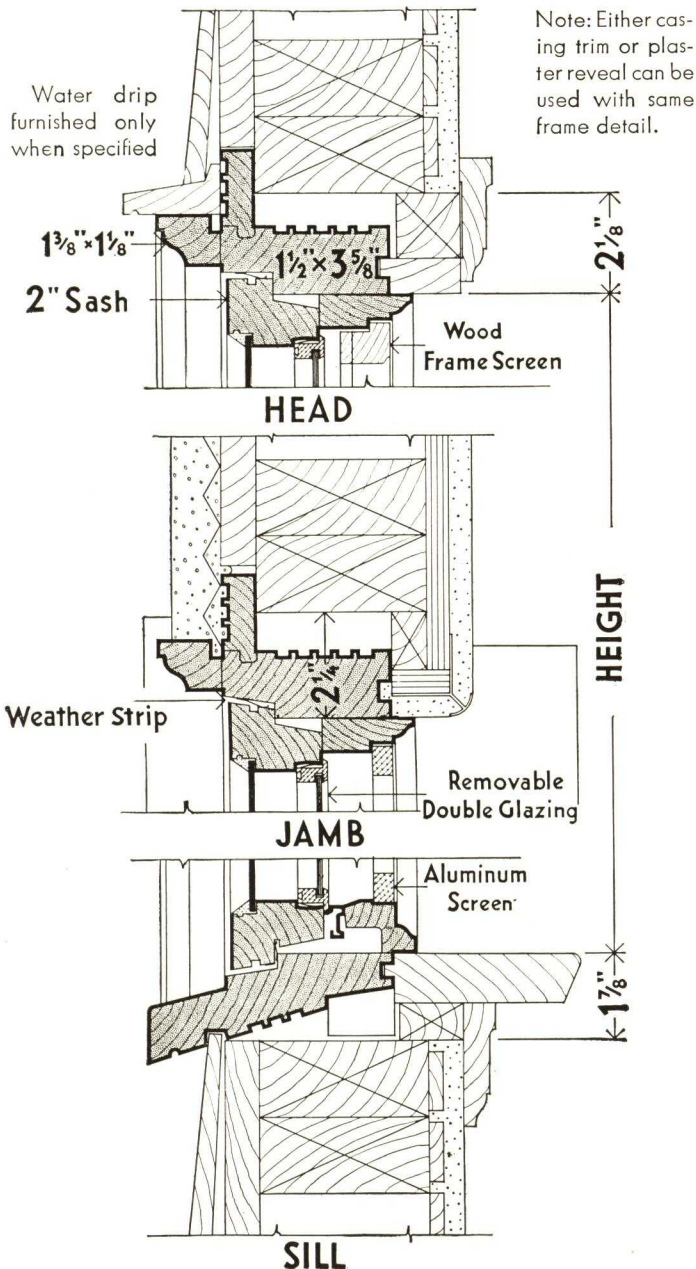


Andersen Casements give added charm and beauty to any home. They are furnished in a wide variety of stock units and are used successfully with any style of architecture in homes, apartments and many institutional and public buildings. Note the many interesting adaptations of standard units on this page.

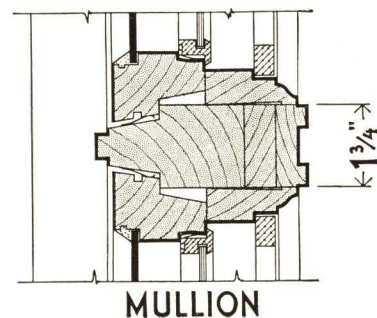
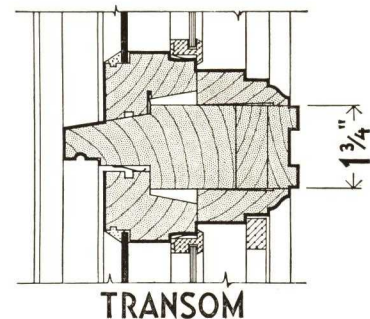
ANDERSEN CASEMENT WINDOW

Detail of Complete Unit

Detail shows a typical installation in frame wall with wood siding or stucco exterior. This same basic detail is also used in brick veneer and masonry walls with inside plaster return or extension jamb. Write for complete file of loose sheet tracing details.



Scale—Three Inches Equal One Foot.
Patents Nos. 17,552,-1,648,712,-1,879,005,-2,003,982

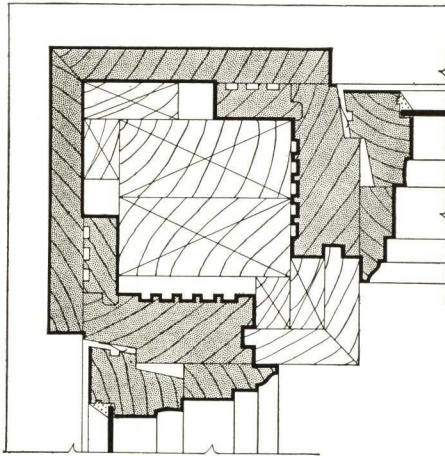


NOTES

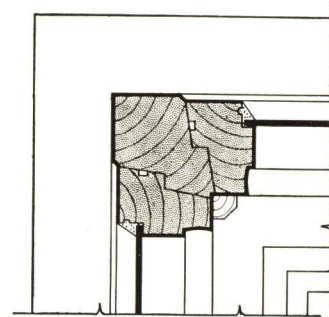
1. See TABLE OF SIZES on page 6 for unit arrangements, sash sizes and opening sizes.
2. EXTERIOR Moulding—Any Andersen brick moulding or casing may be substituted for the brick moulding shown or units can be furnished without exterior moulding on special order. When no exterior moulding is ordered, specify length of sill horns required.
3. All inside finish stops, mullion and transom inside casing as shown on this detail are furnished as part of the unit. These parts are furnished in clear Pine unless otherwise specified. These can be furnished in other woods at an extra charge.
4. Finish moulding with screen rabbet shown in still detail is for swinging sash only. For stationary sash the same moulding as shown at head and jamb is used at the sill.
5. WEATHERSTRIP as shown is furnished for all openings, applied to the head and sides of the frame and the bottom rail of the sash.
6. For full size details or details showing adaptation of standard unit to special requirements, see local millwork dealer or write Andersen Corporation, Bayport, Minn.

ANDERSEN CASEMENT WINDOW

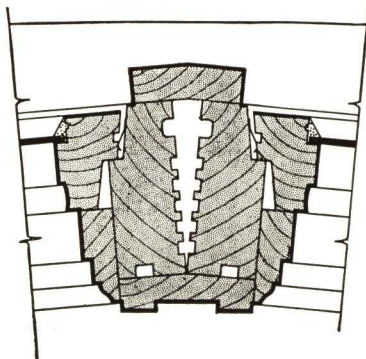
Special Adaptations



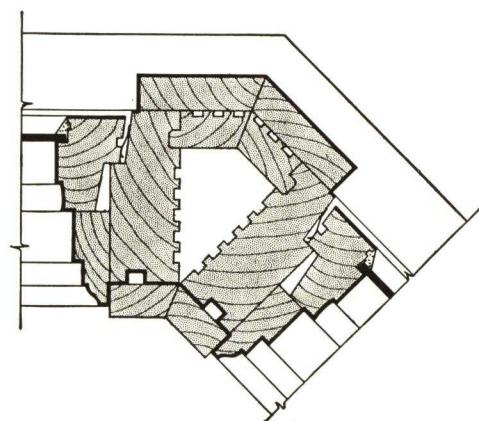
CORNER WINDOW DETAIL NO. 1, 1/4 SCALE—Showing typical corner section for use where support is required above. Angle iron or I beam can be used in place of 2x4's. Exterior casings may be of metal or wood. Sash may be swinging or stationary.



CORNER WINDOW DETAIL NO. 2, 1/4 SCALE—Used where load bearing members are not required at corner. Has special corner mullion post with stationary sash next to corner. Three inches between glass. The rest of casement unit is same as standard detail shown on page 4.



RADIAL BAY WINDOW DETAIL, 1/4 SCALE—Showing section through mullion between sash, using standard straight bead cut with outside edge of sill and head staff bead cut to any radius. Furnished only on special order.



ANGLE BAY DETAIL, 1/4 SCALE—Showing section through typical angle mullion. All parts are standard stock design and construction except the exterior casing. The inside casing is not furnished as part of the unit.

Masonry Opening Moulding 2" wide	Masonry Opening Moulding 1½" wide	Rough Studding Opening	Sash Opening
←-2'-7"-→ ↑ ←-3'-7"-→ ↑ ←-4'-7"-→ ↑ ←-5'-7"-→ ↑ ←-4'-10"-→ ↑ ←-5'-10"-→ ↑ ←-5'-10"-→ ↑ ←-6'-11"-→ ↑ ←-6'-11"-→ ↑ ←-7'-11"-→	←-2'-7"-→ ↑ ←-3'-6"-→ ↑ ←-4'-6"-→ ↑ ←-5'-6"-→ ↑ ←-4'-9"-→ ↑ ←-5'-9"-→ ↑ ←-5'-9"-→ ↑ ←-6'-10"-→ ↑ ←-6'-10"-→ ↑ ←-7'-10"-→ ↑ ←-7'-10"-→	←-2'-6"-→ ↑ ←-3'-6"-→ ↑ ←-4'-6"-→ ↑ ←-5'-6"-→ ↑ ←-4'-9"-→ ↑ ←-5'-9"-→ ↑ ←-5'-9"-→ ↑ ←-6'-10"-→ ↑ ←-6'-10"-→ ↑ ←-7'-10"-→ ↑ ←-7'-10"-→	1212 2214 4224 6234 8244 10254 1313 2316 4326 6336 8346 10356 1414 2418 4428 6438 8448 10458 1515 25110 45210 65310 85410 105510 1413 2416 4426 6436 8446 10456 1514 2518 4528 6538 8548 10558 1513 2516 4526 6536 8546 10556 1614 2618 4628 6638 8648 10658 26110 46210 66310 86410 106510 27110 47210 67310 87410 107510

Masonry Opening Moulding 2" wide
Masonry Opening Moulding 1½" wide
Rough Studding Opening
Sash Opening

Units shown above have fixed side-light sash that are not weatherstripped and do not have mullion posts between sidelight sash and main sash.

Circle top transom units can be used above any square head unit of same width. Standard transom bar is used between square head sash and circle sash.

CH-2 is furnished with standard aluminum or wooden muntin bar as specified. CH-4, CH-6 and CH-8 are furnished with zinc muntins.

NOTES

- 1. Mullion posts between all sash except in units with fixed sidelight sash.
- 2. Glass size 8"x12" standard including side light units. One light wide units have 12"x12" glass.
- 3. Sash layout shown is standard. Same units with horizontal muntin bars only can be furnished when so specified. Sash can also be furnished with leaded glass of any design instead of with muntin bars.
- 4. Main sash may be either swinging or stationary. All swinging sash open out and may be hinged to swing either right or left. When ordering specify how many swinging sash in each unit and whether hinges are to be on right or left side looking in from outside.
- 5. All sizes shown are standard. Wider or higher units using standard sash can be furnished on order.

ANDERSEN NARROLINE WINDOW

A Complete Double Hung Unit

The Andersen NARROLINE Double Hung Window is furnished as a complete unit with modern narrow mullions and casings, yet it retains the time-tested counterbalancing principle to insure dependable and trouble-free sash operation throughout the life of the building. It is effectively weatherstripped and is exceptionally leakproof and weathertight.

CONSTRUCTION FEATURES

FRAME—A leakproof Andersen Master Frame of improved design including the famous Locked Sill Joint, steep sill slope, one piece wide blind stop and other superior Andersen features. See detail on page 9.

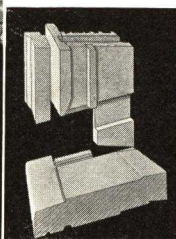
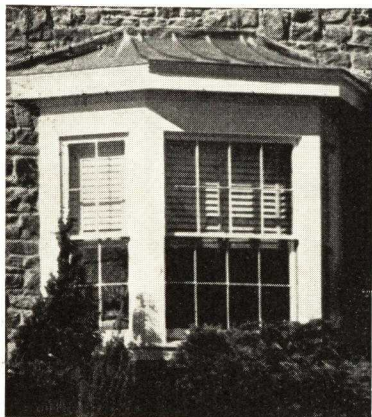
NEW ANDERSEN WINDOW—1½" THICK—Furnished as part of the unit completely manufactured and fitted for use with Andersen Silver Seal Weatherstrips. Improved construction eliminates exposed end wood at bottom rail. The sash are milled for weatherstrip ribs and are furnished with check rail and bottom rail weatherstrips installed. Glazed SSA except as noted on LIST OF STANDARD SIZES. Glass bedded in putty.

CHEMICALLY PRESERVED—Both frame and check rail window are permanently protected against moisture, decay and termites with the Andersen Pentachlorophenol Preservative Treatment.

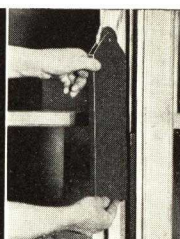
COUNTERBALANCING EQUIPMENT—After experiments with many different devices for operating the sash, the time tested principle of counterbalancing weights has been retained. A specially designed flat weight with a pulley wheel permits the use of only one weight on each side in place of two. Standard equipment includes weights, sash chain cut to length and with fasteners included and Andersen Noiseless Pulleys. The sash chain has short, heavy links especially designed for quiet operation. Tests have proved that dependable and trouble-free sash operation is assured for more than an ordinary lifetime.

COMPLETE WEATHERSTRIPPING—Andersen Silver Seal Weatherstrips (patent pending) supplied for all units—made of strong, attractive aluminum alloy, electro-chemically treated to give a permanently lubricated, glass-like surface. Maximum weathertightness and easy sash operation is assured by new duplex action.

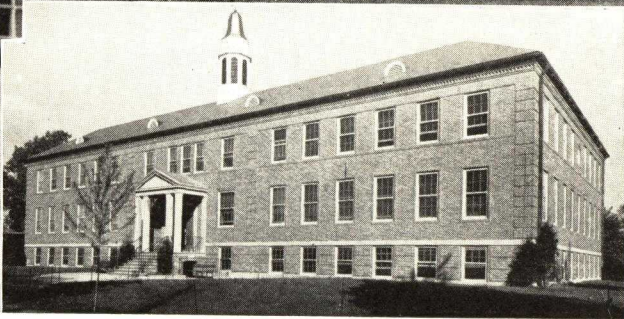
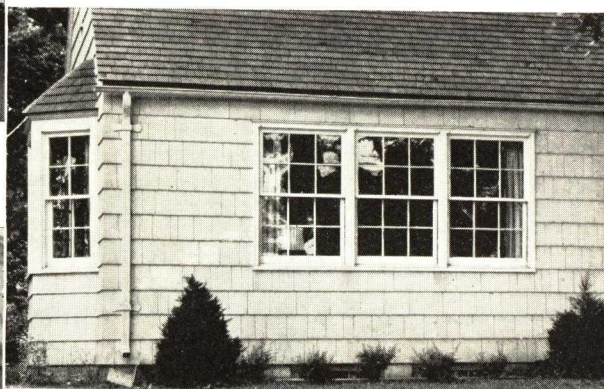
EASY INSTALLATION—The sash are completely fitted with weatherstrips already applied on check rail and bottom rail. The units can be furnished completely assembled which is the recommended practice, or, if preferred, the sash can be hung and weatherstrips for side and head installed on the job. This installation is exceedingly simple as it is only necessary to fasten these weatherstrips in place with a few screws, pass the chains through the pulleys in the jambs and flat sash weights and attach the chains to the sash with one screw for each fastener. No other tool work is required.



LEAKPROOF
Steep Slope
Locked Sill Joint



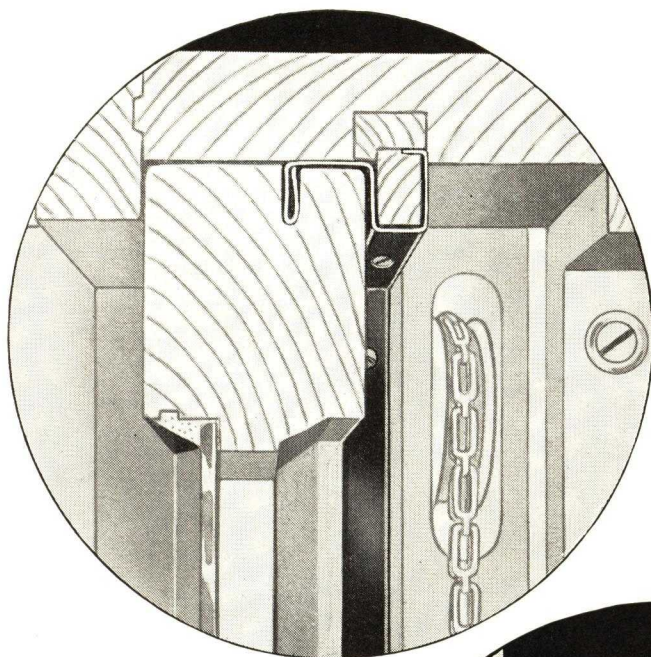
FLAT WEIGHT
with noiseless
pulley wheel



Andersen Corporation

ANDERSEN NARROLINE WINDOW

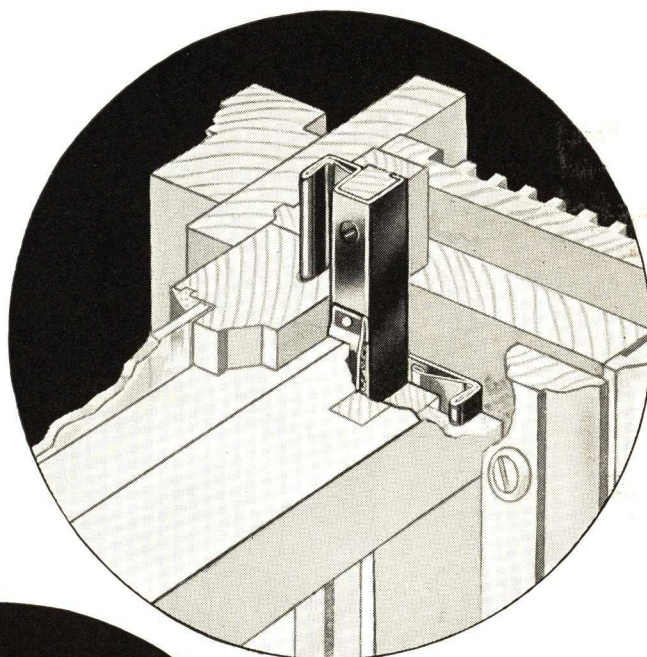
Silver Seal Weatherstrips and Other Improved Features



Section Through Head—

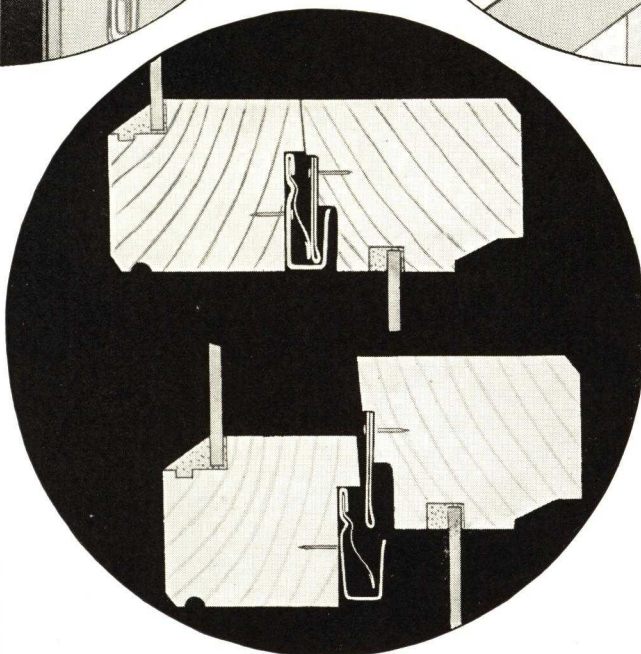
The metal covered parting stop and special weatherstrip insure easy sash operation.

Notice the NEW, sturdy 1½-inch thick sash. ANDERSEN Noiseless and Wear-proof Pulleys and Steel Sash Chain that will not break or wear out, insure a lifetime of satisfactory and trouble-free sash operation.



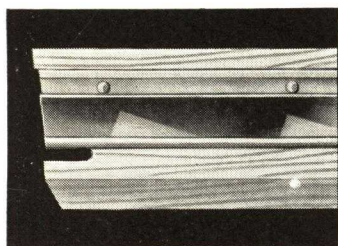
Section Through Jamb—

New duplex action Silver Seal weatherstripping with both rib and spring metal contacts. Sash slide smoothly at all times because they are guided by the ribs, and are centered between spring leaf weatherstrips.



Section Through Check Rail—

Note the improved check rail weatherstrip with concealed nailing and spring leaf metal-to-metal contact.



No Exposed End Wood—

New joint at bottom rail greatly reduces end wood which is completely covered with weatherstrip metal.



Section Through Bottom Rail—

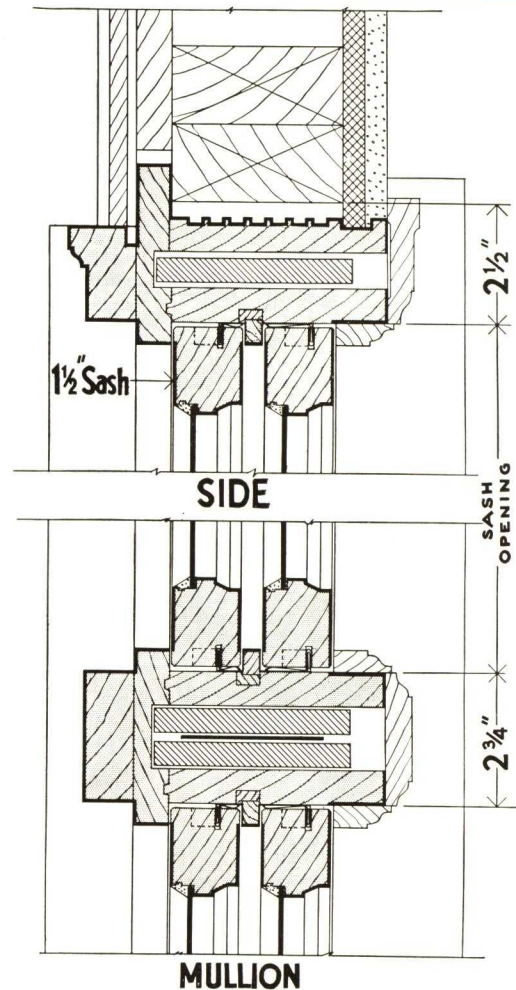
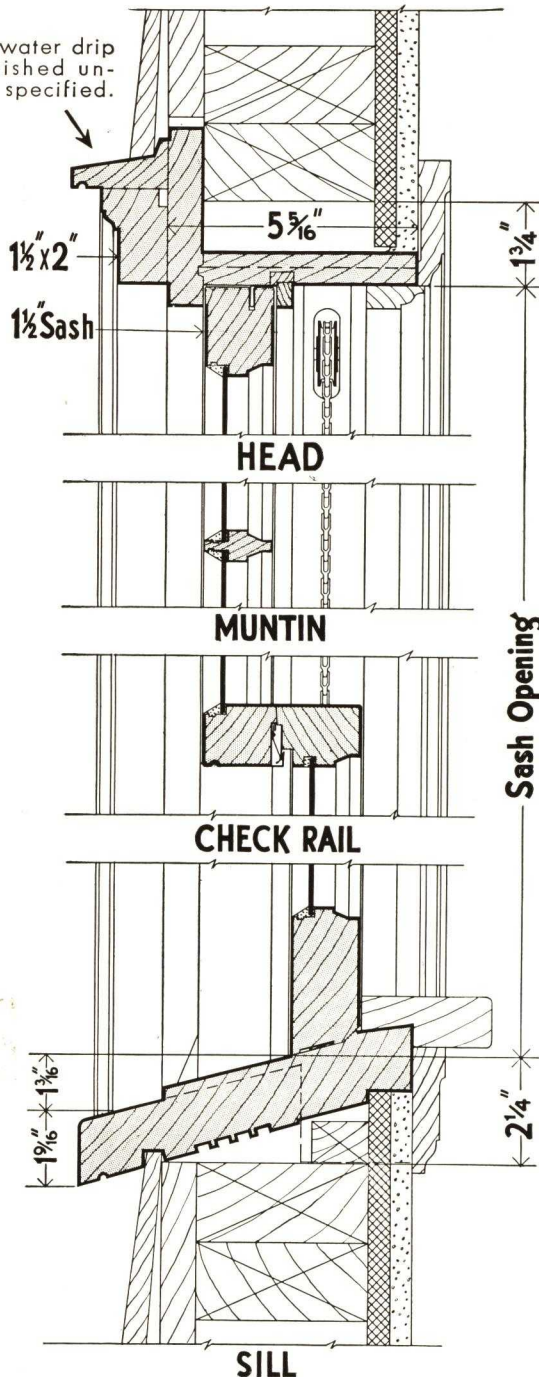
Showing the improved fold back spring leaf weatherstrip . . . Self-cleaning, self-adjusting, out of sight when sash is open.

Nationally Distributed Through Lumber and Millwork Dealers

ANDERSEN NARROLINE WINDOW

Complete Double Hung Unit No. 680

No water drip furnished unless specified.



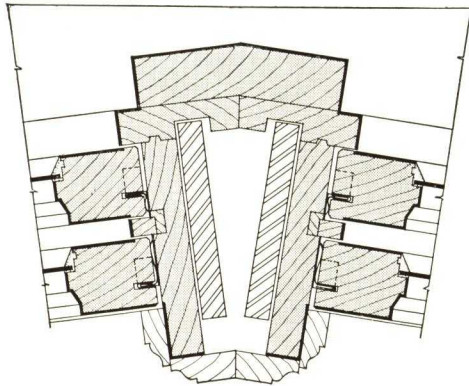
NOTES

1. This standard unit is used in all types of frame or masonry wall construction and with any style of exterior or interior wall finish. Detail shows wood frame construction with siding finish.
2. Andersen SILVER SEAL Weatherstrip for complete opening furnished as standard equipment.
3. Special flat weights, pulleys, and galvanized sash chain furnished for each opening. Chain is cut to length and fasteners are included.
4. 1 1/2" Fitted Sash furnished with check and bottom rail Weatherstrip applied. Sash glazed SSA bedded in putty. See list of stock sizes.
5. Exterior moulding No. 908, shown on detail, is standard on all frames. Any other Andersen brick moulding or casing furnished on special order. Water Drip No. 923 shown on head brick moulding furnished only when specified.
6. Frame and Sash treated with Andersen Chemical Preservative and Moisture Repellent.
7. Inside trim and finish hardware not furnished by Andersen.

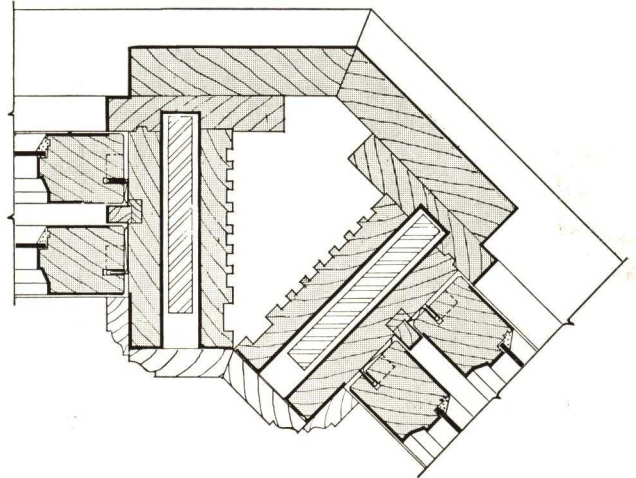
SCALE—Three Inches Equal One Foot
Patents Nos. 1,735,559,-1,879,005,-Re 16,594,-Re 17,552

ANDERSEN NARROLINE WINDOW

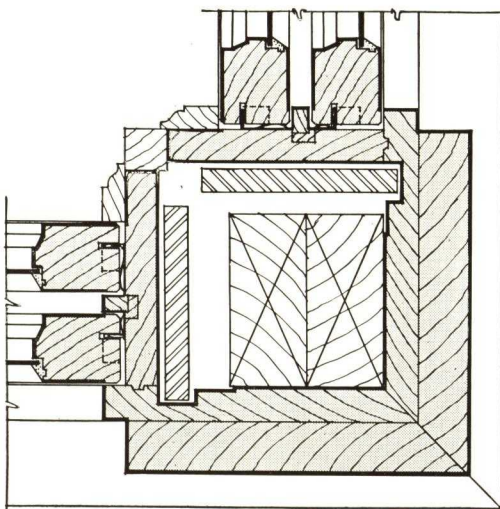
Special Adaptations



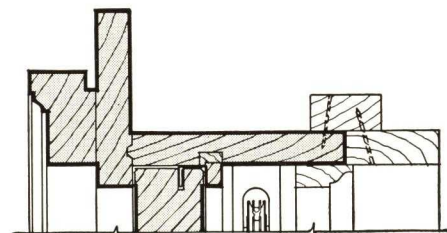
RADIAL BAY WINDOW DETAIL, 1/4 SCALE—Showing mullion between sash, using standard straight sash with outside edge of sill and head staff bead cut to radius. Furnished only on special order.



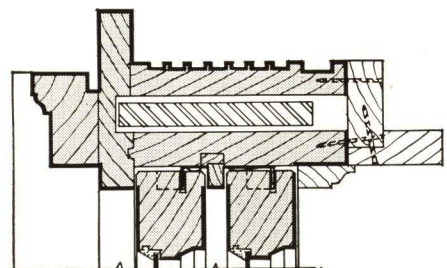
ANGLE BAY DETAIL, 1/4 SCALE—Showing section through typical angle mullion. All parts are standard except the exterior casing and length of sill horns. The inside casing is not furnished as part of the unit. Narrower mullions can be furnished by omitting the back liners.



CORNER WINDOW DETAIL, 1/4 SCALE—Showing typical corner section. Angle iron or I beam can be used in place of the 2 x 4's.



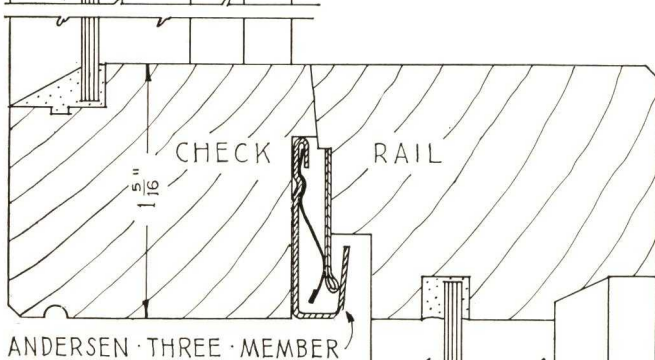
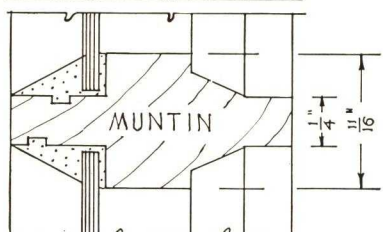
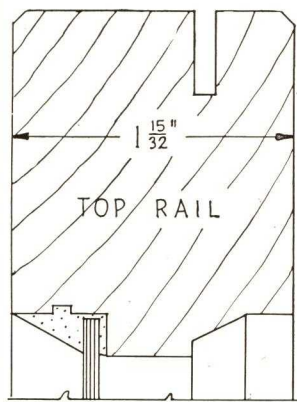
HEAD



JAMB

EXTENSION JAMB DETAIL, 1/4 SCALE—Showing suggested method for application of extension jambs to standard Narroline Frame No. 680. Use Rough Blocking below wide stool.

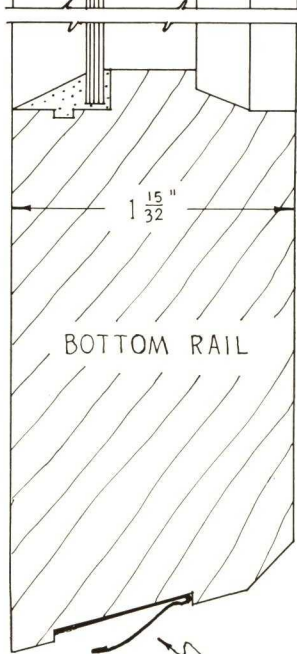
WINDOW DETAIL AND STOCK LAYOUTS



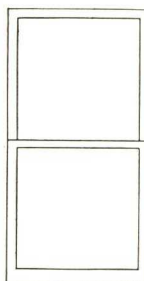
ANDERSEN THREE MEMBER
SILVER SEAL CHECK RAIL
WEATHERSTRIP APPLIED
AT FACTORY.

FULL SIZE CROSS SEC-
TIONAL DETAIL OF THE
NEW *Andersen*
NARROLINE WINDOW
NO. 680.

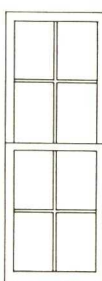
NOTE
DETAIL SHOWS EXACT
WIDTH OF STILES AND
RAILS FOR 12 LT. AND 16 LT.
WINDOWS. THIS WIDTH
VARIES SOMEWHAT FOR
2 LT., 8 LT. AND DIVIDED TOP
WINDOWS.



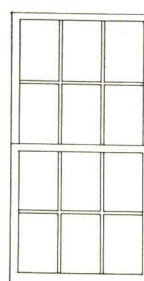
SILVER SEAL BOTTOM
RAIL WEATHERSTRIP
APPLIED AT FACTORY.



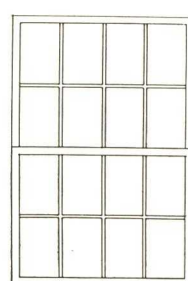
A-1211



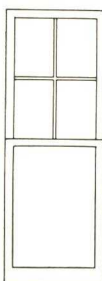
A-2444



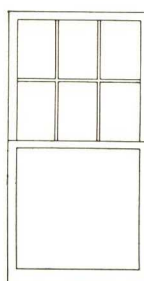
A-3466



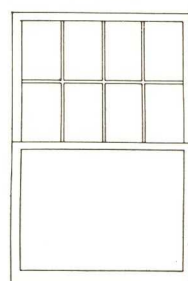
A-4488



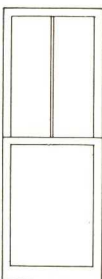
A-1341



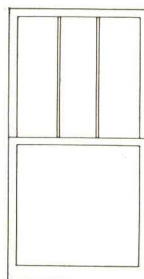
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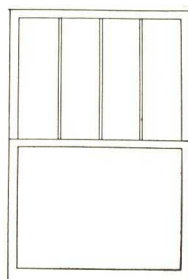
A-1381



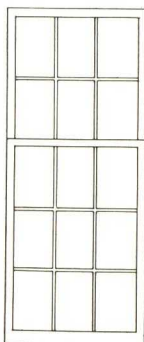
A-1221



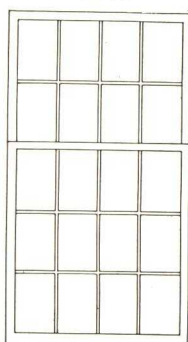
A-1231



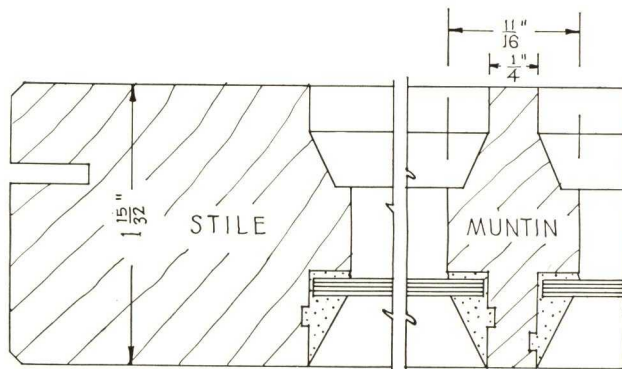
A-1241



A-3569



A-4582



LIST OF STANDARD SIZES ANDERSEN NARROLINE WINDOW No. 680

OPENING SIZES †			A-1211	A-2444	A-3466	A-4488	A-3569	A-4582	DIVIDED TOP WINDOWS	
SASH OPG.	RGH. STUD. OPG.	MASONRY OPG.	GLASS SIZE	GLASS SIZE ‡	GLASS SIZE	GLASS SIZE ‡	GLASS SIZE	GLASS SIZE ‡	‡	
1- 6 x 3-10 4-10	1-11 x 4- 2 5- 2	1-10 x 4- 2 3/4 5- 2 3/4	14 x 20 26	.....	.....	.....	.....	.....	A-1341	A-1221
1- 8 x 3- 0 3- 6 3-10 4- 6 4-10	2- 1 x 3- 4 3-10 4- 2 4-10 5- 2	2- 0 x 3- 4 3/4 3-10 3/4 4- 2 3/4 4-10 3/4 5- 2 3/4	..... ..... 16 x 20 24 26	8 x 7 1/2 9 10 12 13	.....	.....	.....	.....	A-1341 A-1341 A-1341	A-1221
1-10 x 3-10 4- 6 4-10 5- 2	2- 3 x 4- 2 4-10 5- 2 5- 6	2- 2 x 4- 2 3/4 4-10 3/4 5- 2 3/4 5- 6 3/4	18 x 20 24 26	9 x 12 13 14 .....	.....	.....	.....	.....	A-1341 A-1341	A-1221
2- 0 x 2- 6 3- 0 3- 6 3-10 4- 2 4- 6 4-10 5- 2	2- 5 x 2-10 3- 4 3-10 4- 2 4- 6 4-10 5- 2 5- 6	2- 4 x 2-10 3/4 3- 4 3/4 3-10 3/4 4- 2 3/4 4- 6 3/4 4-10 3/4 5- 2 3/4 5- 6 3/4	20 x 12 15 18 20 24 26 28	6 2/3 x 12 7 1/2 9 10 11 12 13 14	.....	.....	.....	.....	A-1361 A-1361 A-1361 A-1361 A-1361 A-1361 A-1361 A-1361	A-1231 A-1231 A-1231 A-1231 A-1231 A-1231 A-1231 A-1231
2- 4 x 3- 0 3- 6 3-10 4- 2 4- 6 4-10 5- 2 5- 6 5-10	2- 9 x 3- 4 3-10 4- 2 4- 6 4-10 5- 2 5- 6 5-10 6- 2	2- 8 x 3- 4 3/4 3-10 3/4 4- 2 3/4 4- 6 3/4 4-10 3/4 5- 2 3/4 5- 6 3/4 5-10 3/4 6- 2 3/4	24 x 15 18 20 24 26 28 30 32	8 x 7 1/2 9 10 11 12 13 14 .....	.....	.....	8 x 12	.....	A-1361 A-1361 A-1361 A-1361 A-1361 A-1361 A-1361 A-1361 A-1361	A-1231 A-1231 A-1231 A-1231 A-1231 A-1231 A-1231 A-1231 A-1231
2- 7 x 2- 6 3- 0 3- 6 3-10 4- 2 4- 6 4-10 5- 2 5- 6 5-10	3- 0 x 2-10 3- 4 3-10 4- 2 4- 6 4-10 5- 2 5- 6 5-10 6- 2	2-11 x 2-10 3/4 3- 4 3/4 3-10 3/4 4- 2 3/4 4- 6 3/4 4-10 3/4 5- 2 3/4 5- 6 3/4 5-10 3/4 6- 2 3/4	27 x 12 15 18 20 24 26 28 30 32*	9 x 12 7 1/2 9 10 11 12 13 14 .....	.....	.....	9 x 12	.....	A-1361 A-1361 A-1361 A-1361 A-1361 A-1361 A-1361 A-1361 A-1361*	A-1231 A-1231 A-1231 A-1231 A-1231 A-1231 A-1231 A-1231 A-1231*
2-10 x 2- 6 3- 0 3- 6 3-10 4- 2 4- 6 4-10 5- 2 5- 6 5-10	3- 3 x 2-10 3- 4 3-10 4- 2 4- 6 4-10 5- 2 5- 6 5-10 6- 2	3- 2 x 2-10 3/4 3- 4 3/4 3-10 3/4 4- 2 3/4 4- 6 3/4 4-10 3/4 5- 2 3/4 5- 6 3/4 5-10 3/4 6- 2 3/4	30 x 12 15 18 20 24 26 28 32*	10 x 12 7 1/2 9 10 11 12 13 14 .....	.....	.....	10 x 12	.....	A-1361 A-1361 A-1361 A-1361 A-1361 A-1361 A-1361 A-1361 A-1361*	A-1231 A-1231 A-1231 A-1231 A-1231 A-1231 A-1231 A-1231 A-1231*
3- 0 x 3- 0 3-10 4- 2 4- 6 4-10 5- 2 5- 6 5-10	3- 5 x 3- 4 4- 2 4- 6 4-10 5- 2 5- 6 5-10 6- 2	3- 4 x 3- 4 3/4 4- 2 3/4 4- 6 3/4 4-10 3/4 5- 2 3/4 5- 6 3/4 5-10 3/4 6- 2 3/4	..... 32 x 20 24 26* 28* 32*	.....	.....	8 x 7 1/2 10 11 12 13 14 .....	.....	8 x 12	A-1381 A-1381 A-1381* A-1381* A-1381* A-1381*	A-1241 A-1241 A-1241* A-1241* A-1241* A-1241*
3- 4 x 3-10 4- 2 4- 6 4-10 5- 2 5- 6 5-10	3- 9 x 4- 2 4- 6 4-10 5- 2 5- 6 5-10 6- 2	3- 8 x 4- 2 3/4 4- 6 3/4 4-10 3/4 5- 2 3/4 5- 6 3/4 5-10 3/4 6- 2 3/4	..... ..... 36 x 24* 26* 32*	.....	.....	9 x 10 11 12 13 14 .....	.....	9 x 12	A-1381 A-1381 A-1381* A-1381* A-1381* A-1381*	A-1241 A-1241 A-1241* A-1241* A-1241* A-1241*
3- 8 x 3-10 4- 6 4-10 5- 2 5- 6 5-10	4- 1 x 4- 2 4-10 5- 2 5- 6 5-10 6- 2	4- 0 x 4- 2 3/4 4-10 3/4 5- 2 3/4 5- 6 3/4 5-10 3/4 6- 2 3/4	..... 40 x 24* 26* 30* 32*	.....	.....	10 x 10 12 13 14 16	.....	10 x 12	A-1381* A-1381* A-1381* A-1381* A-1381* A-1381*	A-1241* A-1241* A-1241* A-1241* A-1241* A-1241*

‡ To maintain sash openings listed, the glass must be cut and the glass sizes shown are approximate.

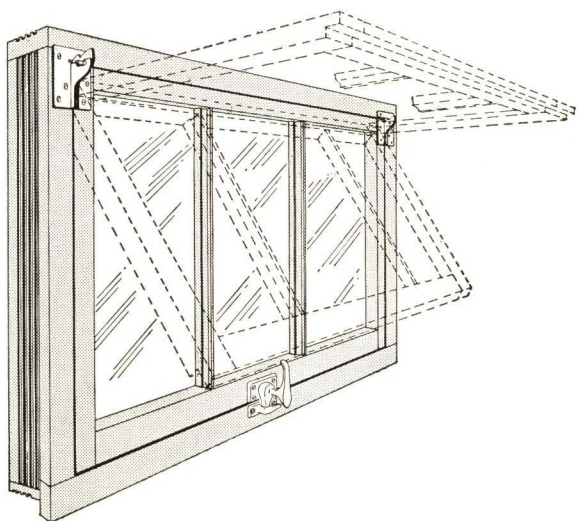
* These items glazed DSA.

† To arrive at rough stud opening for multiple window multiply

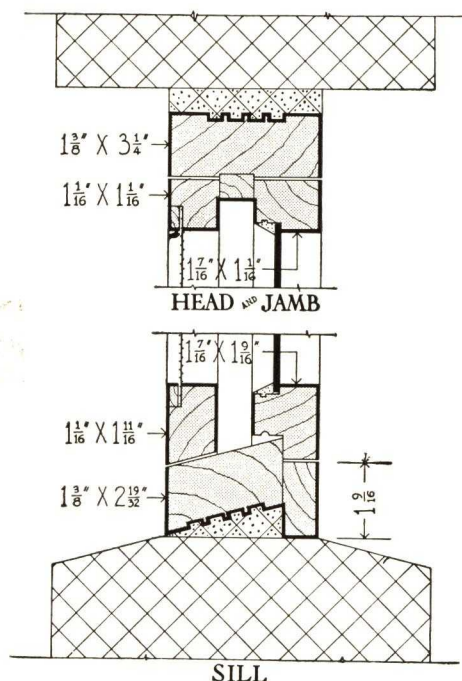
sash size and add 5" plus 2 3/4" for each mullion.
To arrive at masonry opening for multiple windows multiply sash size and add 4" plus 2 3/4" for each mullion.
◇ These items with vertical muntin bars only.

ANDERSEN BASEMENT WINDOW

A Complete Unit Including FRAME • SASH • HARDWARE • SCREEN



FROM THE INSIDE—Note two open positions in which sash is automatically held. Sash is easily removed when open by simply lifting it out of the frame. The strong lock holds the sash tightly in the closed position.



Scale—Three Inches Equal One Foot.
Patent No. 1,879,005

FRAME—Manufactured of Clear Pine. The design of the frame makes it suitable for any wall. Mortar clinch grooves anchor the frame and eliminate leaking of water, dust, and air around the frame. The frame is set up and all hardware is applied at the factory.

SASH—Glazed and Factory Fitted. Stiles and Rails are designed for sturdiness and to give maximum light. Bottom rail is rabbetted to make watertight joint between sash and sill. The sash is hung in frame at factory.

SCREEN—Factory Fitted, 18 mesh Bronze Screen Cloth. Installed in frame at factory.

HARDWARE—Hinges automatically hold sash securely in two open positions without rattling.

Lock closes sash tightly. Special inside screen fasteners can also be used for storm sash. All hardware parts are cadmium plated.

TERMITE AND DECAY PROTECTION—All wood parts of frame, sash, and screen are protected against decay, termites, and moisture absorption with a chemical preservative with the addition of a water repellent compound the same as the Casement and Narroline Units.

The treatment used is that fully described on page 1 under the heading "Treated Wood." The wood is not discolored and any customary finish can be applied over it.

The toxic agent in the preservative gives positive protection against termites and a high resistance to decay, and the water repellent compound protects against moisture during construction.

PACKING—The complete assembled unit is shipped in a carton with double protection for the glass.

STANDARD SIZES

Glass Sizes	No. of Lights	Masonry Opening Size
8x12 in.	Two Light	1'- 9" x 1'- 5 3/8"
10x12 in.	Two Light	2'- 1" x 1'- 5 3/8"
10x16 in.	Two Light	2'- 1" x 1'- 9 3/8"
12x16 in.	Two Light	2'- 5" x 1'- 9 3/8"
12x18 in.	Two Light	2'- 5" x 1'- 11 3/8"
12x20 in.	Two Light	2'- 5" x 2'- 1 3/8"
8x10 in.	Three Light	2'- 5 1/4" x 1'- 3 3/8"
8x12 in.	Three Light	2'- 5 1/4" x 1'- 5 3/8"
9x10 in.	Three Light	2'- 8 1/4" x 1'- 3 3/8"
9x12 in.	Three Light	2'- 8 1/4" x 1'- 5 3/8"
9x18 in.	Three Light	2'- 8 1/4" x 1'- 11 3/8"
10x12 in.	Three Light	2'- 11 1/4" x 1'- 5 3/8"
10x14 in.	Three Light	2'- 11 1/4" x 1'- 7 3/8"
10x16 in.	Three Light	2'- 11 1/4" x 1'- 9 3/8"
10x18 in.	Three Light	2'- 11 1/4" x 1'- 11 3/8"
10x20 in.	Three Light	2'- 11 1/4" x 2'- 1 3/8"
12x18 in.	Three Light	3'- 5 1/4" x 1'- 11 3/8"

Andersen Corporation
ANDERSEN WINDOW UNITS
Suggested Specifications

Note: Words or clauses in italic type within brackets are selective. Choose and include that which applies.

**ANDERSEN CASEMENT
WINDOWS**

All casement windows shall be standard Andersen Casement Windows manufactured by Andersen Corporation, Bayport, Minnesota. Each shall include the following:

- (a) All wood parts shall be given the Andersen Chemical Preservative and Moisture Proofing Treatment.
- (b) Frame with (*standard 1 $\frac{3}{8}$ in. x 1 $\frac{1}{8}$ in.*) (*special detail*) exterior casings.
- (c) Sash with (*aluminum*) (*wood*) muntin bars glazed with (*SSA*) (*DSA*) glass.
- (d) Complete weatherstripping, factory applied.
- (e) Complete hardware for out-swinging sash, including (*worm gear*) (*bar*) type sash operator.
- (f) Screen, (*aluminum frame with 16 mesh aluminum wire cloth*) (*wood frame with 18 mesh bronze wire cloth*) for all swinging sash.
- (g) Inside stops (*and mullion*) (*and transom bar*) (*inside casings*) of (*clear Pine*) (*specify other wood*).
- (h) Removable Double Glazing for all sash.
- (i) These casements shall be assembled before delivery to the job with frame set up, sash hung (*removable double glazing installed in sash*), and all hardware applied, except metal sockets for screen bolts. Inside stops and (*mullion center*) (*and*) (*transom bar*) casings, and screens shall be delivered separately to be applied by the carpentry contractor after plastering or other inside wall finish is complete.

**ANDERSEN BASEMENT
WINDOWS**

All basement windows shall be standard Andersen Basement Window units as manufactured by Andersen Corporation, Bayport, Minnesota. Each shall include the following:

- (a) All wood parts shall be given the Andersen Chemical Preservative and Moisture Proofing Treatment.
- (b) Frame; sash glazed with SSB glass; screen with 18 mesh bronze wire cloth; complete hardware.
- (c) Units shall be completely factory assembled with sash and screen fitted into set-up frame and all hardware applied.

**ANDERSEN NARROLINE
DOUBLE HUNG WINDOWS**

All double hung windows shall be Andersen NARROLINE Complete Units No. 680 manufactured by Andersen Corporation, Bayport, Minnesota. Each unit shall include the following:

- (a) Frame with (standard 1 $\frac{1}{2}$ in. x 2 in.) (with water drip) (*special design*) exterior casings.
- (b) Andersen Check Rail Window, 1 $\frac{1}{2}$ in. thick, glazed with Andersen standard glazing, using A quality glass bedded in putty. Sash to have check rail and bottom rail weatherstrips applied.
- (c) Complete Andersen Silver Seal weatherstrips.
- (d) Flat type cast iron sash weights with wood bushed pulley wheel. Special Andersen Noiseless Sash Pulleys. Galvanized steel sash chain, cut to length, with fasteners.
- (e) All wood parts shall be given the Andersen Chemical Preservative and Moisture Proofing Treatment.

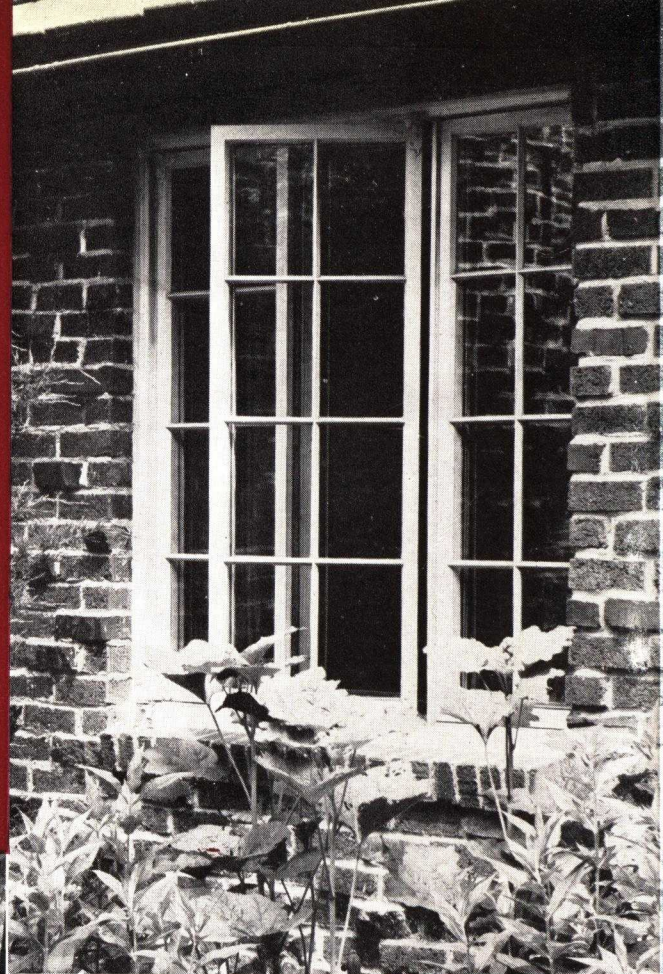
If complete assembly before delivery to the job is desired, include the following.

- (f) Units shall be furnished completely assembled with fitted sash hung with chains and weights, weatherstripping completely installed, sash and weights blocked in place in accordance with the manufacturers' instructions.

WRITE FOR COMPLETE FILE OF LOOSE SHEET TRACING DETAILS

Nationally Distributed Through Lumber and Millwork Dealers

Andersen COMPLETE WINDOW UNITS



• CASEMENT
WINDOWS •

NARROWLINE
DOUBLE-HUNG
WINDOWS •

• BASEMENT
WINDOWS •

ANDERSEN CORPORATION
BAYPORT, MINNESOTA

CURTIS COMPANIES SERVICE BUREAU

CLINTON, IOWA

A Department of CURTIS COMPANIES INCORPORATED, Clinton, Iowa

PLANTS AND SALES OFFICES: CHICAGO, ILL.
SIOUX CITY, IOWA

CLINTON, IOWA
TOPEKA, KAN.

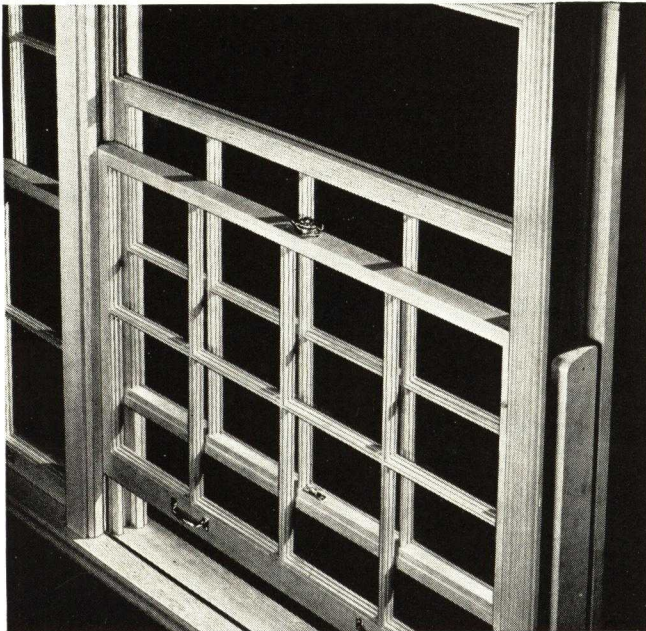
LINCOLN, NEB. MINNEAPOLIS, MINN.
WAUSAU, WIS.

PRODUCTS

SILENTITE PRE-FIT DOUBLE-HUNG and CASEMENT WINDOW UNITS, MITERTITE DOOR and WINDOW TRIM.
Exterior and Interior Doors, Entrances, Windows, Frames, Trim, Moldings, Sectional Kitchen Cabinet Units, Cabinet

Work, Mantels, Stairways, Garage Doors, Screens, Shutters, Storm Doors and Windows.

For our pages on Curtis Standard Kitchen Units and Curtis Doors and Woodwork, see File Index.



Features

Seven years of use under all conditions and in all climates have proved that the following advantages of the Silentite window unit have been proved. Silentite is a troubleproof window. And there is only one Silentite, only one modern, double-hung, complete window unit that has proved every claim made for it.

Silentite consists of the frame, sash, storm sash, screen and trim—all pre-fit at the factory, all harmonized into a single integrated double-hung window unit. All parts are priced separately. Here are some Silentite advantages:

1. A strong wood window unit to suit all architectural styles and provide modern beauty with narrow trim and mullions.
2. Large saving in installation costs because Silentite is accurately pre-fit at the factory. Sizes of all parts of the complete unit are controlled by Curtis to insure lasting satisfaction and performance.
3. Specifications, purchase and installation are simplified because one basic frame fits all types of wall construction. All parts are carton-packed.
4. Free, easy operation the year 'round is a result of perfect fit and a co-ordination of the sash with a new type of Metalane weather-stripping which is patented by Curtis.
5. Weather-stripping means weather-tightness and great reduction of heat leakage. Air infiltration is prevented between window and frame and frame and wall. Silentite makes heating plants more efficient, more economical, aids air conditioning.
6. All frame parts and windows are thoroughly treated in a laboratory-tested, decay-resisting toxic dip, developed in the Curtis Laboratory and proved by test and use to be the most effective on the market.

Spring-Balanced and Fully Weather-Stripped

Two revolutionary improvements are combined in the Silentite window. Tempered, non-corrosive steel springs replace clumsy weights. Full metal-to-metal contact between sash and frame, a new principle of weather-stripping, assures permanent, easy operation with accurate compensation for expansion and contraction of wood. Tests by Pittsburgh Testing Laboratory of Pittsburgh, Pa., indicate that the Silentite window is several times as weather-tight as an ordinary window. Write for these amazing window tests.

One Basic Detail for All Wall Types

Standardized manufacture permits the use of Silentite windows in any type of wall. A simple change of jamb liners and brick mold is the only change needed. Figure 4, on the following page, illustrates the basic frame detail.

In addition to the following commonly used frames, Silentite is available for every possible wall construction type.

Frame Number	For Wall Type
C-1515	3 5/8" stud wall—siding or shingles
C-1516	3 3/4" stud wall—siding or shingles
C-1517	3 5/8" stud wall—siding or shingles, insulation inside, no plaster
C-1518	3 5/8" stud wall—siding or shingles 1/2" insulating plaster base and 1/2" of plaster
C-1519	3 5/8" stud wall—stucco with 3/4" furring
C-1520	3 5/8" stud wall—stucco with 3/8" furring
C-1521	3 5/8" stud wall—stucco with 3/8" furring, insulation outside
C-1522	3 3/4" stud wall—siding or shingle—1/2" plaster board and 1/2" plaster
C-1523	Brick veneer, 5 1/8" jambs. Can also be used in masonry wall
C-1524	Brick veneer, 5 1/8" jambs
C-1526	Masonry 4 7/8" jambs with stud sub-jambs
C-1527	Masonry 5 1/8" jambs with sub-jambs
C-1528	Masonry 5 5/8" jambs with sub-jambs

Varying widths of stops are available for the frames tabulated above.

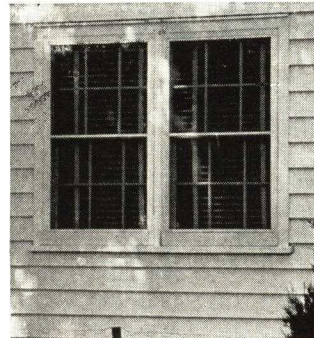


Fig. 1.—Smaller Window Area—Less Waste Space—
Narrow, graceful mullions made possible by Silentite window design—there are no bulky weight boxes.

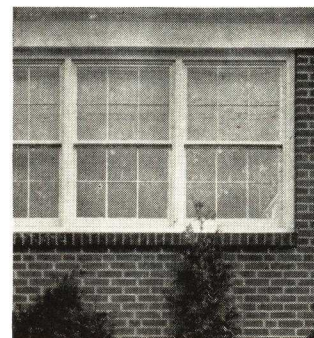


Fig. 2.—Silentite Is a Complete Wood Window Unit—
Frame, sash and trim—even storm sash and screens—are all harmonized into a single pre-fit window unit. All wood parts have preservative treatment to assure long life.

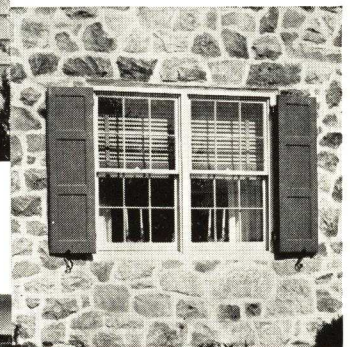


Fig. 3—Silentite Windows Fit Architectural Beauty of Stone, Brick, Wood and Masonry Exteriors—
You are never restricted in the use of Silentite; the same basic frame is used regardless of wall construction.

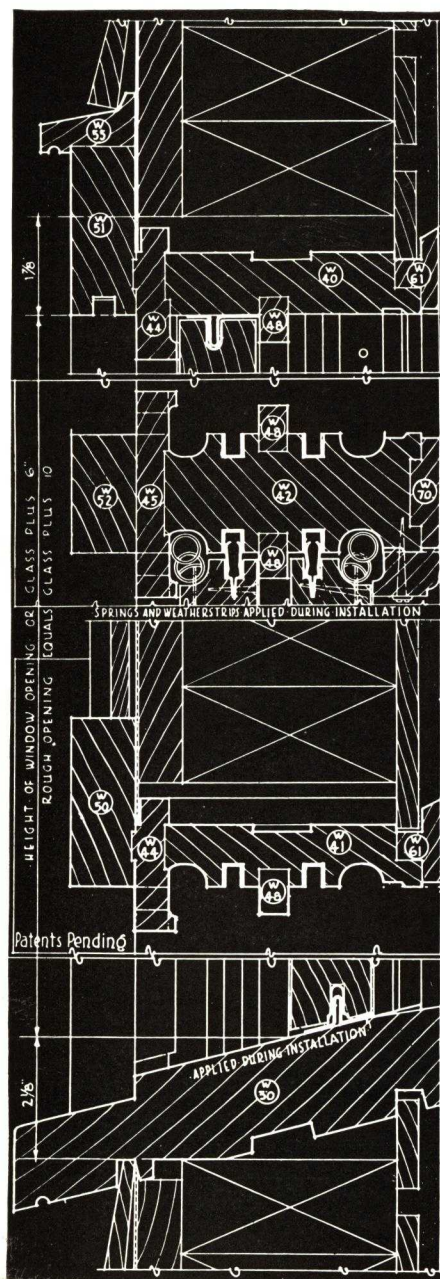


Fig. 4—Basic construction of Silentite window units. This is the frame for a 3 5/8" stud wall with siding or shingles and a 5 1/8" jamb. See small space required for spring counter-balances which make possible a narrow, solid mullion. Note metal-to-metal contacts between sash and frame—full 1/8" clearance to compensate for painting and movement of wood in sash or frame.

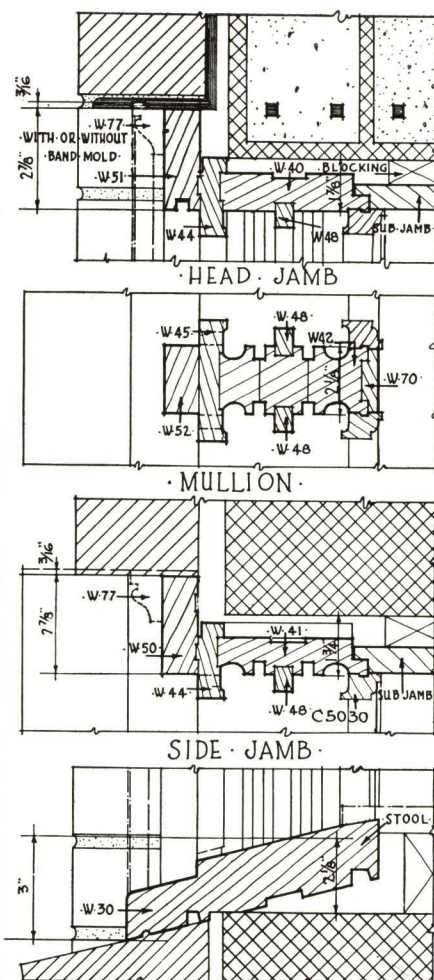


Fig. 5—This detail shows the application of Silentite in masonry wall construction. Drip cap (W55) and jamb liner (W61) are omitted. May be used with or without band mold (W77). Spring suspension insures constant, easy operation. No sticking or binding—no dust, water or dirt leakage. Silentite is a trouble-proof window unit.

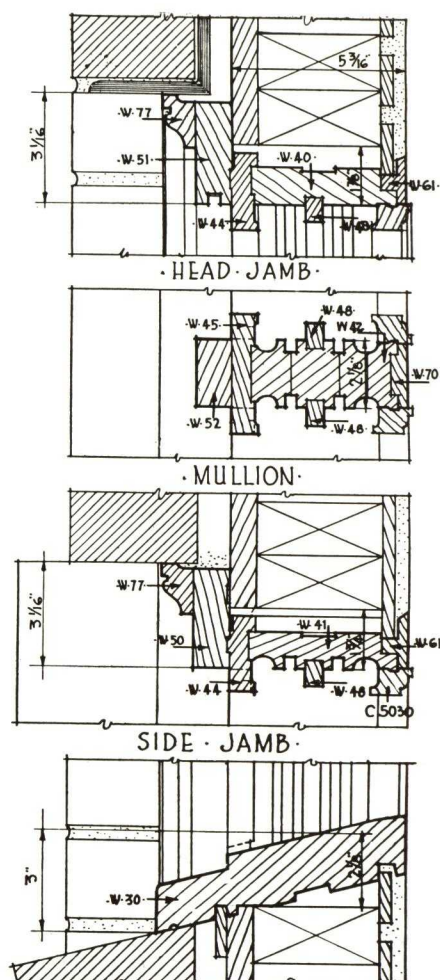


Fig. 6—This detail shows how Silentite frames are readily adapted to brick veneer walls by eliminating drip cap (W55) and adding band mold (W77). Nearly all infiltrating air is kept out by the tight frame and the double contact metal-to-metal weather-stripping. Homeowners report fuel savings as high as 25% in homes with Silentite windows.

STORM SASH AND SCREENS

Pre-fit storm sash and screens are available for all Silentite window units. Installation costs are lowered and permanent fit is assured. They are quickly hung from the inside; have simple hardware. The Curtis Protectorvant Storm Sash for a Silentite Window allows better control of ventilation, plus the advantage of being able to introduce fresh air at either top or bottom without moving storm sash itself.

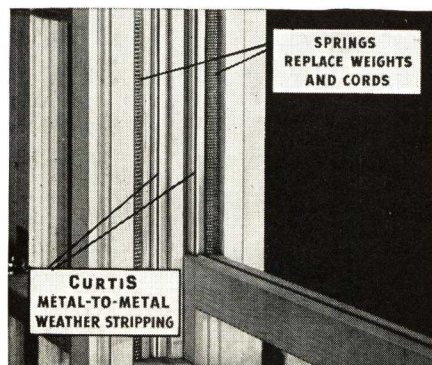
Toxic Treatment to Assure Long Life

Silentite frame and sash are made of Ponderosa Pine which is treated to make it permanently satisfactory. Curtis developed this special preservative formula in their own laboratory. After six years, no more satisfactory formula has been developed. Since Jan. 1, 1933, when Curtis started to ship their toxic-treated woodwork, *not one case of decay has been reported in a Curtis-treated product!* In fact, severe tests, made regularly since the present toxic dip became the standard Curtis treatment, have failed to show any breakdown under decay fungi. In addition, the chemicals used by Curtis in their toxic treatment remain the outstanding agent for the prevention of decay in woodwork!

Literature and Architects' Details

Architect's detail sheets, catalog and descriptive literature may be secured from the Curtis dealer in your city. Write for his name.

The Silentite Unit—Note spring counter-balances; patented Metalane weather-stripping.

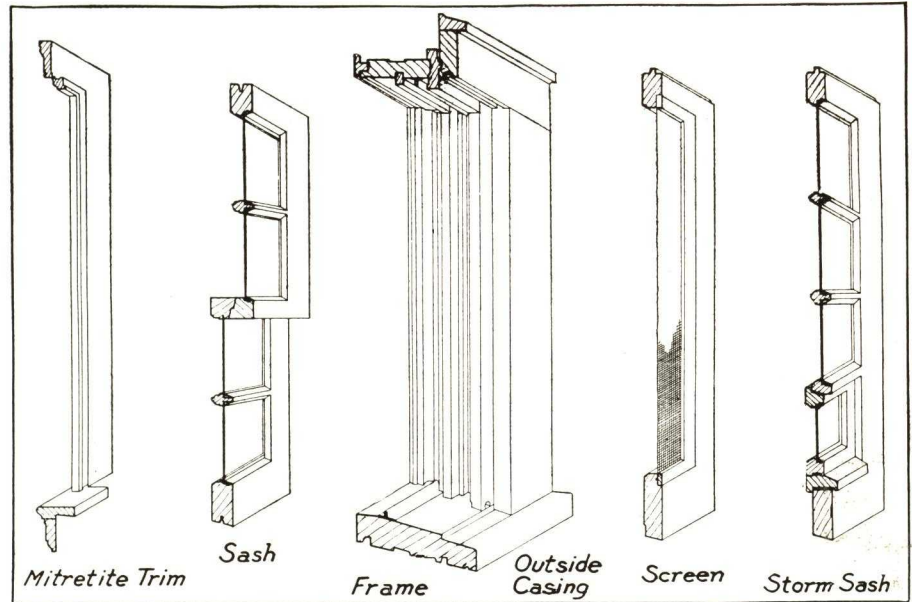


Miterite Trim

Miterite trim is finished with the greatest accuracy and is available in pre-fit form for use with Silentite window units. A single side of Miterite trim can be applied in 13 minutes as compared with 55 minutes required for the preparation and application of ordinary cut-to-length or lineal trim.

Head casing and head stop are cut to exact length and mitered. Side casing and side stop are each mitered on top side and cut one inch longer than required to allow perfect fit at stool. Stool and apron are cut to exact lengths, and both returned on the solid. Stool is notched.

Miterite trim is narrower and more attractive than ordinary, old-fashioned trim. Miterite eliminates unsightly open joints. Curtis has developed a new patented joint construction which is more than twice as strong as an ordinary butt miter reinforced with a clamp nail or spline. Miterite may also be used as door trim. Once installed, it stays in place indefinitely. Miterite is made in a variety of attractive designs and in several woods.



Frame, sash, trim, also storm sash and screen—have been harmonized into a single window unit by Curtis with Silentite. Each part is pre-fit at the factory and carton packed.

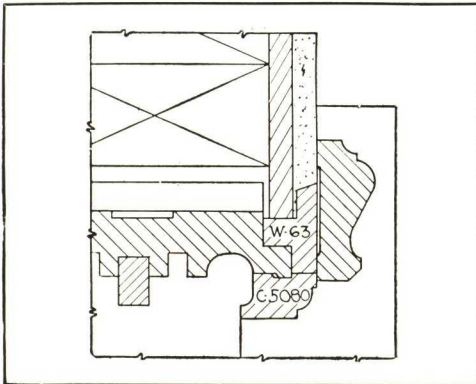
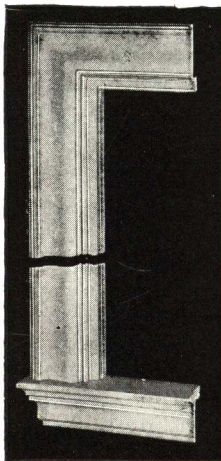


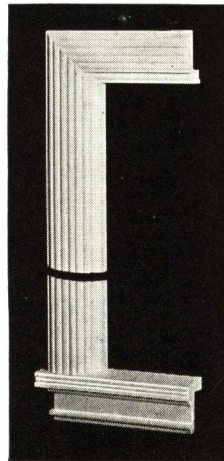
Fig. 7

Application of Miterite trim to Silentite frame. Note width of trim and nailing surface—direct to stud. This design, the Madison, finishes $\frac{3}{4}$ " by $2\frac{1}{4}$ ". Here the liner (W-63) provides jamb width necessary to accommodate full $3\frac{3}{4}$ " studs with lath and plaster. Samples of these and other Miterite designs are available at your Curtis dealer.

REGENCY—A charming symmetrical trim design by Dwight James Baum, F.A.I.A., finishes $\frac{3}{4}$ " by $2\frac{1}{4}$ ". Available in pine, oak, birch and walnut.



MADISON—This popular Miterite trim design finishes $\frac{3}{4}$ " by $2\frac{1}{4}$ ". It is available in pine, oak and birch.



OPENINGS REQUIRED FOR STOCK SIZES OF SILENTITE DOUBLE-HUNG WINDOWS

Window Opening Size	Two Light Glass Size	Twelve Light Glass Size	ROUGH OPENINGS REQUIRED					
			Stud Wall Opening			Masonry Wall Opening		
			Single	Twin	Triple	Single	Twin	Triple
1- 8x3- 0	.....	.....	1-11 $\frac{1}{2}$ x3- 4	3-9 $\frac{5}{8}$ x3- 4	5-7 $\frac{3}{4}$ x3- 4	2-1 $\frac{1}{4}$ x3- 5 $\frac{7}{8}$	3-11 $\frac{1}{8}$ x3- 5 $\frac{7}{8}$	5-10x3- 5 $\frac{7}{8}$
3- 6	.....	.....	3-10	3-10	3-10	3-11 $\frac{1}{8}$	3-11 $\frac{1}{8}$	3-11 $\frac{1}{8}$
3-10	16x20	.....	4- 2	4- 2	4- 2	4- 3 $\frac{1}{8}$	4- 3 $\frac{1}{8}$	4- 3 $\frac{1}{8}$
4- 6	.....	.....	4-10	4-10	4-10	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$
4-10	.....	.....	5- 2	5- 2	5- 2	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$
1-10x2- 6	18x12	.....	2- 1 $\frac{1}{2}$ x2-10	4-1 $\frac{5}{8}$ x2-10	6-1 $\frac{3}{4}$ x2-10	2-3 $\frac{3}{4}$ x2-11 $\frac{1}{8}$	4- 3 $\frac{3}{8}$ x2-11 $\frac{1}{8}$	6- 4x2-11 $\frac{1}{8}$
4- 6	.....	.....	4-10	4-10	4-10	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$
2- 0x3- 0	20x15	6 $\frac{1}{2}$ x 7 $\frac{1}{2}$	2- 3 $\frac{1}{2}$ x3- 4	4-5 $\frac{5}{8}$ x3- 4	6-7 $\frac{3}{4}$ x3- 4	2-5 $\frac{3}{4}$ x3- 5 $\frac{7}{8}$	4- 7 $\frac{3}{8}$ x3- 5 $\frac{7}{8}$	6-10x3- 5 $\frac{7}{8}$
3- 6	18	9	3-10	3-10	3-10	3-11 $\frac{1}{8}$	3-11 $\frac{1}{8}$	3-11 $\frac{1}{8}$
3-10	20	10	4- 2	4- 2	4- 2	4- 3 $\frac{1}{8}$	4- 3 $\frac{1}{8}$	4- 3 $\frac{1}{8}$
4- 2	.....	11	4- 6	4- 6	4- 6	4- 7 $\frac{3}{8}$	4- 7 $\frac{3}{8}$	4- 7 $\frac{3}{8}$
4- 6	24	12	4-10	4-10	4-10	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$
4-10	26	13	5- 2	5- 2	5- 2	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$
5- 2	28	14	5- 6	5- 6	5- 6	5- 7 $\frac{3}{8}$	5- 7 $\frac{3}{8}$	5- 7 $\frac{3}{8}$
2- 4x2- 6	.....	.....	2- 7 $\frac{1}{2}$ x2-10	5-1 $\frac{5}{8}$ x2-10	7-7 $\frac{3}{4}$ x2-10	2-9 $\frac{3}{4}$ x2-11 $\frac{1}{8}$	5- 3 $\frac{3}{8}$ x2-11 $\frac{1}{8}$	7-10x2-11 $\frac{1}{8}$
3- 0	24x15	8 x 7 $\frac{1}{2}$	3- 4	3- 4	3- 4	3- 5 $\frac{1}{8}$	3- 5 $\frac{1}{8}$	3- 5 $\frac{1}{8}$
3- 6	18	9	3-10	3-10	3-10	3-11 $\frac{1}{8}$	3-11 $\frac{1}{8}$	3-11 $\frac{1}{8}$
3-10	20	10	4- 2	4- 2	4- 2	4- 3 $\frac{1}{8}$	4- 3 $\frac{1}{8}$	4- 3 $\frac{1}{8}$
4- 2	.....	11	4- 6	4- 6	4- 6	4- 7 $\frac{3}{8}$	4- 7 $\frac{3}{8}$	4- 7 $\frac{3}{8}$
4- 6	24	12	4-10	4-10	4-10	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$
4-10	24x26	8 x13	5- 2	5- 2	5- 2	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$
5- 2	28	14	5- 6	5- 6	5- 6	5- 7 $\frac{3}{8}$	5- 7 $\frac{3}{8}$	5- 7 $\frac{3}{8}$
5- 6	.....	.....	5-10	5-10	5-10	5-11 $\frac{1}{8}$	5-11 $\frac{1}{8}$	5-11 $\frac{1}{8}$
2- 7x2- 6	.....	.....	2-10 $\frac{1}{2}$ x2-10	5-7 $\frac{5}{8}$ x2-10	8-4 $\frac{3}{4}$ x2-10	3-0 $\frac{3}{4}$ x2-11 $\frac{1}{8}$	5- 9 $\frac{3}{8}$ x2-11 $\frac{1}{8}$	8- 7x2-11 $\frac{1}{8}$
3- 0	27x15	9 x 7 $\frac{1}{2}$	3- 4	3- 4	3- 4	3- 5 $\frac{1}{8}$	3- 5 $\frac{1}{8}$	3- 5 $\frac{1}{8}$
3- 6	18	9	3-10	3-10	3-10	3-11 $\frac{1}{8}$	3-11 $\frac{1}{8}$	3-11 $\frac{1}{8}$
3-10	20	10	4- 2	4- 2	4- 2	4- 3 $\frac{1}{8}$	4- 3 $\frac{1}{8}$	4- 3 $\frac{1}{8}$
4- 2	.....	11	4- 6	4- 6	4- 6	4- 7 $\frac{3}{8}$	4- 7 $\frac{3}{8}$	4- 7 $\frac{3}{8}$
4- 6	24	12	4-10	4-10	4-10	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$
4-10	26	13	5- 2	5- 2	5- 2	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$
5- 2	28	14	5- 6	5- 6	5- 6	5- 7 $\frac{3}{8}$	5- 7 $\frac{3}{8}$	5- 7 $\frac{3}{8}$
5- 6	.....	.....	5-10	5-10	5-10	5-11 $\frac{1}{8}$	5-11 $\frac{1}{8}$	5-11 $\frac{1}{8}$
2-10x2- 6	30x12	.....	3- 1 $\frac{1}{2}$ x2-10	6-1 $\frac{5}{8}$ x2-10	9-1 $\frac{3}{4}$ x2-10	3-3 $\frac{3}{4}$ x2-11 $\frac{1}{8}$	6- 3 $\frac{3}{8}$ x2-11 $\frac{1}{8}$	9- 4x2-11 $\frac{1}{8}$
3- 0	15	10 x 7 $\frac{1}{2}$	3- 4	3- 4	3- 4	3- 5 $\frac{1}{8}$	3- 5 $\frac{1}{8}$	3- 5 $\frac{1}{8}$
3- 6	.....	9	3-10	3-10	3-10	3-11 $\frac{1}{8}$	3-11 $\frac{1}{8}$	3-11 $\frac{1}{8}$
3-10	20	10	4- 2	4- 2	4- 2	4- 3 $\frac{1}{8}$	4- 3 $\frac{1}{8}$	4- 3 $\frac{1}{8}$
4- 2	.....	11	4- 6	4- 6	4- 6	4- 7 $\frac{3}{8}$	4- 7 $\frac{3}{8}$	4- 7 $\frac{3}{8}$
4- 6	24	12	4-10	4-10	4-10	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$
4-10	26	13	5- 2	5- 2	5- 2	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$
5- 2	28	14	5- 6	5- 6	5- 6	5- 7 $\frac{3}{8}$	5- 7 $\frac{3}{8}$	5- 7 $\frac{3}{8}$
5- 6	.....	.....	5-10	5-10	5-10	5-11 $\frac{1}{8}$	5-11 $\frac{1}{8}$	5-11 $\frac{1}{8}$
3- 0x3-10	.....	10 $\frac{1}{2}$ x10	3- 3 $\frac{1}{2}$ x4- 2	6-5 $\frac{5}{8}$ x4- 2	9-7 $\frac{3}{4}$ x4- 2	3-5 $\frac{3}{4}$ x4- 3 $\frac{1}{8}$	6- 7 $\frac{3}{8}$ x4- 3 $\frac{1}{8}$	9-10x4- 3 $\frac{1}{8}$
4- 2	.....	11	4- 6	4- 6	4- 6	4- 7 $\frac{3}{8}$	4- 7 $\frac{3}{8}$	4- 7 $\frac{3}{8}$
4- 6	32x24	12	4-10	4-10	4-10	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$
4- 8	.....	.....	5- 0	5- 0	5- 0	5- 1 $\frac{1}{8}$	5- 1 $\frac{1}{8}$	5- 1 $\frac{1}{8}$
4-10	26	13	5- 2	5- 2	5- 2	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$
5- 2	.....	14	5- 6	5- 6	5- 6	5- 7 $\frac{3}{8}$	5- 7 $\frac{3}{8}$	5- 7 $\frac{3}{8}$
5- 6	.....	.....	5-10	5-10	5-10	5-11 $\frac{1}{8}$	5-11 $\frac{1}{8}$	5-11 $\frac{1}{8}$
3- 4x3-10	.....	.....	3- 7 $\frac{1}{2}$ x4- 2	7-1 $\frac{5}{8}$ x4- 2	10-7 $\frac{3}{4}$ x4- 2	3-9 $\frac{3}{4}$ x4- 3 $\frac{1}{8}$	7- 3 $\frac{3}{8}$ x4- 3 $\frac{1}{8}$	10-10x4- 3 $\frac{1}{8}$
4- 2	.....	.....	4- 6	4- 6	4- 6	4- 7 $\frac{3}{8}$	4- 7 $\frac{3}{8}$	4- 7 $\frac{3}{8}$
4- 6	.....	.....	4-10	4-10	4-10	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$
4-10	.....	.....	5- 2	5- 2	5- 2	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$
5- 2	.....	.....	5- 6	5- 6	5- 6	5- 7 $\frac{3}{8}$	5- 7 $\frac{3}{8}$	5- 7 $\frac{3}{8}$
5- 6	.....	.....	5-10	5-10	5-10	5-11 $\frac{1}{8}$	5-11 $\frac{1}{8}$	5-11 $\frac{1}{8}$
3- 8x3-10	.....	.....	3-11 $\frac{1}{2}$ x4- 2	7-9 $\frac{5}{8}$ x4- 2	11-7 $\frac{3}{4}$ x4- 2	4-1 $\frac{3}{4}$ x4- 3 $\frac{1}{8}$	7-11 $\frac{3}{8}$ x4- 3 $\frac{1}{8}$	11-10x4- 3 $\frac{1}{8}$
4- 6	.....	.....	4-10	4-10	4-10	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$	4-11 $\frac{1}{8}$
4-10	.....	.....	5- 2	5- 2	5- 2	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$	5- 3 $\frac{1}{8}$

Those sash opening sizes listed in the first column are all stock sizes for some design of the Silentite window. The stock sizes of the two- and twelve-light windows are listed. Your Curtis dealer can give you a complete list of the stock sizes in which all Silentite designs are available.

We have listed the glass sizes for the two- and twelve-light windows to show the difference between the glass sizes, sash opening sizes and rough opening sizes. Rough openings for single, twin and triple, in both stud and masonry walls are listed above. Your Curtis dealer will help you figure rough opening sizes for any combination of Silentite Windows.

"Stick to Stock Sizes"

THE SILENTITE CASEMENT—Draftless, Troubleproof, Insulated

CURTIS SILENTITE CASEMENT UNIT



The Curtis Silentite Wood Casement is one of the most remarkable units ever developed. It employs entirely new ideas in the construction of casement windows and meets every modern requirement for beauty, utility and economy. It's a worthy companion product to the Silentite Double-Hung Window.

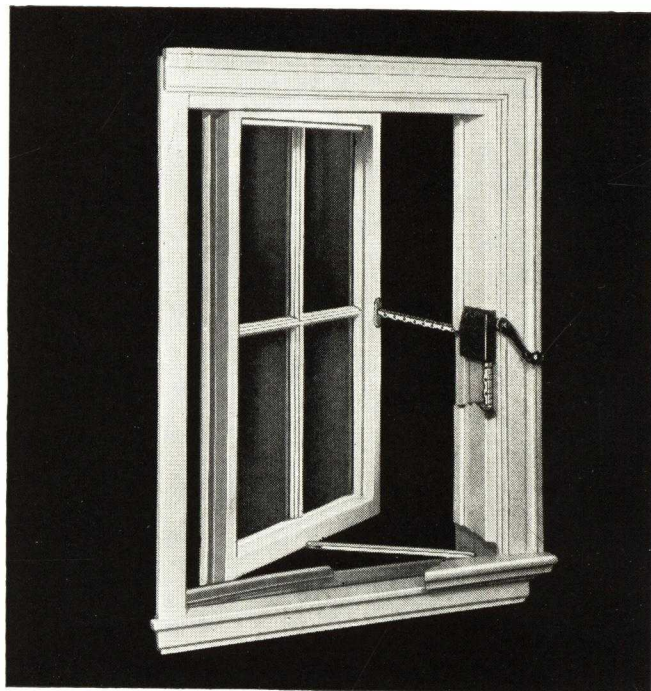
Check these Silentite Casement features:

1. A complete pre-fit casement unit which may include operating hardware, screens, and insulating glass (each item priced separately).
2. Efficient Metalane weather-stripping, developed and patented by Curtis.
3. Can't stick, bind or warp.
4. Can't swing, slam or rattle.
5. No outside hardware to rust.
6. No inside projecting hardware.
7. Self-locking tamperproof sash.
8. Operates only from inside without disturbing screen or insulating glass.
9. Sash adjuster easy to operate. Placed at medium height.
10. Provides draftless ventilation.
11. Easily cleaned from inside.
12. All wood parts protected with exclusive Curtis preservative dip.
13. Installation costs lower because of pre-fit feature.
14. Distinctive architectural beauty—suits any type of home.

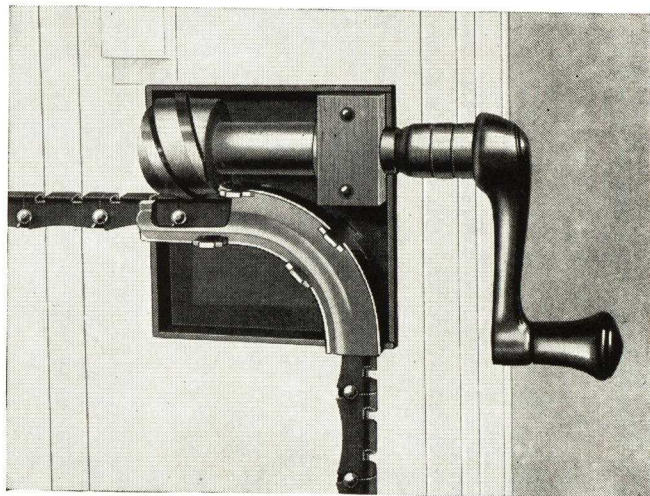


Saves Fuel—Provides Year-'Round Comfort

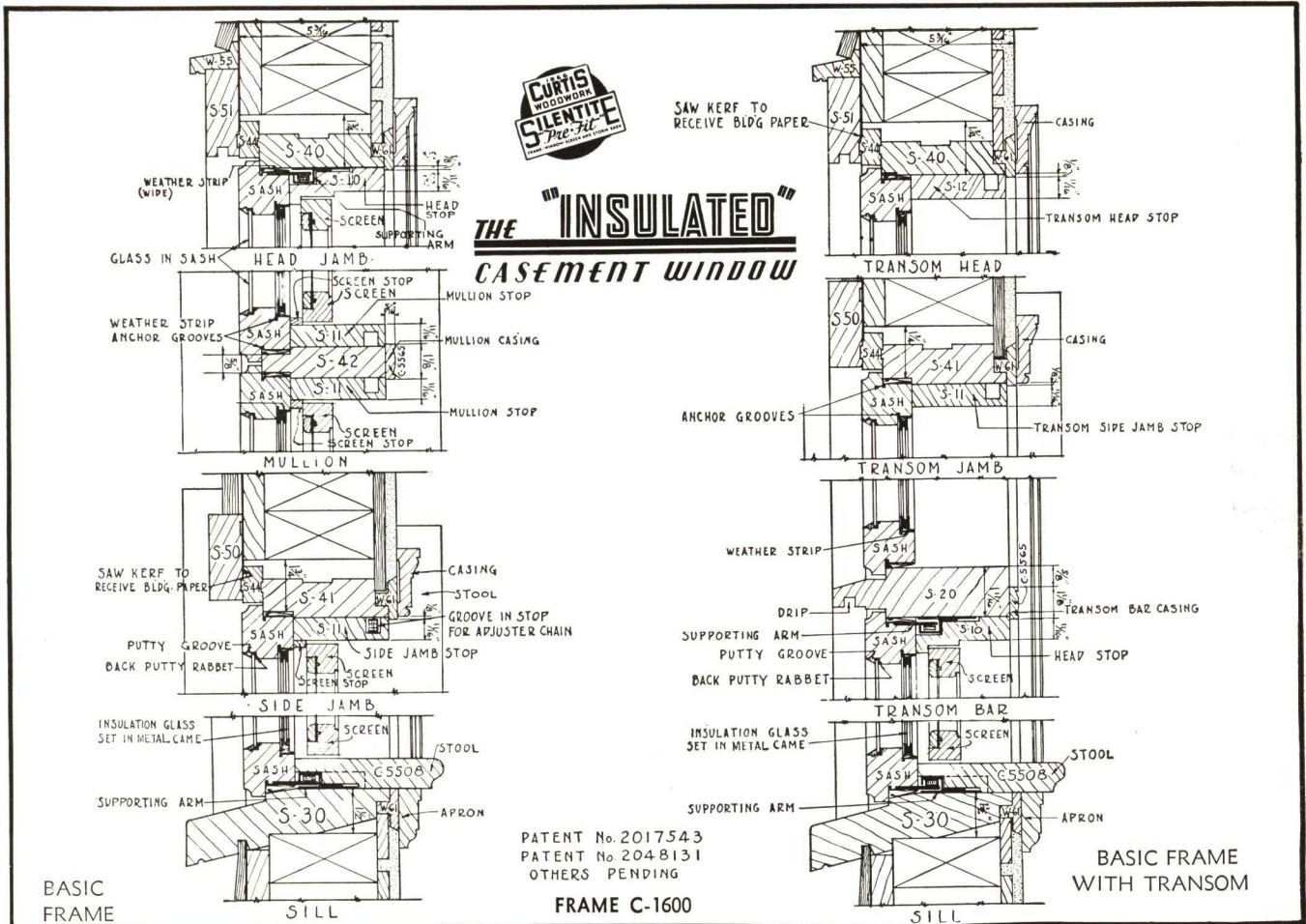
Pittsburgh Testing Laboratory checked the Silentite Casement and other casements of wood and other materials to determine their air leakage and heat loss. These tests indicated that Silentite leaks only 15.97 cubic feet per hour, per foot of sash perimeter, as compared with 22.10 cubic feet for Competitive Wood Casement, and an average of 32.26 cubic feet for Competitive Casements other than wood. Thus, by test, Silentite makes possible a saving of 45% of air leakage over other types of casement windows. Let us give you complete details of these tests.



A cutaway of a four-light Silentite Casement. Part of the trim is removed to show operation. Note lack of hinges. The sash "floats" open to a 45-degree angle which permits entrance of air equal to entire window opening. Sash adjuster provides fifteen times greater opening pressure than ordinary lever type. There is no hardware protruding either inside or outside—the sash adjuster is removable.



Closeup view with cover plate removed to indicate the compact and sturdy construction of Silentite Casement Hardware. In this remarkable casement unit, there is nothing to get out of order. It opens and closes with the greatest ease. The worm acts directly upon the operating chain to eliminate all rattling or swinging. The adjustable brake locks the sash in any position. The chain is guided to a concealed position within the frame. Chain is plated in statuary bronze over a heavy cadmium plating. Crank and housing are also bronze plated. All operating hardware is covered by exclusive Curtis patents.



ALL GLASS SIZES 8" X 12"

SASH OPENING (BETWEEN JAMBS)
STUD WALL OPG.
BRICK WALL OPG.

NOTE: SIX 12" SASH ARE ALSO AVAILABLE IN 24" HIGH GLASS SIZE. IF SASH OPENING IS SPECIFIED, THE GLASS SIZE ALSO MUST BE GIVEN.

STUD WALL OPG.	BRICK WALL OPG.	STUD WALL OPG.	BRICK WALL OPG.	STUD WALL OPG.	BRICK WALL OPG.	STUD WALL OPG.	BRICK WALL OPG.
140	240	340	440	540	640	740	840
160	260	360	460	560	660	760	860
180	280	380	480	580	680	780	880
162	262	362	462	562	662	762	862
182	282	382	482	582	682	782	882
164	264	364	464	564	664	764	864
184	284	384	484	584	684	784	884

INSULATION: 1/2" INSULATION, 1/4" INSULATION, 1/8" INSULATION, 1/16" INSULATION, 1/32" INSULATION, 1/64" INSULATION, 1/128" INSULATION, 1/256" INSULATION, 1/512" INSULATION, 1/1024" INSULATION, 1/2048" INSULATION, 1/4096" INSULATION, 1/8192" INSULATION, 1/16384" INSULATION, 1/32768" INSULATION, 1/65536" INSULATION, 1/131072" INSULATION, 1/262144" INSULATION, 1/524288" INSULATION, 1/1048576" INSULATION, 1/2097152" INSULATION, 1/4194304" INSULATION, 1/8388608" INSULATION, 1/16777216" INSULATION, 1/33554432" INSULATION, 1/67108864" INSULATION, 1/134217728" INSULATION, 1/268435456" INSULATION, 1/536870912" INSULATION, 1/1073741824" INSULATION, 1/2147483648" INSULATION, 1/4294967296" INSULATION, 1/8589934592" INSULATION, 1/17179869184" INSULATION, 1/34359738368" INSULATION, 1/68719476736" INSULATION, 1/137438953472" INSULATION, 1/274877906944" INSULATION, 1/549755813888" INSULATION, 1/1099511627776" INSULATION, 1/2199023255552" INSULATION, 1/4398046511104" INSULATION, 1/8796093022208" 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MEMORANDA

FARLEY & LOETSCHER MFG. CO.

ESTABLISHED 1875

DUBUQUE, IOWA

Products

"QUALITYBILT" Woodwork of all kinds; "UNIPAK" Wood Casements; "UNIPAK UNIQUE" Double Hung Windows; Standard and Special Detail Wood Sash and Frames; Interior and Exterior Doors, hardwood and softwood, flush and panel; "AIR SLAB" Flush Doors; Interior Trim; Mouldings; Stairwork; Colonial Stair

Qualitybilt WOODWORK

REGISTERED

Parts; Cabinet Work; Mantels; Panel Work; Medicine Cases; Ironing Boards; Screens, window and door; Blinds; Shutters; Porch Work; Combination Doors; Garage Doors; Standardized Colonial Front Entrances; Basement Sash Units, etc. For Doors and "DeLuxe" Kitchen Units, see File Index.

WEATHER-STRIPPED
INSULATED

"UNIPAK" WOOD CASEMENTS

ROT-PROOFED
SCREENED

TRADE MARK

PATENTED AND PATENTS PENDING

"Unipak" Wood Casements are complete unit installations, prefitted and with all hardware and accessories supplied. They retain the inherent superior qualities of wood construction and are built on sound, time tested architectural principles to provide a lifetime of trouble free service. The quality is the very finest, backed by our long established reputation for highest grade building woodwork.

The revolutionary split frame saves installation time and eliminates the principal causes from which most window troubles result. Units may be completely painted before installing, permitting a more thorough paint job.

The exceptional weather tightness and optional double glazing of "Unipak" Casements meets year 'round air conditioning requirements. Operative units have four points of contact at head and three points at side and sill. There are no open joints around stationary units or transoms.

Locks and screens do not project to interfere with shades or Venetian Blinds. Sash open to full 90° angle.

Construction

"Unipak" frames and sash are carefully and accurately built of clear W. P. Pine, chemically treated to resist moisture and termites and to provide a perfect paint base. They will not corrode, sweat, or scale. Sash are full 2 in. thick, mortise and tenon construction, glued with waterproof glue and pinned. Glazed sash have glass bedded in putty. Sash are two types, operative and stationary; in two standard widths, 1 ft. 2 in. (100 series) and 1 ft. 8 in. (200 series); 2 to 7 lights high.

Two optional methods of operation are provided, "Manually" and "Mechanically."

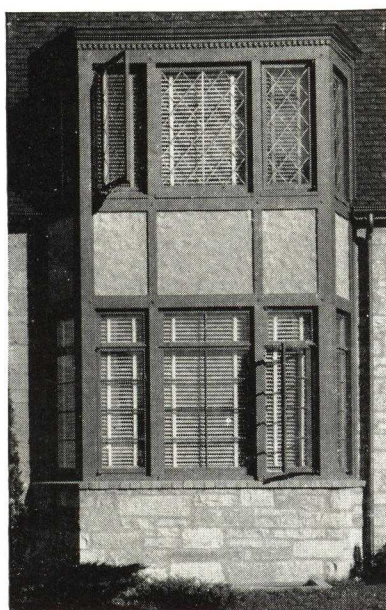
One basic frame is used in all types of wall construction, frame or masonry. Outer Frame consisting of only four parts (head, sill, and two sides) regardless of opening size, is shipped semi-knocked down. Inner Units are shipped completely assembled with sash fitted, weatherstripped and hinges applied, ready to attach to the outer frames with screws. Exclusive split frame method of installation is fully described on following page.

Screens

Screens fit inside, out of weather. Wired with 16-mesh aluminum wire. Require no fitting or painting. Quickly removed or replaced. "Manually Operated" units have steel sliding screen with baked aluminum finish. "Mechanically Operated" units have one-piece screens with extruded aluminum frame fitted with spring bolts for fastening in place.

Double Glazing

Double glazing panels have a narrow white metal frame with com-



Exterior lines of "Unipak" are strictly modern in design. Suitable for any type of wall

pression gasket to seal dead air space. Require no fitting or painting. Fit snugly in rabbet on inside of sash, either stationary or operative type. Fastened with clips, easily removed. Left in place the year around and removed only for occasional cleaning between glass. Eliminate sweating or frosting of glass to a large extent and reduce heat loss by radiation 60%. Meet all requirements of air conditioning.

Hardware

Hinges—Special design, made of heavy steel, cadmium-plated. Applied at factory. Extension type used on the 1 ft. 8 in. wide units. Close-in hinges applied on 1 ft. 2 in. wide units.

Sash Operators—"Mechanically Operated" units employ under-the-screen worm and gear type operators, made of heavy cadmium plated steel and die cast zinc. Cranks are statuary bronze over cadmium with brass handles. Either "Thru-Stool" or "Angle Drive" operators are standard optional equipment on "Mechanically Operated" sash. "Manually Operated" sash supplied with special combination pull and keeper, statuary bronze finish, and a cadmium plated safety sliding stay to prevent opening of sash beyond 90-degree angle. No operator is required.

Sash Locks—Special design semi-rotary type, operate without screen interference. Draw sash up tightly. Statuary bronze finish over cadmium plated steel. Drop forged brass handles, statuary bronze finish. Handles project only 7/8 in. from face trim. Do not interfere with shades or Venetian Blinds.

Weatherstripping

Compression type spring bronze weatherstrip is applied at factory, completely around all operative sash. Insures positive seal around entire opening. Double glazing panels fitted with compression gasket which completely seals dead air space.

Compactness

"Unipak" construction is very compact. From outside of glass to screen is only 1 1/2 in. A deep reveal on the outside and a generous plaster return on the inside is secured in standard 2 x 4-in. stud wall. Openings can also be fully cased.

Proved and Tested

Thousands of installations in all parts of the country and in all types of buildings have proved the efficiency of "Unipak" Wood Casements.

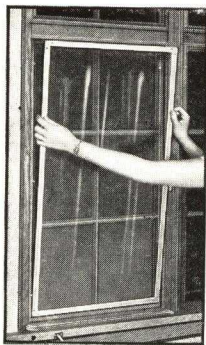
Details and Information

Complete catalog and other descriptive literature with details will be sent on request. Suggestions for unusual installations will be promptly submitted by our Engineering Department.



Our modern plant where "Unipaks" are made. Comprises over 21 acres of floor space. One of the largest and most modern woodworking establishments in the world

OUTSTANDING "UNIPAK" FEATURES



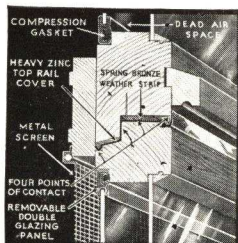
Screens and Double Glazing Panels on Inside

Easily removed or installed in a few minutes.



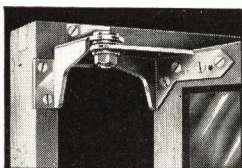
Cleaning

Extension hinges provide 4-in. opening for cleaning outside of sash from inside of building. Sash open to full 90° angle.



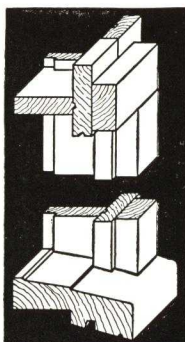
Transom Bar Section

Four points of contact and drip cap prevent any possibility of leakage. Stationary units have same profile but are made with transom bar in one piece without joints. Note heavy zinc cover which protects entire top edge of sash when open.



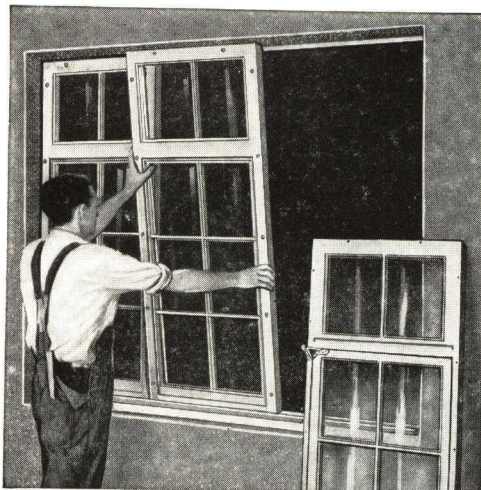
"Unipak" Extension Hinge

Note angular truss construction and method of attaching for maximum strength and rigidity. See how hinges reinforce members of inner frames and sash. Prevents side play or sagging of sash and positively controls fitting clearance. Close-in hinges, used on narrow units, are same construction but without the extension arms.



Outer Frame

Has wide blind stops and overlapping halved joints at all corners which prevent leakage.



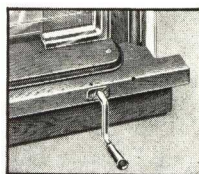
Entire Installation of "Unipak" Inner Units Is Made from Inside of the Building

OPTIONAL OPERATION METHODS

Without structural changes of any kind in basic units, two distinct means of operating "Unipak" Casements are provided as follows:

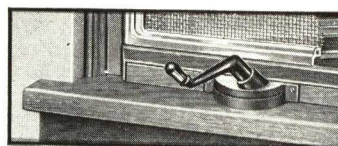
"Mechanically Operated" Unipak

"Mechanically Operated" Unipaks employ the finest nationally known worm and gear type operators. Automatically hold sash in any desired position. Two types available. "Angle Drive" type sets directly on stool with no notching of stool or boring for crank required. Crank does not project beyond stool line. Particularly desirable for wide stool. "Thru-Stool" type is fully concealed within stool, which is notched out to form enclosure. A neat removable cover is supplied to conceal notching.



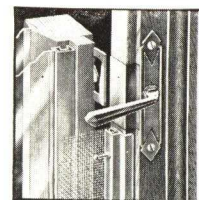
"Thru-Stool" Operator

Illustrations show how operators work independent of screen. Very powerful and positive in action.



"Angle-Drive" Operator

When specifying or ordering "Mechanically Operated" Unipaks be sure to state type of operator wanted.

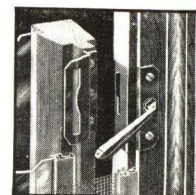


Cam action of lock picks up sash within about 1/2 in. of closed position, insuring positive locking. Two locks supplied for all sash over three lights high.

"Manually Operated" Unipak

"Manually Operated" Unipaks provide the utmost efficiency at a substantial saving in cost. They dispense with all mechanical operating devices and provide instant, direct, and never failing control of the casement.

Sash is opened and closed just like a door. This is made possible by a beautiful streamlined metal sliding screen, only 1/2 in. thick over-all, which operates without interfering with shades or Venetian Blinds. When closed, you would never guess it to be a sliding screen as the wire of the two panels is almost on the same plane, with only sufficient clearance to permit bottom panel to slide. Swing of sash is controlled by special type friction washers built into the hinges, and safety sliding stay prevents opening of sash beyond ninety degree angle.



Lock—for "Manually Operated" units.

SPLIT FRAME INSTALLATION METHOD

"Unipak" employs an entirely different principle of installation. Instead of installing the completed window frame with its finished jambs, mullion posts and transom bars and subjecting them to all the inherent abuses of the early construction period and plastering time, "Unipak" eliminates these evils by installing in two parts, as follows:

Outer Frame—The outer frame only, consisting of the minimum parts necessary to frame the opening and having no direct relationship with the operation of the casements, is installed as the walls are erected. *It has no jambs, mullion posts or transom bars. These are formed by inner units when installed later.*

Inner Units—Completely assembled and fitted—stationary units or prefitted sash with their surrounding frames, hinged and weatherstripped at factory, are installed preferably after the plastering is dry, by merely driving a few screws.

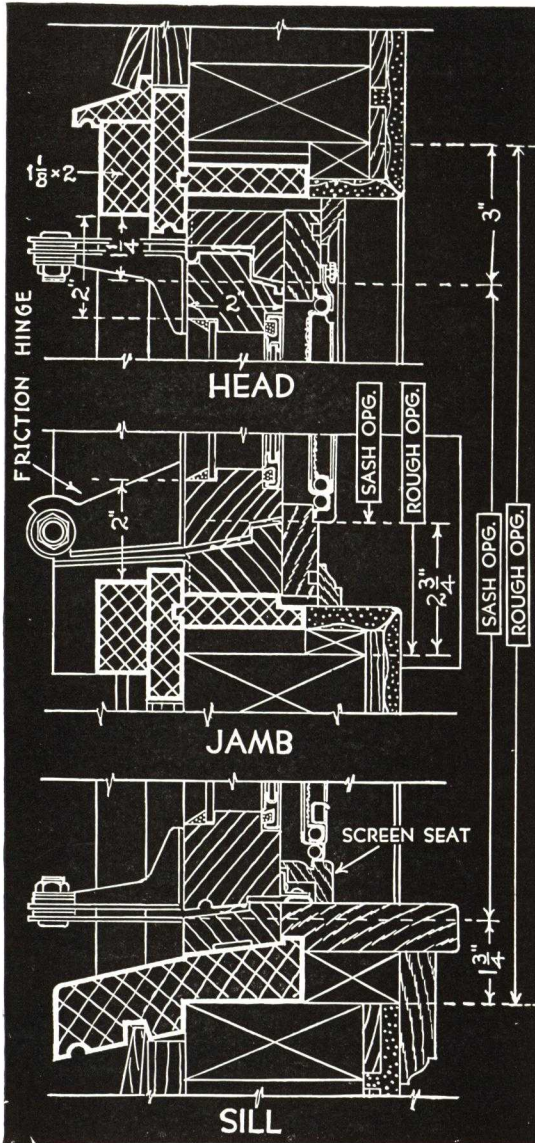
Application of the Interior Trim—This is also of utmost simplicity. As detailed on the following page, mullion casing and transom bar casing consists only of one piece instead of the customary three members. This reduces installation labor two-thirds. Face trim is furnished cut to exact length and notch mortised at intersections, insuring ease and accuracy of installation.

"UNIPAK" CASEMENT INSTALLATION DETAILS

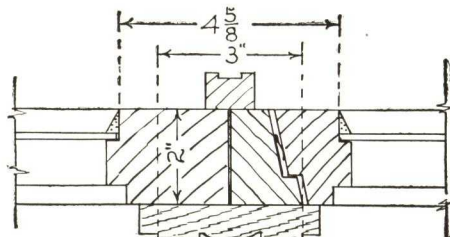
STANDARD OPERATIVE UNIT

SAME FRAME ADAPTED TO ALL TYPES OF FRAME
AND MASONRY WALLS

Heavy Lines Indicate Outer Frame



Above basic detail shows installation of "Manually Operated" Sash. No operator is required. "Mechanically Operated" Sash are made to exactly the same details, the only difference is in the screen seat and operator cover. See sill details to the right.



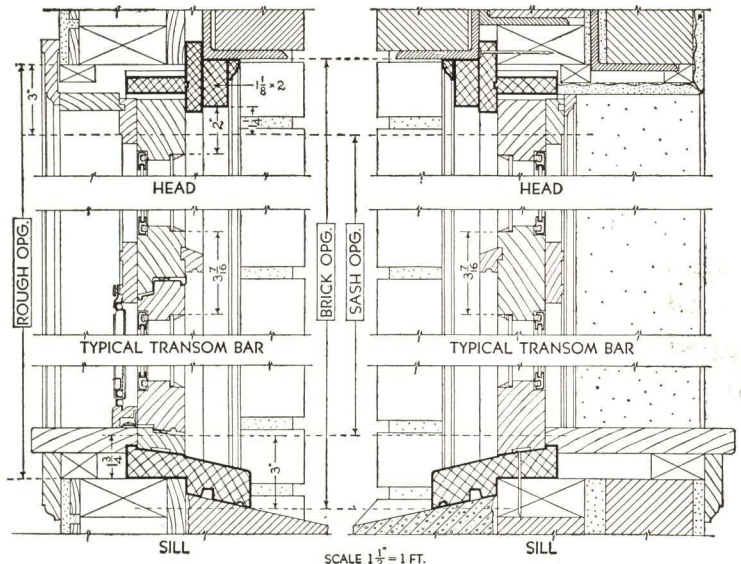
TYPICAL MULLION
BETWEEN HINGED & STATIONARY UNITS

SCALE: 3" — 1'-0"

MASONRY WALLS

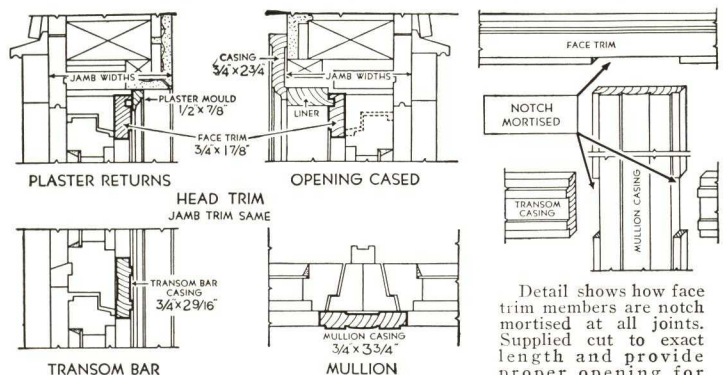
BRICK VENEER
Operative Unit with Transom

SOLID MASONRY
Stationary Unit with Transom



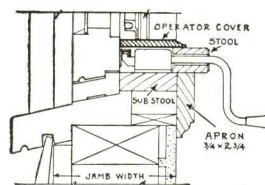
A rough 2x4 frame to which the outer frame is nailed before installing in wall, is recommended for installations in solid masonry, particularly on openings over 5-0 wide. Note that operative and stationary units match perfectly and that the glass "lines" in all instances.

"UNIPAK" INTERIOR TRIM—TYPE "R"

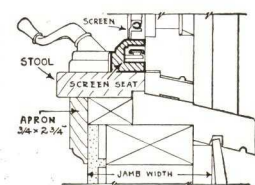


Detail shows how face trim members are notch mortised at all joints. Supplied cut to exact length and provide proper opening for screen. No cutting or fitting required, thus greatly reducing installation costs.

The face trim, including transom bar casings, mullion casings, screen seats, and operator covers (those members shown heavily cross hatched) must never be changed and are always furnished as shown. Any other design room casing and apron or plaster mould may be substituted when specifically ordered. Plaster mould must not be wider than 7/8 in. to allow space for sash lock. Stools must finish 1 1/8 in. in thickness on account of screen opening. Small details show sill trim for "Mechanically Operated" units.



SILL—"Thru-Stool" Operator



SILL—"Angle Drive" Operator

Order Information for Trim

- (1) Give jamb width.
- (2) Specify whether openings are to be cased or finished with plaster returns.
- (3) Specify type of operation, "Manually" or "Mechanically" operated. If "Mechanically Operated," whether "Thru Stool" or "Angle Drive" operator will be used.
- (4) Specify kind of wood.

Note: Face trim including operator covers or screen seats is furnished with inner units but is not attached.

**BASIC
INNER UNITS**

BRICK OPG.	STUD OPG.	SASH OPG.
1'-8 1/2"	1'-7 1/2"	1'-2"
2'-9 1/2"	2'-7 1/2"	2'-3 1/2"
3'-9 1/2"	3'-8 1/2"	3'-3 1/2"
4'-10 1/2"	4'-8 1/2"	4'-3 1/2"
5'-10 3/8"	5'-8 7/8"	5'-4 1/8"
5'-1 1/4"	4'-11 3/4"	4'-7"
6'-1 3/8"	6'-0 1/8"	5'-7 1/8"
6'-1 3/8"	6'-0 1/8"	5'-7 1/8"
6'-1 3/8"	6'-0 1/8"	5'-7 1/8"
7'-1 7/8"	7'-0 3/8"	6'-7 5/8"
7'-1 7/8"	7'-0 3/8"	6'-7 5/8"
8'-2 3/8"	8'-0 1/8"	7'-7 1/8"
120	220	
130	230	
140	240	
150	250	
131	231	
132	232	
141	241	
142	242	
151	251	
152	252	

Schedule of UNIPAK CASEMENT Sizes

All Group Installations Below Are Composed of the Basic Inner Units Shown in Panel at Left

BRICK OPG.	STUD OPG.	SASH OPG.	2202	4202	4203	5203	6203	6204	8204	7205	8205	10205
2'-2 1/2"	2'-1 1/2"	1'-8"	2302	4302	4303	5303	6303	6304	8304	7305	8305	10305
2'-2 1/2"	2'-1 1/2"	1'-8"	2402	4402	4403	5403	6403	6404	8404	7405	8405	10405
2'-2 1/2"	2'-1 1/2"	1'-8"	2502	4502	4503	5503	6503	6504	8504	7505	8505	10505
2'-2 1/2"	2'-1 1/2"	1'-8"	2312	4312	4313	5313	6313	6314	8314	7315	8315	10315
2'-2 1/2"	2'-1 1/2"	1'-8"	2322	4322	4323	5323	6323	6324	8324	7325	8325	10325
2'-2 1/2"	2'-1 1/2"	1'-8"	2412	4412	4413	5413	6413	6414	8414	7415	8415	10415
2'-2 1/2"	2'-1 1/2"	1'-8"	2422	4422	4423	5423	6423	6424	8424	7425	8425	10425
2'-2 1/2"	2'-1 1/2"	1'-8"	2512	4512	4513	5513	6513	6514	8514	7515	8515	10515
2'-2 1/2"	2'-1 1/2"	1'-8"	2522	4522	4523	5523	6523	6524	8524	7525	8525	10525

All Sizes Shown are Standard

Units 1 ft. wide (100 Series) have sash opening 1 ft. 2 in. wide. Glass size 12x12 in. (See Note.)

Units 2 ft. wide (200 Series) have sash opening 1 ft. 8 in. wide. Glass size 9x12 in. (See Note.)

Note: In addition to above sizes, special 3-light high units are available for use over kitchen sinks or work tables. These are made with sash opening 2 ft. 10 in. high—5 1/2 in. shorter than standard 130 and 230 units. When specifying this special height, add "KB" to standard 3-light high units and group numbers as: 130KB, 230KB, 2302KB, 4302KB, etc.

Divisions of glass, other than shown, can be supplied in standard openings, or all muntins may be omitted. Art or Special Glass furnished when so ordered.

Installation

"Unipak" basic Inner Units may be installed as single units or combined to produce the various groups shown.

Units furnished operative and stationary. Both types match. All operative sash open out.

All transoms are stationary.

Inner Frame Mullions between all sash.

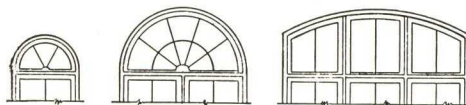
All operative sash are hung to Inner Frame and fully weather-stripped at factory.

Hardware and accessories including operators, sash locks, screen and double glazing panels shipped with Inner Units. Double glazing panels attached in place.

Order Information Required

- (1) Group or unit numbers.
- (2) Type of wall construction.
- (3) "Manually" or "Mechanically" operated.
- (4) Type of operator if mechanically operated: "Thru-Stool" or "Angle Drive."
- (5) Kind of glass.
- (6) If screens and double glazing are to be included.
- (7) Type of interior trim, whether cased or plaster returns. Also kind of wood and wall jamb width.
- (8) How many operative sash in each group and whether sash are to be hinged on right or left side as viewed from outside.

Important—In the interest of efficiency and appearance it is usually more desirable to use transom head units for openings over 4 lights high. As an example, units 241 are recommended in preference to units 250 and units 242 in preference to 251.

Irregular Heads

Circle top, segment head or other irregular head treatment, can be had over standard Unipak units. These are made either irregular in and out or square inside as desired. Be sure to specify. Such transoms are always stationary and usually furnished in one section. Installed same as standard units by attaching to outer frame with screws.

"UNIPAK UNIQUE" DOUBLE HUNG WINDOWS

TRADE MARK

PATENTED AND PATENTS PENDING

Companion Product to "Unipak" Casements

"Unipak Unique" Double Hung Windows are beautifully streamlined with narrow casings and mullions and effectively weatherstripped with built-in, interlocking weatherstrip. They are complete units embodying the same basic principle of weathertight Outer Frame and Inner Unit construction and installation as "Unipak" Wood Casements, described on preceding pages, and may be used in conjunction with them.

Outer Frame only is installed as walls are erected. It consists merely of wide blind stops, outside casings, and a portion of the sill (heavily outlined on detail).

Later, preferably after plaster is completed and dry, Inner Frame is assembled around the prefitted windows and the entire unit is lifted into position against Outer Frame and rigidly screwed in place. Holes for screws are drilled at factory and screws are furnished. As the windows and frames are factory fitted with all weatherstrip completely applied, assembly of unit and its installation requires only a few minutes time. Storm sash or muslin may be used to enclose building at plastering time.

All-Purpose Frame

"Unipak Unique" is an all-purpose frame—the same detail used for any type wall, siding, shingles, stucco, brick veneer or solid masonry. Adapted by using either drip FL-7480, or brick mould FL-7056-A. Always specify type of wall. All frames and sash made of clear W.P. Pine, chemically treated to resist moisture and termites and provide perfect paint base. Jambs are 1½ in. thick. Shipped semi set up, but completely fitted with all weatherstripping applied.

Interlocking Weatherstrip

Weatherstrip is a specially designed double interlocking type, with metal to metal sliding contact for entire sash travel. Rolled from cross grained zinc; very strong, yet sufficiently resilient to compensate for ordinary misalignments in sash or frame. It completely covers parting stops, thereby simplifying the painting of window and frame. Head, check rail and sill weatherstrip is compression type.

Smooth and frictionless in operation, this is without doubt the finest and most efficient weatherstrip made.

Sizes

Made in all standard sizes with any divisions of glass for windows. All divided light windows, however, are made to standard opening sizes for regular 2-light windows.

Rough Openings

Width—Add 7 in. to glass or 3 in. to sash opening.

Height—Add 10 in. to glass or 4 in. to sash opening.

Mullions—Add 6½ in. between glass or 2½ in. between sash.

Note: If brick veneer Outer Frames are set to overlap sheathing, order must so state as wider stops, stool, and liner will be required.

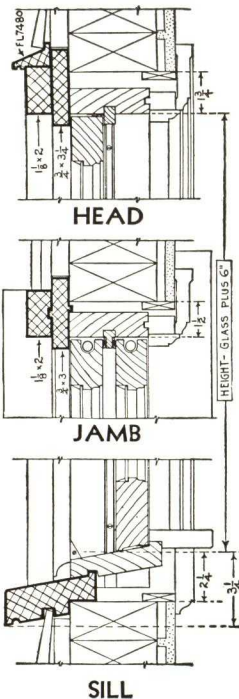
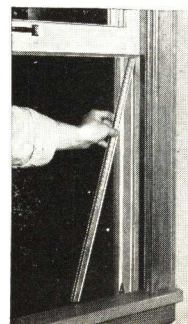
Architects' Specifications

Simply specify: All Double Hung Windows shall be "Unipak Unique" with interlocking weatherstrip as manufactured by FARLEY & LOETSCHER MFG. CO., Dubuque, Iowa. Exterior door frames shall match.

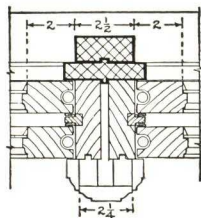
Details for unusual installations will be sent promptly on request.

Removal of Window

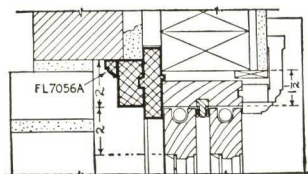
The weatherstripped parting stops divide at center line of window meeting rail. To remove window, after installation, remove the few screws which hold parting stops in place. The parting stop with its weatherstrip can then be pivoted out (as illustrated at right) which will automatically disengage the interlocking weatherstrip members and permit window to be removed or replaced without slightest injury to weatherstrip.



SILL

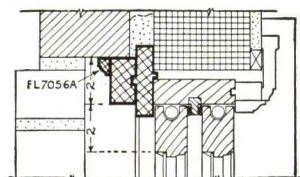


MULLION



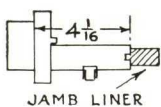
BRICK VENEER

(See note under Rough Openings)



SOLID MASONRY

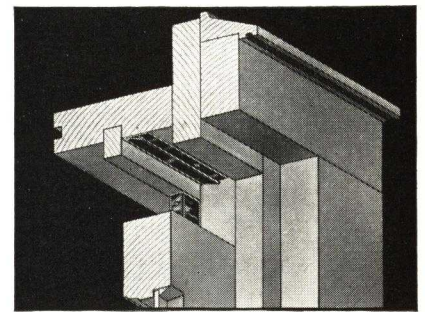
Scale—1½" = 1'-0"



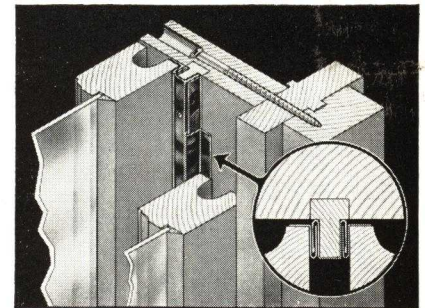
JAMB LINER

Jamb Liners

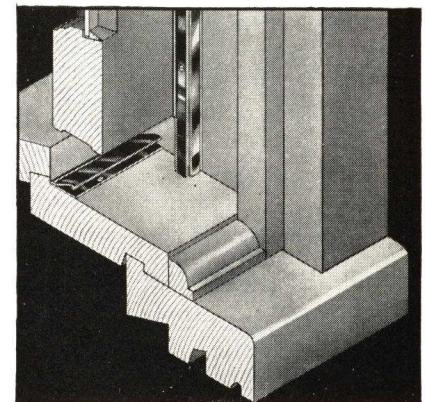
All frames furnished with standardized jambs 4⅝ in. wide for 1⅝ in. windows. If wall requires 5¼ in. jambs, 1⅝ in. liners are supplied. Thus, any width jamb is provided for without change in standardized frame. Liners are furnished with inside trim. Merely specify width of jamb over-all required.



Head



Jambs



Sill

"Unique" Sash Balances

"Unique" Sash Balances are used in "Unipak Unique" Double Hung Windows, eliminating pulleys, weights and cord, pulley holes and pockets.

This is a simple, highly efficient counterbalancing method which has been proved and tested by thousands of installations. It is made with an oil tempered torsion spring, encased in a rigid metal tube, which acts on a spiral lifting rod. Balance is fully contained within the runways of the sash. Painting will not affect its operation.



N. S. W. COMPANY

Non-Stick Windows—No Sash Weights

2137 Gratiot Avenue
DETROIT, MICH.

THE N. S. W. WINDOW—DESCRIPTION

A COMPLETE DOUBLE-HUNG WINDOW UNIT—Consists of "plank" frame, glazed sash hung on overhead spring balances, the whole completely weatherstripped. Frames are primed and sash waterproofed ready for final painting and application of lifts and locks by others.

FACTORY FABRICATED AND FITTED—Primed frames are mill assembled. Weatherstripping is shop-installed; sash are machine grooved and fitted with predetermined clearances, dip impregnated with colorless waterproofing, glazed and hung on properly adjusted balances.

DELIVERY AND ERECTION—As desired, frames may be delivered and built in, after which factory fitted weatherstripping and sash can be installed and adjusted by the manufacturer; or the complete factory assembled, glazed unit can be delivered ready to install.

COMPLETE METAL TO WOOD SASH RUNS—Heavy, accurately formed, factory-fitted, non-corrosive zinc sash runs include parting beads, weatherstripping ribs and returns at blind and inside stops. At no point does sash contact wood prone to shrink and swell.

WEATHERTIGHT—Plank frames and completely housed spring balances eliminate entirely the so-called "elsewhere air leakage". Factory-installed weatherstripping and sash mill-fitted and grooved permanently reduce air infiltration to a surprising minimum.

FRictionLESS, NON-STICK OPERATION—Complete, factory-installed metal sash runs coupled with sash machined to accurate clearances assures non-stick operation. While weathertight, sash run so smoothly that only a single spring balance is required per sash.

NOISELESS—The sash are held firmly in the frictionless metal jamb sash runs and glide noiselessly in operation. There is no excess play to cause sash to rattle. The high grade spring balances are permanently noiseless when operating.

GOOD APPEARANCE—Since the sash runs are completely metal faced, no unfinished portions of the frame are exposed. Complete architectural latitude is provided in the design of exterior and interior trim without affecting the basic principles of the sash operation.

NARROW MULLIONS—By the elimination of weight pockets, mullions, usually 7 inches wide, are reduced to $1\frac{5}{8}$ inches, assuring the maximum amount of unrestricted light area in multiple window installations and improving the appearance from both within and without.

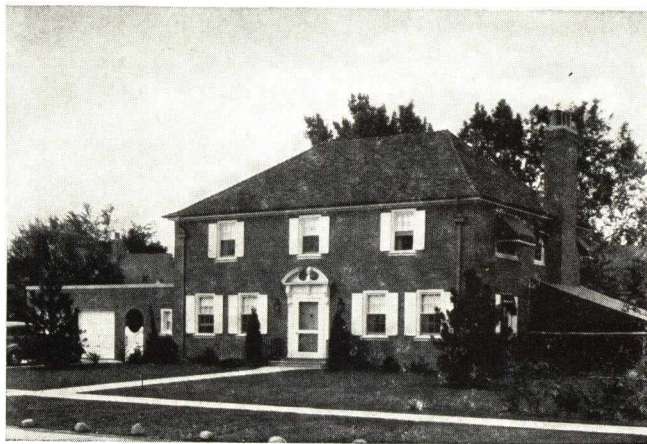
SASH EASILY REMOVED AND REPLACED—By removing the inside stops and eight screws which secure the metal sash runs to the frame, sash and runs are easily removed and replaced as a unit, without danger of damage to the sash assembly.

TAMPER PROOF—Once installed, they require no attention. Spring balances give lifetime service without maintenance. Climatic changes cannot affect predetermined sash clearances. Periodic painting never contacts the sash runways to cause the usual sticking.

SATISFACTORY OPERATION GUARANTEED—N.S.W. Windows have been in successful use for a period of 9 years. Undivided responsibility for not only weathertightness but frictionless, easy operation is guaranteed by selected, licensed manufacturers.

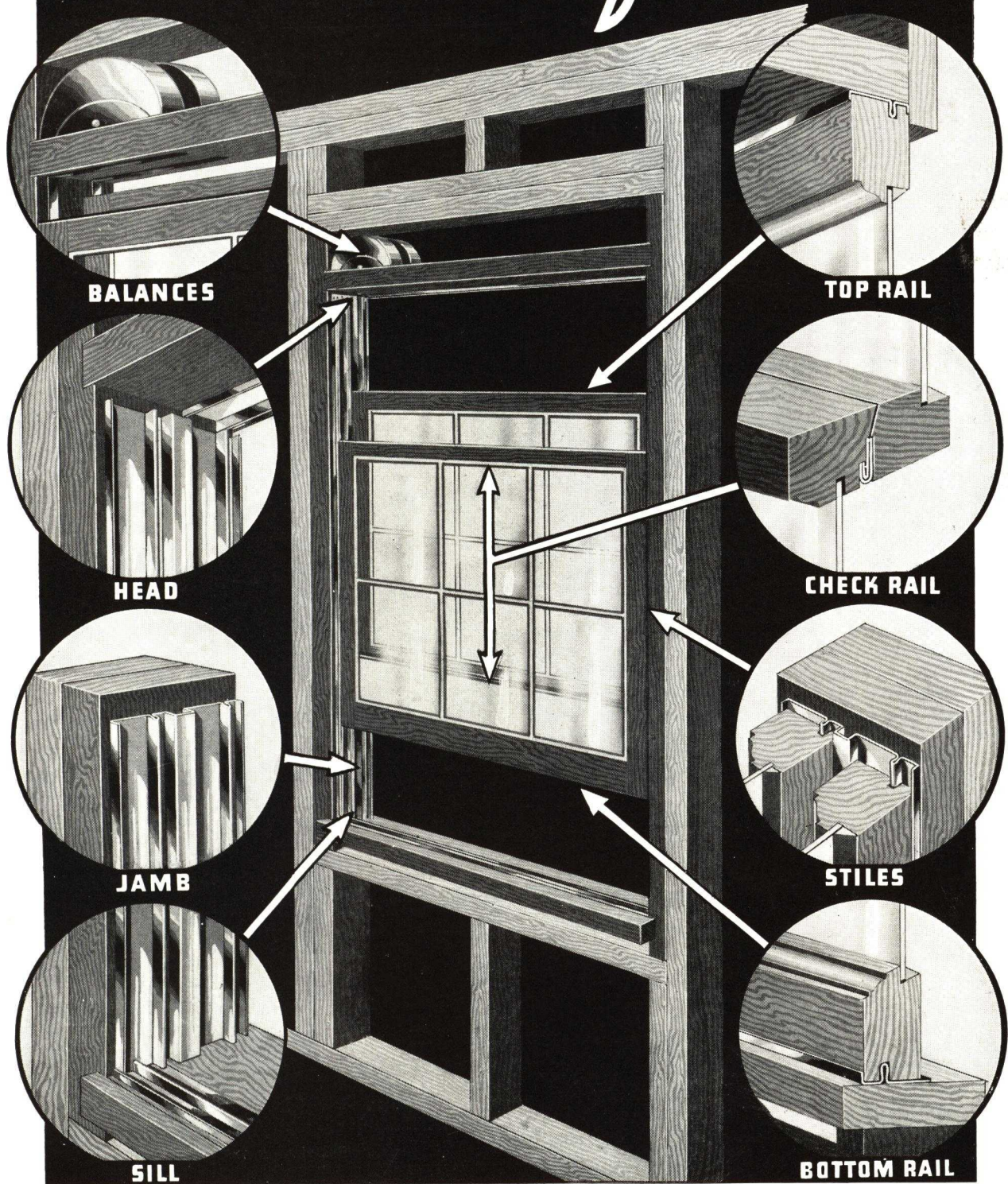


NURSES HOME, MICHIGAN STATE HOSPITAL, KALAMAZOO
Geo. W. Graves, Architect



RESIDENCE OF MORITZ KAHN, DETROIT, MICH.
Member of Firm of Albert Kahn, Architect, Detroit

the Trouble-Proof Window



THE N. S. W. NON STICK WINDOW ABOVE SHOWS THE REGULAR 2x4 IN. WINDOW FRAME SET IN STANDARD WOOD STUD CONSTRUCTION. THIS SAME FRAME UNIT WITH THE ADDITION OF GROUNDS IS READILY ADAPTED TO ALL OTHER TYPES OF WALL CONSTRUCTION FOR BOTH 1 $\frac{3}{8}$ IN. AND 1 $\frac{3}{4}$ IN. THICK SASH

OUTSTANDING FEATURES

DESIGN LATITUDE—While the details shown on pages 4 and 6 are standard with the various licensed manufacturers of the N.S.W. Windows, the architect may vary the design of the outside trim or staff beads to suit any special requirements of style or construction. Only the plank jambs, yoke and sill need follow the prescribed N.S.W. standard details. Obviously any interior trim may be used.

STURDY PLANK FRAMES—Jambs and yokes of N.S.W. Windows (entirely hidden by metal facing or interior trim) are made from standard 2 x 4 inch stud-ding ($1\frac{5}{8} \times 3\frac{5}{8}$ inches) of No. 1 Common S4S Douglas Fir or equivalent, dependent on local lumber markets. In wood frame construction, as shown on page 4, the frame jambs take the place of the "cripple" studs in the framed opening—an economy of material. As housed and assembled to accurate template measurements, the frames are particularly strong and weathertight.

Sills, blind stops, and exterior trim (casings or staff beads) are of clear pine.

NARROW MULLIONS—An outstanding feature of the N.S.W. Window is the narrow mullion. This, as detailed on page 6, may be as little as $1\frac{5}{8}$ inches in width. In multiple window installations, this materially reduces the span of lintels, increases the effective, uninterrupted light area and adds materially to the appearance both from within and without.

METAL WEATHERSTRIPPING SASH RUNS—The basic, patented feature of N.S.W. Windows is the complete metal sash runways or tracks for both $1\frac{3}{8}$ in. and $1\frac{3}{4}$ in. thick sash. These form complete jamb facings accurately machine rolled from a single strip of No. 9 gauge zinc and include parting bead, weatherstripping ribs, and, most important, return flanges at blind and inside stops. Similar features are provided at sill and head which, together with the interlocking metal members at the sash meeting rails, furnish complete, frictionless operation and weathertightness. The metal work is factory fitted to the window frames. There is no wood to wood contact between sash and frames. The return outer flanges permanently prevent binding due

to seasonal climatic changes as well as the usual paint sealing encountered in ordinary construction.

FACTORY-FITTED SASH—The sash, of clear pine, are accurately factory machine grooved and template fitted to the metal jamb, head, and sill members. Not only are true, ideal clearances maintained but the grooving is straight to fit the weatherstripping ribs—a condition seldom accomplished with hand fitted sash and weatherstripping applied at the building.

SPRING BALANCES—The spring balances used are the Pullman Sash Balances as made by Pullman Mfg. Corp.—a time-tested product of high quality. The springs are durable, remain uniform in tension and do not require oiling. Balances are guaranteed for the life of the building.

PRIMING AND WATERPROOFING—Frames, after assembly, are completely aluminum primed. This includes unexposed as well as exposed surfaces. The sash after mill fitting are dip-impregnated with a colorless waterproofing compound. This not only permanently seals the usually unfinished edges but protects the sash from moisture damage until final painting. The swelling and shrinkage of sash after accurate mill fitting is prevented.

A BETTER WINDOW AT LESS COST—Standard lumber plank frames equipped with but a single spring balance per sash reduces not only material but mill labor costs as compared to the usual weight-hung box-frame construction. Complete factory fabrication and assembly under ideal working conditions assures a better product at reduced labor costs. All inaccurate, time-consuming hand labor of sash fitting and weatherstrip installation is eliminated. All wood parts are adequately protected against moisture damage.

All these plus values, inherent in N.S.W. Windows, result in less rather than increased cost.

UNDIVIDED RESPONSIBILITY—Factory fabrication and assembly provide undivided responsibility for permanently frictionless operation and weathertightness.



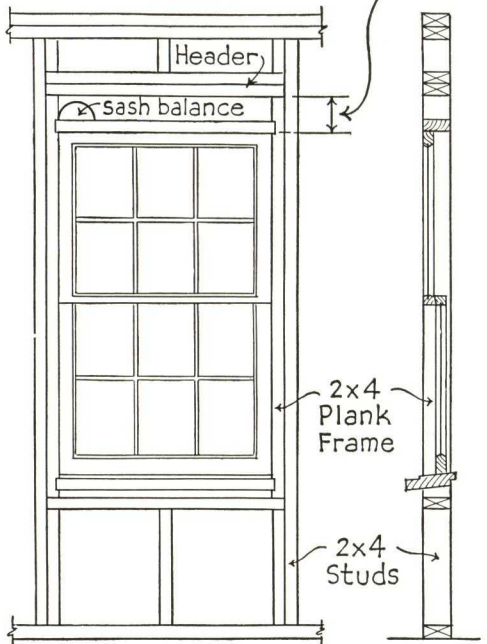
KENSINGTON HIGH SCHOOL, BUFFALO, N. Y.
Daniel McNeil, Architect



STOVER APARTMENTS, BUFFALO, N. Y.
Frederick Backus, Architect

DETAILS OF N.S.W. WINDOW CONSTRUCTION

For sash up to 100 lb. = $6\frac{1}{4}"$
 For sash up to 48 lb. = $4\frac{3}{4}"$
 For sash up to 28 lb. = $4"$

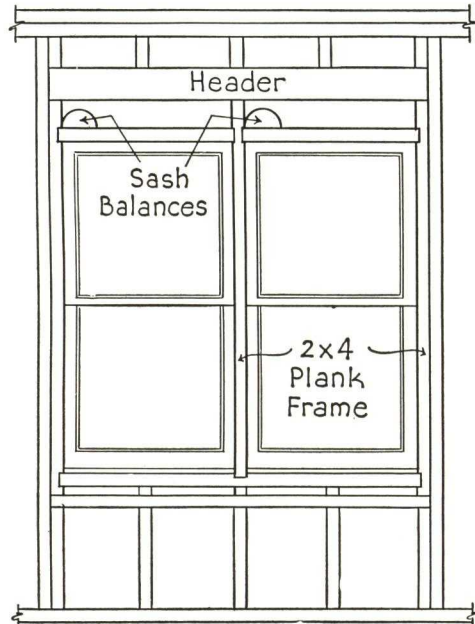


Elevation

Section

SINGLE WINDOW

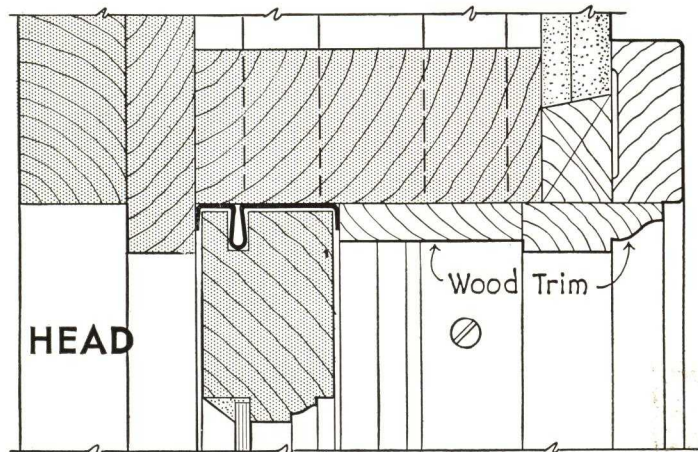
Detail showing Single N.S.W. Window Frame set in stud wall.



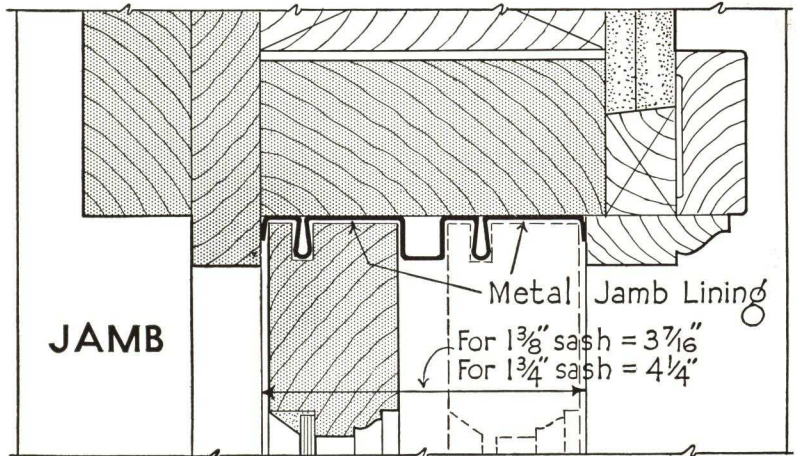
Elevation

MULLION WINDOW

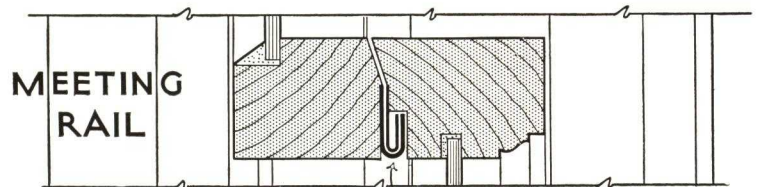
Detail showing Mullion N.S.W. Window Frame set in stud wall.



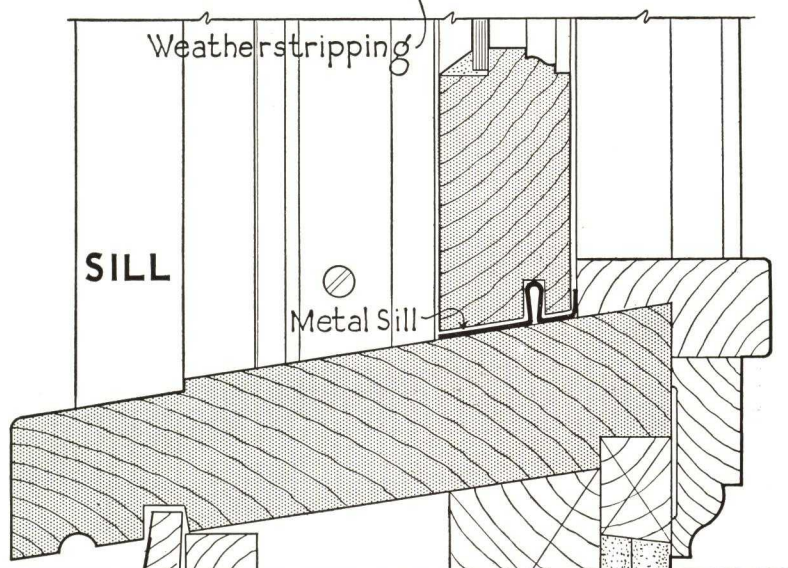
HEAD



JAMB



MEETING RAIL



SILL

SPECIFICATIONS—N. S. W. WINDOWS

GENERAL

All double hung windows shall be N.S.W. completely factory-assembled units as made by a manufacturer licensed by N. S. W. Company, 2137 Gratiot Ave., Detroit, Mich.

FRAMES

Plank jambs and yokes shall be made in accordance with N.S.W. standard details from No. 1 Common, S4S, (*specify species of wood*) 2x4 in ($1\frac{5}{8} \times 3\frac{5}{8}$ in.) standard framing lumber (*with jamb extenders as required*). Blind stops (*exterior trim*) (*staff beads*) and sills shall be as detailed made from clear pine.

SPRING BALANCES

Frames shall be equipped with Pullman Sash Balances as made by Pullman Mfg. Corp., one or two balances to each sash as the weight requires.

SASH

Sash shall be ($1\frac{3}{8}$ in.) ($1\frac{3}{4}$ in.) thick as detailed of clear pine, factory machine fitted to N.S.W. metal weatherstripping sash runs and matching head, sill, and meeting rail members.

PRIMING AND SASH WATERPROOFING

Frames shall be primed on all surfaces before assembly with aluminum paint. Sash shall be dip-impreg-

nated with colorless waterproofing compound after fitting and before glazing.

WEATHERSTRIPPING SASH RUNS, ETC.

Windows shall be equipped with factory-fitted and assembled N.S.W. patented jamb sash runs and matching head, sill, and meeting rail members of No. 9 gauge zinc.

GLAZING

Sash shall be glazed with (*specify glass*) back puttied and neatly face puttied with high grade wood sash putty.

DELIVERY

(*Select clauses (a) or (b) as best suited to conditions*).

(a) Assembled wood frames shall be delivered to be built into the rough structure. When called upon, the window manufacturer shall install in the erected frames the factory fitted metal weatherstripping and glazed sash and leave in perfect working condition.

(b) The complete assembled weatherstripped glazed window unit shall be delivered ready for erection.

RESPONSIBILITY

The window manufacturer shall assume full responsibility for free, frictionless sash operation and weather-tightness.

WHERE TO OBTAIN N. S. W. WINDOWS AND SERVICE

Adams & Kelly Company . .	Omaha, Neb.
Adams-Rogers Company . .	Indianapolis, Ind.
Edward J. Bahe Company . .	Chicago, Ill.
Byron Sash & Door Company	Louisville, Ky.
Builders Supply Co.	Knoxville, Tenn.
Carr & Moehl Company . . .	Des Moines, Iowa
Carry, Ryder & Adams Com- pany	Dubuque, Iowa
Carr-Johnston Company . .	Peoria, Ill.
Carr-Trombley Mfg. Company	St. Louis, Mo.

Collier-Barnett Company . .	Toledo, Ohio
Iron City Sash & Door Co. . .	Pittsburgh, Pa.
Morgan Company	Oshkosh, Wis.
Morgan Millwork Company .	Baltimore, Md.
Morgan Sash & Door Com- pany	Oklahoma City, Okla.
Mackey Millwork Co. . . .	Detroit, Mich.
The Throop-Martin Co. . . .	Columbus, Ohio
Whitmer-Jackson Company . .	Buffalo, N. Y.

PARTIAL LIST OF INSTALLATIONS

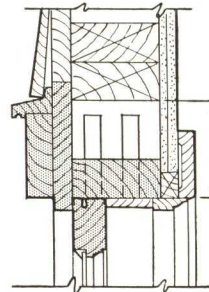
Selfridge Field, U. S. Army . .	Mount Clemens, Mich.
Fort Belvoir, U. S. Army . .	Virginia (near Washington, D. C.)
Patterson Field, U. S. Army .	Dayton, Ohio
School No. 37	Buffalo, N. Y.
Government Backed Subsistence Homesteads	Decatur, Ind.
Government Backed Subsistence Homesteads	Mount Pleasant, Pa.

Kensington High School . . .	Buffalo, N. Y.
John R. King School	Detroit, Mich.
Carleton School	Carleton, Mich.
Wyandotte Nurses Home . . .	Wyandotte, Mich.
Michigan State Hospital . . .	Kalamazoo, Mich.
First Hungarian Reform Church	Cleveland, Ohio

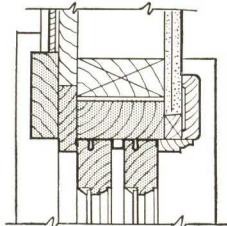
Numerous commercial buildings, college buildings, and homes and apartments from the small cottage to the \$50,000.00 home.

DETAILS OF N.S.W. WINDOW CONSTRUCTION

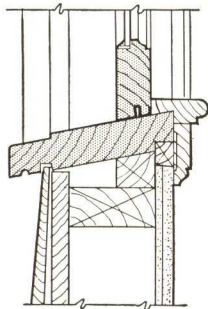
FRAME CONSTRUCTION



HEAD

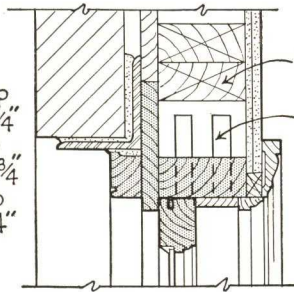


JAMB

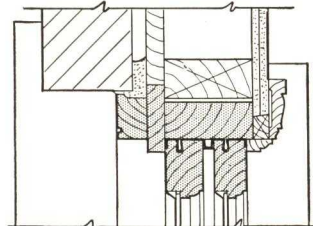


SILL

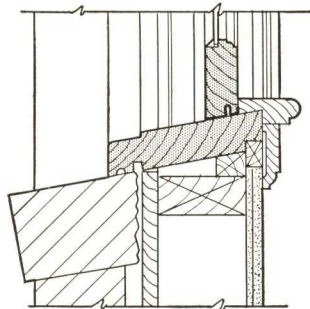
BRICK VENEER CONSTRUCTION



HEAD

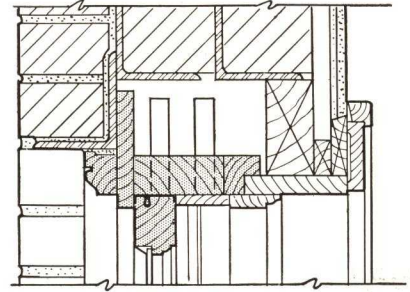


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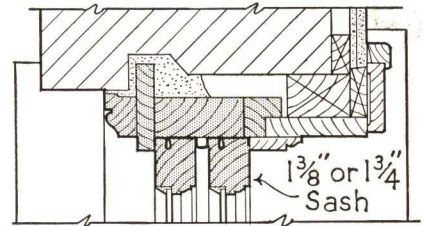


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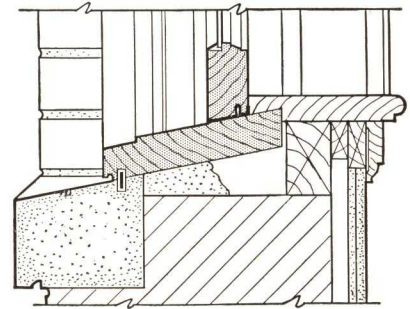
MASONRY CONSTRUCTION



HEAD

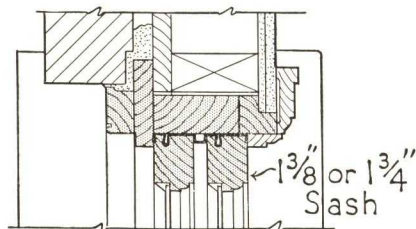


JAMB



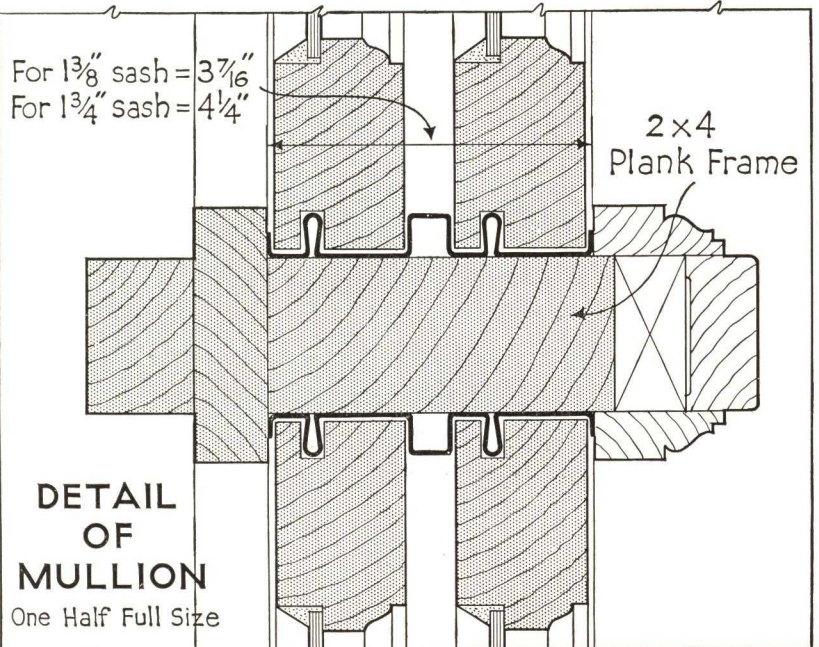
SILL

Shaded members indicate exterior trim, plank frame and sash furnished by the N.S.W. WINDOW CO. Interior trim by others.



JAMB

**ALTERNATE
BRICK VENEER
CONSTRUCTION**



**DETAIL
OF
MULLION**

One Half Full Size

MEMORANDA

A Manual
of
STANDARD
CONSTRUCTION
for
STOCK:SASH
DOORS *and* FRAMES

NATIONAL DOOR MANUFACTURERS ASSOCIATION, INC.

332 South Michigan Ave., Chicago, Ill.

BRANCH OFFICE: 919 17th Street, Northwest, Washington, D. C.

FOREWORD

THE ASSOCIATION—The Roster of the National Door Manufacturers Association consists of the country's largest producers of Ponderosa Pine Sash, Doors, and Frames and Hardwood Veneered Doors (see back cover). Through several generations of service to the construction industry, these national producers have developed standards of design, construction, and quality which assure to their users a maximum of utility, beauty, availability, and economy not only in first cost but in maintenance.

THE PURPOSE OF THIS CATALOG—The purpose of this catalog is to set forth clearly both in detail and specification the essential data and information regarding these products as they are manufactured in large quantities for the building trade. The details shown provide for variations in the width and thickness of some members. The variations in widths represent the differences established by common practice in various geographical centers. Minimum thicknesses are shown throughout, but the majority of items will actually finish $\frac{3}{8}$ inch thicker after sanding than shown on the details.

THE ADVANTAGES OF STOCK WINDOWS AND DOORS—In serving and protecting the best interests of his clients, it is the aim of every Architect and

Builder to avail himself of every logical economy which does not sacrifice quality. In no way can this be better accomplished than in acceptance and use of standardized (stock) products. Stock windows, doors, and frames as distinguished from products of costly, time-consuming special design and construction, have the following definite advantages in their favor:

(1) **Lower Cost**—Made on a quantity production basis from time-tried designs which have proven their economies in utilization of available stock lumber dimensions and species, specialized machine operations, and ease in distributing, warehousing, and marketing.

(2) **Availability**—Stock windows, doors, and frames are available for immediate delivery in all localities nationally. The same designs and quality are obtainable at the smaller country lumber and millwork distributing yards as are obtainable in the metropolitan centers.

(3) **Standardization**—The national standards of design and quality are adhered to rigidly.

(4) **Adaptability**—They are adapted to all types of construction and architectural design, and, by varied methods of installation and arrangement, may be used to produce special effects at a minimum of cost.

WINDOW OPENING SIZES

The following amounts are added to Glass Sizes to determine finished Window Opening Sizes

MARKET	1 $\frac{3}{8}$ and 1 $\frac{3}{4}$ 2 Light Wds.		1 $\frac{3}{8}$ and 1 $\frac{3}{4}$ 4 Light Wds.		1 $\frac{3}{8}$ and 1 $\frac{3}{4}$ 8 Light Wds.	
	Width	Length	Width	Length	Width	Length
Boston.....	3 $\frac{5}{8}$	5	3 $\frac{5}{8}$	5	3 $\frac{5}{8}$	5
New York.....	4	6	4	6	4	6
Western.....	4	6	5	6	5	6
Ohio.....	4 $\frac{1}{2}$	6 $\frac{1}{8}$	4 $\frac{1}{2}$	6 $\frac{1}{8}$	4 $\frac{1}{2}$	6 $\frac{1}{8}$
Washington (*).....	4 $\frac{1}{2}$	6 $\frac{1}{4}$	*4 $\frac{1}{2}$	6 $\frac{1}{4}$	*4 $\frac{1}{2}$	6 $\frac{1}{4}$
Baltimore (*).....	4 $\frac{1}{2}$	6 $\frac{1}{4}$	*4 $\frac{1}{2}$	6 $\frac{1}{4}$	*4 $\frac{1}{2}$	6 $\frac{1}{4}$
Philadelphia.....	4 $\frac{5}{8}$	6 $\frac{1}{2}$	4 $\frac{5}{8}$	6 $\frac{1}{2}$	4 $\frac{5}{8}$	6 $\frac{1}{2}$
Indianapolis.....	5	6 $\frac{1}{2}$	5	6	5	6
Wilkes-Barre.....	5	6	5	6	5	6
Southern.....	5	6	5	6	5	6

(*) NOTE: There are exceptions to the above layout on 4 and 8 light Baltimore and Washington sizes. On 4 and 8 Light Windows 13" and 14 $\frac{1}{2}$ " wide, allow 5 $\frac{1}{2}$ " for wood. On 4 Light Windows 14" wide, allow 5" where opening is 2' 9" and 6 $\frac{1}{2}$ " where opening is 2' 10 $\frac{1}{2}$ ". 13 $\frac{1}{4}$ ", 13 $\frac{1}{2}$ ", and 15" are not regular stock sizes. Where these layouts are ordered, a definite understanding as to width of stiles and muntins should be reached.

NOTE: Sizes of stiles and rails in all Markets may vary slightly with the different manufacturers, but the finished opening or overall size of window is essentially the same in all cases.

EXPLANATION OF SCHEDULE

OPENING SIZE OF 2 LIGHT WINDOW IN VARIOUS MARKETS

Glass Size	Boston	New York	Western	Ohio
24"x24"	2'3 $\frac{5}{8}$ "x4'5"	2'4"x4'6"	2'4"x4'6"	2'4 $\frac{1}{2}$ "x4'6 $\frac{1}{8}$ " Etc.
24"x26"	2'3 $\frac{5}{8}$ "x4'9"	2'4"x4'10"	2'4"x4'10"	2'4 $\frac{1}{2}$ "x4'10 $\frac{1}{8}$ " Etc.

OPENING SIZE OF 4 LIGHT WINDOW IN VARIOUS MARKETS

12"x24"	2'3 $\frac{5}{8}$ "x4'5"	2'4"x4'6"	2'5"x4'6"	2'4 $\frac{1}{2}$ "x4'6 $\frac{1}{8}$ " Etc.
12"x26"	2'3 $\frac{5}{8}$ "x4'9"	2'4"x4'10"	2'5"x4'10"	2'4 $\frac{1}{2}$ "x4'10 $\frac{1}{8}$ " Etc.

OUT OF THE LABORATORY COMES AN EVEN LONGER LIFE FOR WOOD



The long and splendid record of wood requires no apologies. The versatility, beauty, economy and durability of wood has been proven through the centuries. Today countless fine old American dwellings, churches and business buildings stand as monuments to the vital part wood has played in American architecture.

Windows, frames, doors and other forms of architectural woodwork have withstood the test of time in an impressive manner.

With the increased use of competitive materials, notably for sash and frames, there has been, due perhaps to competitive zeal, a tendency to over-emphasize the factor of "rot" or "decay" in wood products.

WHAT ARE THE FACTS?

The over-emphasis upon decay is glaringly apparent when one looks squarely at the actual facts. Among the millions of wood sash and frames in use, the percentage of failures due to decay has been infinitesimal. Competitive materials have as yet not withstood the actual test of long time service—nor are these wood substitutes free from destructive influences.

AIR CONDITIONING CREATES NEW SERVICE CONDITIONS

With the rapid expansion of air conditioning, sash and frames are being subjected to more severe service conditions primarily due to high humidities and the need for heat retention. Wood meets these new requirements of modern living better than any other material because wood possesses higher insulating qualities, is more adaptable to weather-stripping and the use of storm sash and, notably, does not sweat, weep, frost or drip in cold weather.

TOXIC TREATMENT FOR PERMANENCE

Leading manufacturers of wood windows and frames have kept pace with the increasing service demands upon their products by improvements in design and construction. Likewise, determined to prevent fungus attack in ALL wood sash and frames, they have been constantly at work devising and testing methods of preservation which would be consistently effective. These efforts, aided and supplemented by leading research laboratories and chemical manufacturers in cooperation with the National Door Manufacturers Association have produced the pre-eminently successful results represented by the

NDMA Preservative Minimum Standards.

Backed by the endorsement of the leading authorities in wood preservation methods and sponsored by this Association, the Preservative Minimum Standards have been established as a protection to makers, specifiers, sellers and users of architectural wood products.

THE SEAL OF APPROVAL FOR TOXIC PRESERVATION (see illustrations) is hot branded upon wood products which are toxic treated according to the Preservative Minimum Standards—an assurance to the buyer that adequate and effective preservative methods were employed.

The Preservative Minimum Standards provide for:

1. Minimum qualities of the toxic-chemical, i.e., toxicity and permanence in wood.
2. Minimum qualities of the complete treating solution, i.e., toxic strength, flash point, volatility, leachability, etc.
3. Minimum fungicidal protection of the wood, i.e., penetration and resistance to attack by fungus.

OPEN TO ALL MANUFACTURERS

The Preservative Minimum Standards is an industry development. All manufacturers may use the SEAL OF APPROVAL providing they conform strictly to the standards behind it and agree to periodic tests of treating solution and methods. Thus the SEAL OF APPROVAL stands as ample guarantee against ineffective or skimpy methods of wood preservation.

TECHNOLOGICAL ADVISORY COMMITTEE

Final decision for approval or disapproval of applications for License to use the SEAL OF APPROVAL rests with the Preservative Standards Committee of the National Door Manufacturers Association. Technological questions will be referred to an Advisory Committee of which the following recognized authorities are members: George M. Hunt, Dr. C. A. Richards, Dr. T. C. Scheffer, Dr. R. H. Baechler, Forest Products Laboratory, Madison, Wis.; Dr. E. E. Hubert, Research Technologist, Western Pine Association; Dr. Henry Schmitz, College of Forestry, University of Minnesota. The pathologists and research technologists of the leading chemical manufacturers are also members of this committee. These committees are keenly aware of their responsibilities and are committed to the highest ethical and scientific administration of the constructive Preservative Minimum Standards.

**WOOD IS BEST—WOOD Bearing This
Brand Is WOOD AT ITS BEST**



Specifications

• • •

STOCK WINDOW FRAMES and SASH

NOTE: Notes are explanatory or advisory only and should not be included in the specifications.

NOTE: Select and include only those clauses which apply to the particular work. Words within brackets in italics are selective.

(1) MATERIAL

(1a) All window frames and sash shall be made of Ponderosa Pine selected for straightness and in strict accordance with the grading rules of the National Door Manufacturers Association, Inc.

(1b) Lumber shall be dried to a moisture content of from 8 to 10 per cent before fabrication.

(1c) Frames shall be Grade "A" Quality.

(1d) Sash shall be First Quality.

NOTE: See Grading Rules, page 10.

(2) FRAMES

(2a) Window frames shall be of stock design, construction, and dimensions in accordance with the standard details of the National Door Manufacturers Association, Inc.

(2b) Frames shall be delivered (*knock down*) (*completely erected*) (*except for application of*) (*exterior trim*) (*staff beads*).

NOTE: Sill pitch varies from $1\frac{1}{2}$ to 3 inches per foot with different manufacturers—can be made to any pitch specified. In masonry wall frames, sills are customarily dadoed to receive jambs, whereas in frame wall frames the jambs are dadoed to receive the sills.

Inside stops and extension jambs are not considered parts of exterior frame.

(3) SASH

(3a) Window sash shall be of stock design and dimensions in accordance with the standard details of the National Door Manufacturers Association, Inc. They shall be ($1\frac{1}{8}$) ($1\frac{3}{8}$) ($1\frac{3}{4}$) (*specify*) inch thick. A "thickness tolerance" not exceeding $\frac{1}{16}$ inch less than the nominal thickness will be allowed.

NOTE: Sash can also be made $\frac{3}{4}$, $2\frac{1}{4}$, and $2\frac{1}{2}$ inch thick.

(3b) Sash shall be constructed, at the manufacturer's option, "mortised and tenoned" or "slot mortised."

(3c) Tenons shall be approximately three-quarters of the rail width. Sash shall be well clamped together and all tenons care-

fully pinned on the outside face with barbed steel pins set through tenons and countersunk.

(3d) The stiles of all double hung check rail windows shall be plowed and bored for sash cord attachment.

NOTE: Plain rail window sash are not plowed and bored.

(3e) Both sides of all sash including the top face of bottom sash check rail shall be machine sanded.

(3f) Bottom rails shall be rabbetted.

NOTE: Bottom rails are not rabbetted unless so specified.

(3g) Furnish wood glass stops where sash are not putty glazed.

(4) PRIMING OR PRESERVATIVE TREATMENT

NOTE: Unless otherwise specified, frames and sash are delivered unprimed in the white. A suitable priming will check moisture content changes to such an extent as to largely overcome swelling and subsequent shrinking after installation.

(4a) All (*frames*) (*and*) (*sash*) shall be primed before delivery.

(4b) All (*frames*) (*and*) (*sash*) shall be preservative treated in accordance with the Preservative Minimum Standards of the National Door Manufacturers Association and shall bear the NDMA Seal of Approval.

(4c) Priming coat shall consist of (*lead and linseed oil*) (*zinc, lead, and linseed oil*) (*high grade mixed paint*) (*reduced in accordance with the manufacturer's direction for first or priming coat work*).

(4d) The runs of frames and the edges of sash shall be thoroughly primed with raw linseed oil or liquid paraffine.

(4e) Sash primed before fitting shall have the exposed parts reprimed particularly under countersunk hardware.

(5) GLAZING

NOTE: Unless otherwise specified, glass is set with zinc points and high grade putty.

(5a) All sash unless otherwise specified shall be glazed with (SS) (DS) grade (A) (B) (*specify make*) (*flat drawn*) sheet glass.

NOTE: Note exceptions to above, if any.

NOTE: Unless otherwise specified, sash are furnished glazed in "B" or "Standard Glazing" quality.

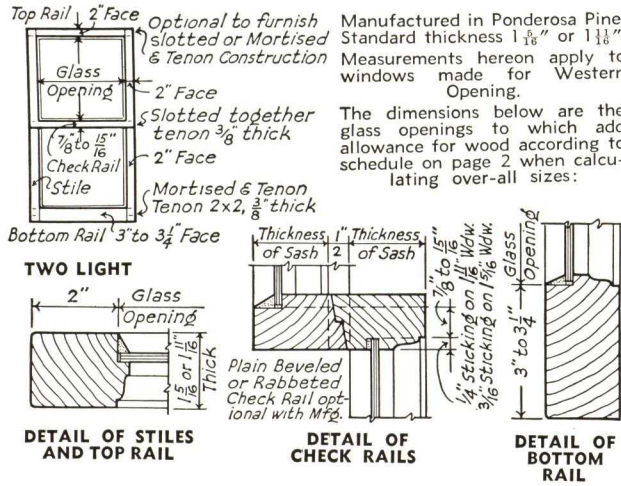
SHORT FORM

All stock window frames and sash shall be made in accordance with the standard specifications of the National Door Manufacturers Association, Inc. as filed in Sweet's Catalog File—Architectural.

Sash shall be (*specify*) thick.

CONSTRUCTION DETAILS

DOUBLE HUNG WINDOWS



SINGLE STRENGTH GLASS—GRADE "B"		
16"x20"	18"x24"	20"x24"
16"x24"	18"x26"	20"x26"
16"x28"	18"x28"	20"x28"
18"x20"	20"x20"	
DOUBLE OR SINGLE STRENGTH GLASS—GRADE "B"		
24"x20"	24"x30"	28"x26"
24"x24"	26"x24"	28"x28"
24"x26"	26"x26"	28"x28"
24"x28"	26"x28"	30"x30"
	26"x30"	

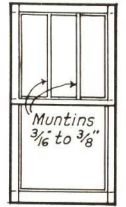
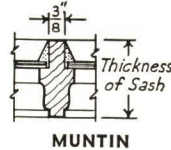
Generally stocked in S.S. glass but can be furnished with glass as desired.

DIVIDED TOP WINDOWS

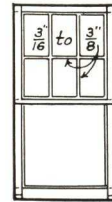
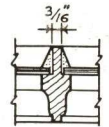
Layout, size of stiles and rails, also glass sizes for 2 light windows apply for all divided top windows.

NOTE:

In some Mills, windows and sash are carried in stock with O.G. sticking as shown while others carry same with Ovolo sticking. Therefore, when strictly stock windows are wanted, sticking will be optional with manufacturer.



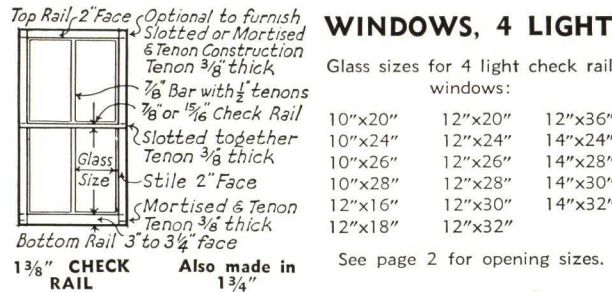
THREE LIGHT TOP



See page 6 for other divisions in top sash.

The sizes of stiles, rails, etc. as made by the different manufacturers vary slightly as noted on elevations, but in all cases the finished opening size is the same, i. e., for 2 light Western Openings, all finished openings are 4" wider and 6" higher than glass openings ordered.

See page 2 for allowance over glass size for openings in other markets.



WINDOWS, 4 LIGHT

Glass sizes for 4 light check rail windows:

10"x20"	12"x20"	12"x36"
10"x24"	12"x24"	14"x24"
10"x26"	12"x26"	14"x28"
10"x28"	12"x28"	14"x30"
12"x16"	12"x30"	14"x32"
12"x18"	12"x32"	

See page 2 for opening sizes.

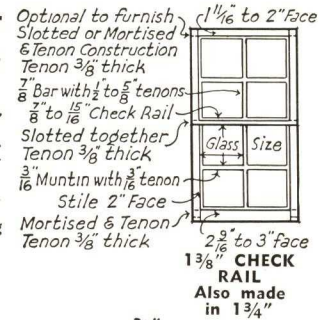
WINDOWS, 8 LIGHT

Glass sizes for 8 light check rail windows:

8"x10"	10"x14"	12"x16"
9"x12"	10"x16"	.....
10"x12"	12"x14"	.....

See page 2 for opening sizes.

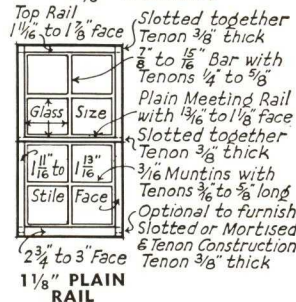
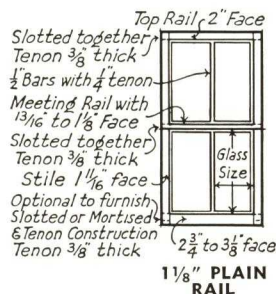
Finished thickness after sanding 1 1/8" or 1 1/4".



4 LIGHT AND 8 LIGHT WINDOWS:

All manufactured in Ponderosa Pine with glass as desired. Finished thickness 1 1/8", 1 1/4", and 1 1/2" after sanding. Measurements shown apply to windows made for Western Openings. See page 2 for opening sizes for all markets.

Glass sizes for 4 light plain rail windows: 12"x20", 12"x24".



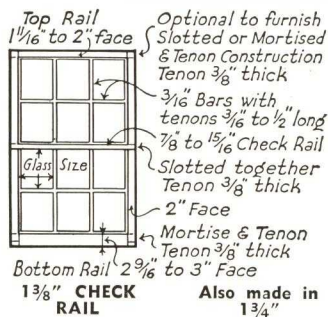
Glass sizes for 8 light plain rail windows:

8"x10"	10"x12"	12"x14"
9"x12"	10"x14"	12"x16"

See page 2 for opening sizes.

Finished thickness after sanding 1 1/8".

CONSTRUCTION DETAILS



WINDOWS, 12 LIGHT

Glass sizes for 12 light check rail windows:

8"x10"	10"x12"	12"x14"
8"x12"	10"x14"	12"x16"
9"x12"	10"x16"	12"x18"
9"x14"	.....	.....

See page 2 for opening sizes. Finished thickness after sanding 1 1/8" or 1 1/16".

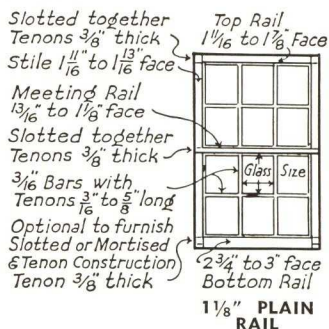
TWELVE LIGHT WINDOWS

All manufactured in Ponderosa Pine with glass as desired. Standard thickness 1 1/16", 1 1/8", and 1 1/4" after sanding. Measurements shown apply to windows made for Western Openings. Opening sizes for all markets scheduled on page 2. See page 4 for sections of windows.

Glass sizes for 12 light plain rail windows:

8"x10"	9"x12"	10"x12"
8"x12"	9"x14"	10"x14"
.....	.....	10"x16"

See page 2 for opening sizes. Finished thickness after sanding 1 1/8".



SASH

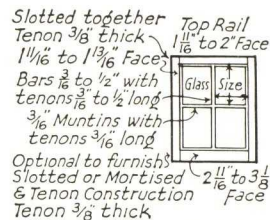
4 LIGHT 1 1/8" and 1 3/8"

Glass Sizes:

8"x10"	10"x10"	10"x14"	12"x12"
9"x12"	10"x12"	10"x16"	12"x14"
9"x14"	.....	.....	12"x16"

For Western Opening, add 4" in width and 5" in height to glass openings.

Finished thickness after sanding 1 1/8" and 1 1/16".



FOUR LIGHT

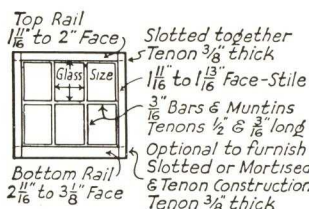
6 LIGHT 1 1/8" and 1 3/8"

Glass Sizes:

8"x10"	9"x12"	10"x12"	10"x14"
.....	.....	.....	10"x16"

For Western Opening, add 4" in width and 5" in height to glass openings.

Finished thickness after sanding 1 1/8" and 1 1/16".



SIX LIGHT

9 LIGHT 1 1/8" and 1 3/8"

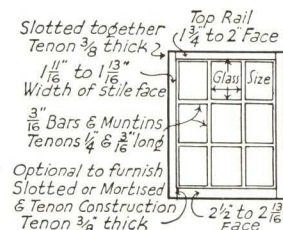
Glass Sizes:

8"x10"	9"x12"
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For Western Opening, add 4" in width and 5" in height to glass openings.

Finished thickness after sanding 1 1/8" and 1 1/16".

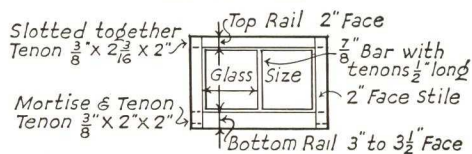
All sash manufactured in Ponderosa Pine with glass as desired.



NINE LIGHT

CELLAR SASH

1 1/8" and 1 3/8"

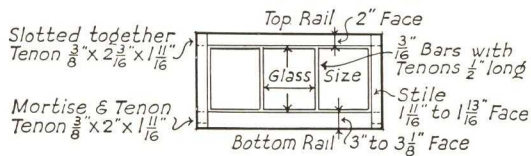


TWO LIGHT

10"x12"	12"x12"	12"x18"	14"x16"
10"x14"	12"x14"	12"x20"	14"x18"
10"x16"	12"x16"	12"x24"	14"x20"

For Western Opening, add 5" in width and 5" in height to glass openings.

Finished thickness after sanding 1 1/8" and 1 1/16".



THREE LIGHT

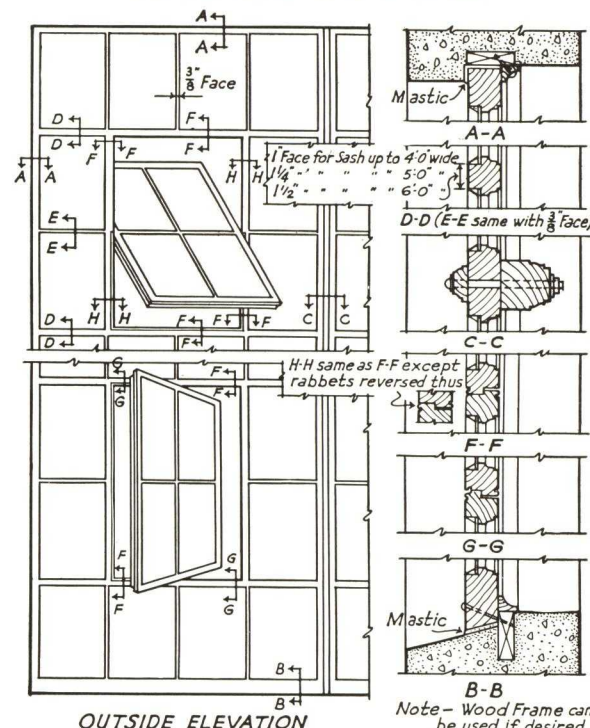
7"x9"	9"x14"	10"x14"	12"x14"
8"x10"	9"x16"	10"x16"	12"x16"
9"x12"	10"x12"	10"x18"	.....

For Western Opening, add 4" in width and 5" in height to glass openings.

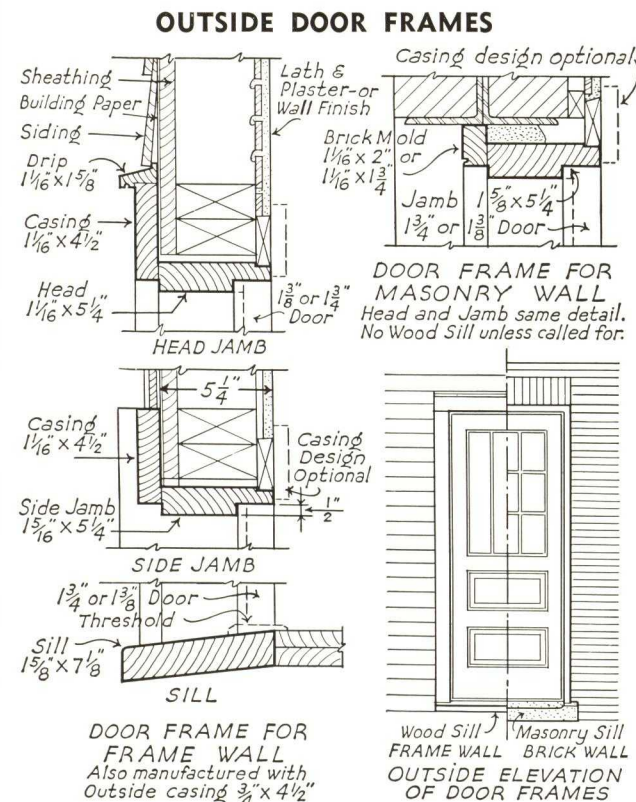
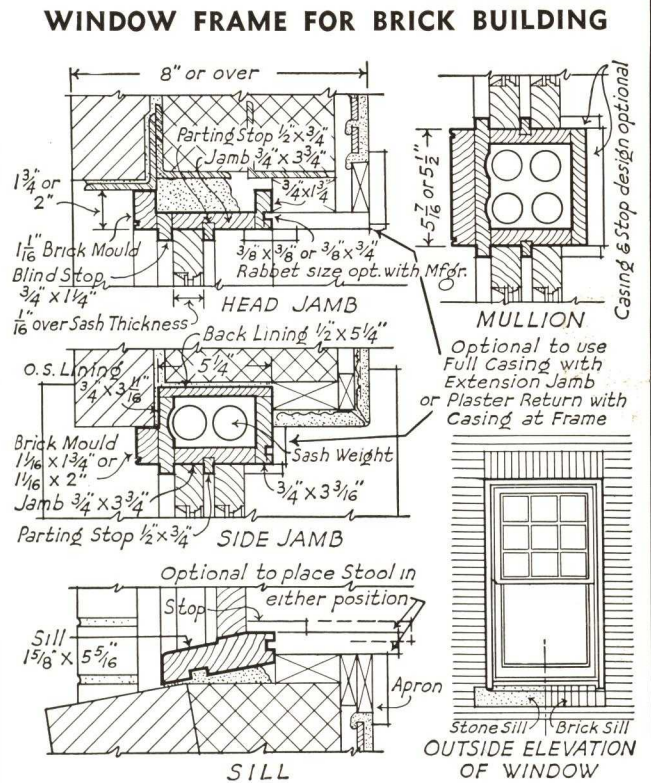
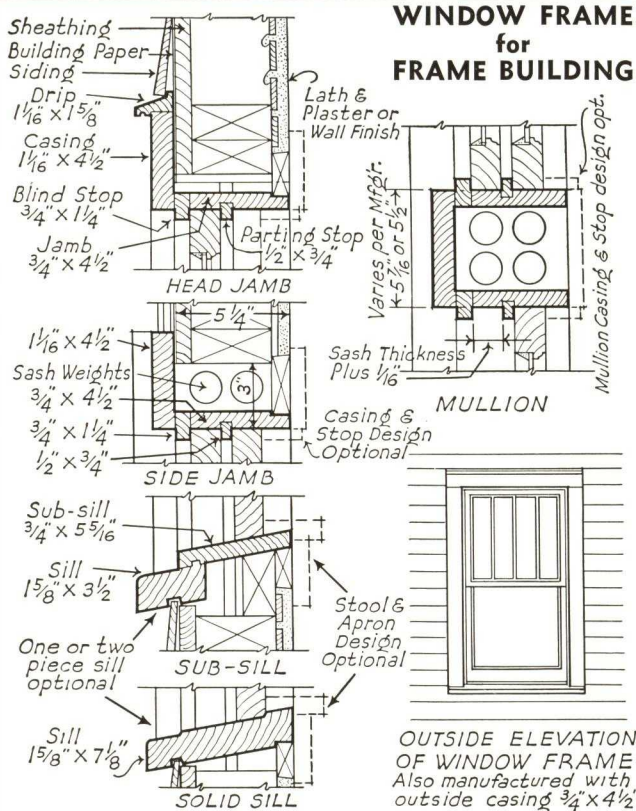
Finished thickness after sanding 1 1/8" and 1 1/16".

Cellar sash manufactured in Ponderosa Pine with glass as desired.

INDUSTRIAL WOOD SASH



WINDOW and DOOR FRAME DETAILS



NOTE: In these frame details "butt-joints" are shown between outside casings and blind stops, and between blind stops and jambs. "Tongued and Grooved" joints are optional with manufacturer and will be furnished by all manufacturers when specified.

DETAILING SPECIAL FRAMES

In detailing frames, economy in construction without loss in effect will be promoted if the standard sizes of lumber, especially thicknesses, are adhered to closely. Kiln dried frame material up to 2 inches (rough), which will finish up to $1\frac{5}{8}$ inches in thickness, is usually carried in stock. If thicker stock is required, it usually has to be cut and dried to order which requires more time and increases production costs materially. If frame members thicker than $1\frac{5}{8}$ inches are required, it is recommended that millwork plants be given the option of supplying them in built-up form. This form of construction is considered to be as good as that calling for use of one large piece. Granting this privilege may simplify a job for a millwork plant with no resultant loss in construction value.

Recommended thicknesses for pulley stiles or jambs are $\frac{3}{4}$ and $1\frac{1}{8}$ inch.

Recommended thicknesses for rabbeted jambs are $1\frac{1}{8}$ and $1\frac{5}{8}$ inches.

Recommended thicknesses for sills is $1\frac{5}{8}$ inches. The appearance of greater thickness, when this effect is desired for purposes of design, may be produced by beveling the front side of the sill.

Specifications

STOCK SOLID DOORS and FRAMES

NOTE: Notes are explanatory or advisory only and should not be included in the specifications.

NOTE: Select and include only those clauses which apply to the particular work. Words within brackets in *italics* are selective.

(1) MATERIAL

(1a) All solid doors and frames shall be made of Ponderosa Pine selected for straightness and in strict accordance with the Grading Rules of the National Door Manufacturers Association, Inc.

(1b) Lumber shall be dried to a moisture content of from 8 to 10 per cent before fabrication.

(1c) Frames shall be Grade "A" Quality.

(1d) Doors shall be (First) (Second) (Third) Quality.

NOTE: See grading rules, page 10.

(2) FRAMES

(2a) Door frames shall be of stock design, construction, and dimensions in accordance with the standard details of the National Door Manufacturers Association, Inc.

(2b) Frames shall be delivered (knock down) (completely erected) (except for application of) (exterior trim) (staff beads).

NOTE: Unless otherwise specified, sills for door frames are furnished in Pine.

(2c) Sills for door frames shall be clear (Pine) (Oak).

(2d) Frames shall be preservative treated in accordance with the Preservative Minimum Standards of the National Door Manufacturers Association, Inc.

facturers Association and shall bear the NDMA Seal of Approval.

(3) DOORS

(3a) Doors shall be of stock design and dimensions in accordance with the standard details of the National Door Manufacturers Association, Inc. They shall be (1 $\frac{3}{8}$) (1 $\frac{3}{4}$) (*specify*) inch thick. A "thickness tolerance" not exceeding $\frac{1}{16}$ inch less than the nominal thickness will be allowed.

NOTE: Doors can also be made $\frac{3}{4}$, 1 $\frac{1}{8}$, and 2 $\frac{1}{4}$ inch thick.

(3b) Stiles and rails shall have (*specify type*) solid sticking with solid raised panels. All intersections shall be coped with joints well fitted.

NOTE: Unless otherwise specified, stock doors are assembled with hardwood dowels extended into stiles and rails approximately one half the width of the stiles.

(3c) Doors shall be (*describe panel arrangement including glazing requirements*).

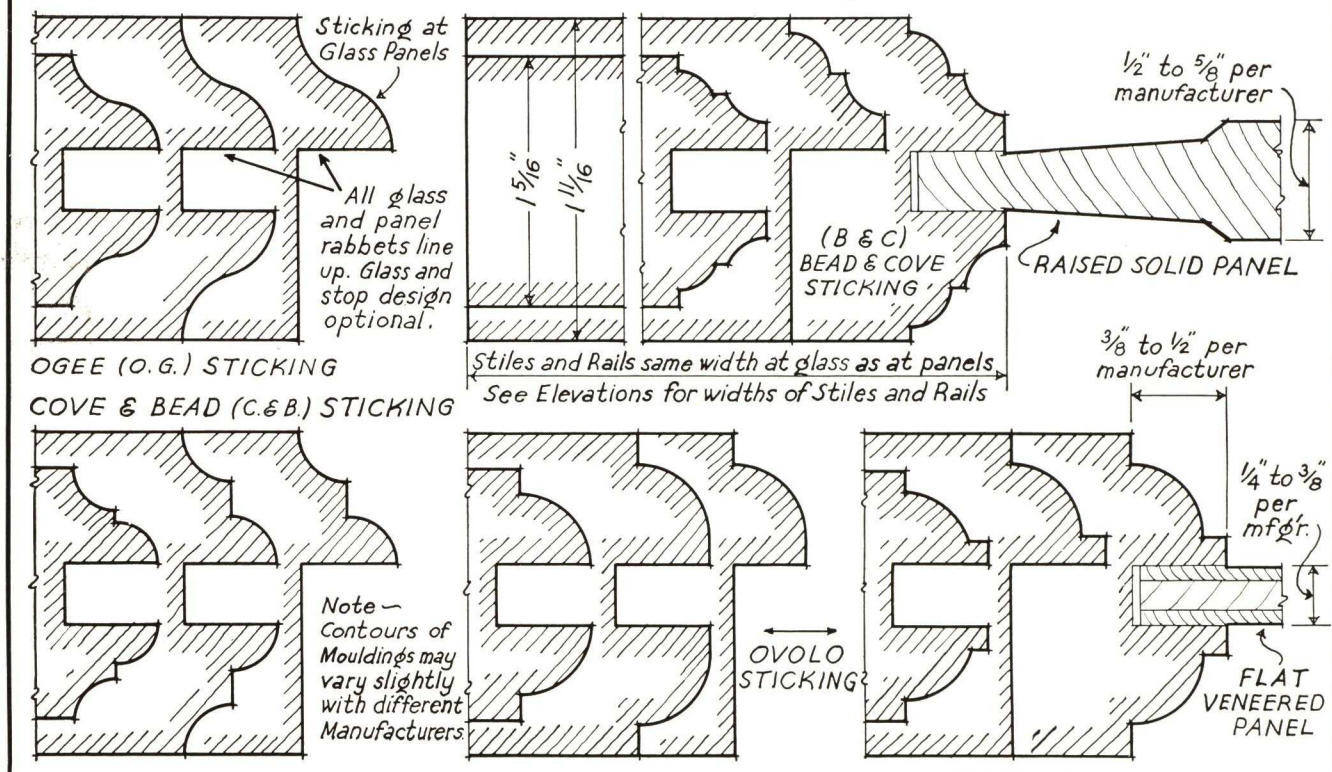
NOTE: Unless otherwise specified, glass stops are furnished for all glazed doors. Faces of all doors are machine sanded.

SHORT FORM

All stock solid doors (and frames) shall be made in accordance with the standard specifications of the National Door Manufacturers Association, Inc. as filed in Sweet's Catalog File—Architectural.

Doors shall be (*specify*) thick.

STANDARD TYPES OF DOOR STICKING and PANELS



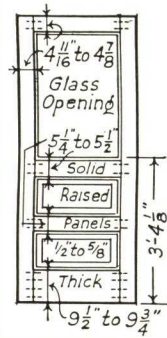
CONSTRUCTION DETAILS

EXTERIOR DOORS

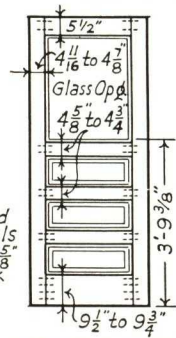
Manufactured in Ponderosa Pine with pine panels as shown on elevations. Moulded B&C, C&B or Ovolo sticking. Standard thickness of doors $1\frac{1}{8}$ " or $1\frac{1}{4}$ ".

STANDARD SIZES

2' 6" x 6' 6"	2' 10" x 6' 10"
2' 8" x 6' 8"	2' 8" x 7' 0"
3' 0" x 6' 8"	3' 0" x 7' 0"



TWO PANEL AND ONE LIGHT

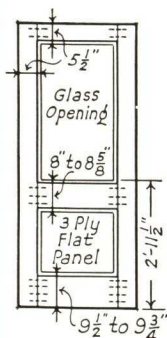


THREE PANEL AND ONE LIGHT

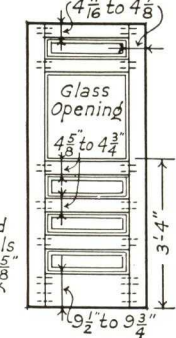
GLASS DIVISIONS

All glass openings in exterior doors can be divided into smaller lights as desired. Usual divisions are:

- 3 lights wide
- 4 lights (2 wide—2 high)
- 6 lights (3 wide—2 high)
- 9 lights (3 wide—3 high)



ONE PANEL AND ONE LIGHT



FOUR PANEL AND ONE LIGHT

CASEMENT DOORS

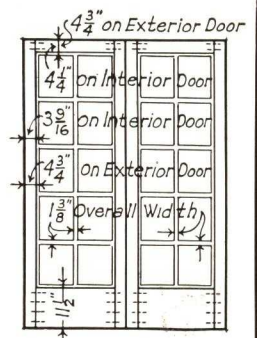
TEN OR FIFTEEN LIGHT CASEMENT DESIGN

Manufactured in Ponderosa Pine with glass as desired. Moulded B&C, C&B, O.G., or Ovolo sticking. Standard thickness of doors $1\frac{1}{8}$ " and $1\frac{1}{4}$ ".

Interior Casement Doors are also made in any hardwood with veneered stiles and rails and solid division bars.

STANDARD SIZES

- 4'-0" opening, 2'-0" x 6'-8" or 2'-0" x 7'-0"
- 4'-8" opening, 2'-4" x 6'-8" or 2'-4" x 7'-0"
- 5'-0" opening, 2'-6" x 6'-8" or 2'-6" x 7'-0"
- 5'-0" opening, 2'-8" x 6'-8" or 2'-8" x 7'-0"



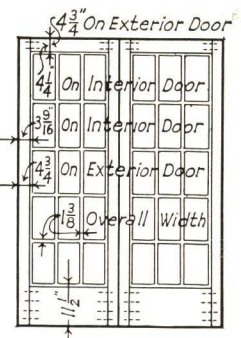
TEN LIGHT DESIGN

CASEMENT DESIGNS

Casement doors can also be divided into:

- 8 lights (2 wide—4 high) and
- 12 lights (3 wide—4 high).

Pairs of casement doors in openings less than 5'-0" wide have $3\frac{1}{8}$ " stiles as shown while pairs in openings 5'-0" wide and wider have $4\frac{1}{4}$ " stiles.



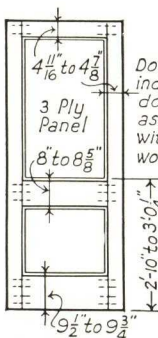
FIFTEEN LIGHT DESIGN

INTERIOR DOORS

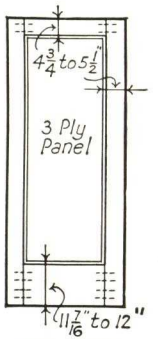
Lock rail heights, width of stiles, and width of rails as noted on all elevations are minimum and maximum dimensions as used by the various manufacturers.

STANDARD SIZES OF ONE, TWO, AND SIX PANEL DOORS

2'-0" x 6'-0", $1\frac{3}{8}$ "	2'-10" x 6'-10", $1\frac{3}{8}$ "
2'-0" x 6'-6", $1\frac{3}{8}$ "	3'-0" x 6'-8", $1\frac{3}{8}$ "
2'-0" x 6'-8", $1\frac{3}{8}$ "	3'-0" x 7'-0", $1\frac{3}{8}$ "
2'-0" x 7'-0", $1\frac{3}{8}$ "	2'-6" x 6'-6", $1\frac{3}{4}$ "
2'-4" x 6'-6", $1\frac{3}{8}$ "	2'-6" x 6'-8", $1\frac{3}{4}$ "
2'-4" x 6'-8", $1\frac{3}{8}$ "	2'-6" x 7'-0", $1\frac{3}{4}$ "
2'-6" x 6'-6", $1\frac{3}{8}$ "	2'-8" x 6'-8", $1\frac{3}{4}$ "
2'-6" x 6'-8", $1\frac{3}{8}$ "	2'-8" x 7'-0", $1\frac{3}{4}$ "
2'-6" x 7'-0", $1\frac{3}{8}$ "	2'-10" x 6'-10", $1\frac{3}{4}$ "
2'-8" x 6'-8", $1\frac{3}{8}$ "	3'-0" x 6'-8", $1\frac{3}{4}$ "
2'-8" x 7'-0", $1\frac{3}{8}$ "	3'-0" x 7'-0", $1\frac{3}{4}$ "



TWO PANEL



ONE PANEL

ONE AND TWO PANEL DESIGNS

Manufactured in Ponderosa Pine with laminated flat panels of pine, fir, gum, or birch. Moulded C&B, B&C or Ovolo Sticking. Standard thickness of doors $1\frac{1}{8}$ " or $1\frac{1}{4}$ ". Made also in any Hardwood with veneered stiles, rails and panels.

INTERIOR DOORS

SIX PANEL DESIGN

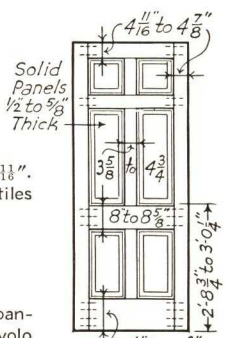
Manufactured in Ponderosa Pine with raised panels of solid pine. Moulded B&C, C&B, or Ovolo Sticking. Panels $\frac{1}{2}$ " thick. Standard thickness of doors $1\frac{1}{8}$ ", $1\frac{1}{4}$ ", or $1\frac{1}{2}$ ". Made also in any Hardwood with veneered stiles and rails, and flat veneered panels.

FIVE CROSS PANEL DESIGN

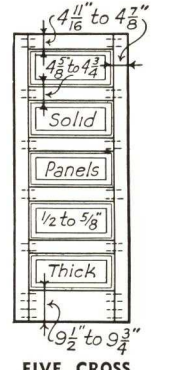
Manufactured in Ponderosa Pine with raised panels of solid pine. Moulded OG, C&B, or Ovolo Sticking. Standard thickness of doors $1\frac{1}{8}$ ", $1\frac{1}{4}$ ", or $1\frac{1}{2}$ ". Panels $\frac{1}{2}$ " thick.

STANDARD SIZES OF FIVE PANEL DESIGN

2'-0" x 6'-0", $1\frac{1}{8}$ "	2'-6" x 7'-0", $1\frac{3}{8}$ "
2'-0" x 6'-8", $1\frac{1}{8}$ "	2'-8" x 6'-8", $1\frac{3}{8}$ "
2'-4" x 6'-8", $1\frac{1}{8}$ "	2'-8" x 7'-0", $1\frac{3}{8}$ "
2'-6" x 6'-6", $1\frac{1}{8}$ "	2'-10" x 6'-10", $1\frac{3}{8}$ "
2'-6" x 6'-8", $1\frac{1}{8}$ "	3'-0" x 6'-8", $1\frac{3}{8}$ "
2'-8" x 6'-8", $1\frac{1}{8}$ "	3'-0" x 7'-0", $1\frac{3}{8}$ "
2'-0" x 6'-0", $1\frac{3}{8}$ "	2'-6" x 6'-6", $1\frac{3}{4}$ "
2'-0" x 6'-6", $1\frac{3}{8}$ "	2'-6" x 6'-8", $1\frac{3}{4}$ "
2'-0" x 6'-8", $1\frac{3}{8}$ "	2'-6" x 7'-0", $1\frac{3}{4}$ "
2'-0" x 7'-0", $1\frac{3}{8}$ "	2'-8" x 6'-8", $1\frac{3}{4}$ "
2'-4" x 6'-6", $1\frac{3}{8}$ "	2'-8" x 7'-0", $1\frac{3}{4}$ "
2'-4" x 6'-8", $1\frac{3}{8}$ "	2'-10" x 6'-10", $1\frac{3}{4}$ "
2'-6" x 6'-6", $1\frac{3}{8}$ "	3'-0" x 6'-8", $1\frac{3}{4}$ "
2'-6" x 6'-8", $1\frac{3}{8}$ "	3'-0" x 7'-0", $1\frac{3}{4}$ "



SIX PANEL



FIVE CROSS PANEL

Specifications

STOCK VENEERED DOORS

NOTE: Notes are explanatory or advisory only and should not be included in the specifications.

NOTE: Select and include only those clauses which apply to the particular work. Words within brackets in italics are selective.

(1) MATERIAL AND CONSTRUCTION

(1a) **GENERAL**—All doors shall be of size and design as called for on plans (*and details*) constructed in accordance with the standard details of the National Door Manufacturers Association, Inc.

(1a1) All doors shall be constructed of thoroughly seasoned material redried by the door manufacturer before assembly to a proper, uniform moisture content suitable for the climate in which they are to be used.

(1b) **GLUE AND GLUING**—Glue for all fabrication shall be high grade vegetable glue or water resisting casein glue equally distributed over the surfaces and applied under pressure before "chilling."

(1c) **CORES**—All cores shall be constructed of soft pine blocks not over 2 inches wide on the face with end joints in adjacent rows well staggered.

(1c1) Outer exposed edges of all stiles and rails shall be finished with a 3/4 inch thick strip of same wood as face veneer wood.

(1c2) Cores, after gluing, shall be planed smooth to a uniform thickness.

(1d) **SANDING**—Faces of all doors shall be smoothly machine sanded with "00" sandpaper.

(2) INTERIOR STILE AND RAIL DOORS

(2a) All cores for stiles and rails shall be finished on panel edges with a 3/4 inch thick strip of face veneer wood.

(2b) Stiles and rails shall have (*specify type*) solid sticking.

(2c) Furnish glass stops (*and muntins*) of face veneer wood.

(2d) Face veneers for stiles and rails shall be of (*specify wood*) 1/8 inch thick before sanding.

(2e) Panels shall be of (*three*) (*five*) ply veneer faced with (*specify wood*) veneer of standard commercial thickness. Grains of the various plies shall alternate in direction.

(2f) All stiles and rails shall be assembled with hard wood dowels not less than 1/2 inch in diameter by 5 inches long. On rails 6 inches or less in width, there shall be two dowels with one additional dowel for each additional 3 inches in width or fraction thereof. All joints shall be well cope fitted and all moulded edges smoothly machined.

(3) INTERIOR FLUSH VENEER DOORS

(3a) At the option of the manufacturer, the core shall be constructed of vertical blocks not over 2 inches wide on the face, well glued together with joints staggered and surrounded with 3/4 inch hardwood edge strip on all four edges; or shall be constructed of stile, rail and panel units, each unit made up entirely of blocks with 3/4 inch edge strips on the exposed edges of stiles and rails.

(3b) In lieu of 3/4 inch hardwood top and bottom edge strips, the tops and bottoms of the doors shall be given two coats of paint or varnish before leaving the factory.

(3c) Horizontal crossbanding shall be 1/8 inch thick or thicker before sanding. Face veneers shall be (1/8) (1/6) inch thick before sanding (*specify wood*).

(4) EXTERIOR DOORS

Exterior (*stile and rail*) (*flush veneer*) doors shall be made in accordance with specifications for interior doors except that all glue, throughout, shall be water resisting casein glue and (*stile and rail*) face veneers shall be 1/4 inch thick, before sanding.

SHORT FORM

All stock (*stile and rail*) (*flush veneer*) doors shall be made of sizes and design as called for on plans (*and details*) in accordance with the standard specifications of the National Door Manufacturers Association, Inc. as filed in Sweet's Catalog File—Architectural.

CONSTRUCTION DETAILS

INTERIOR DOORS VENEERED CONSTRUCTION

ONE PANEL VENEERED DESIGN

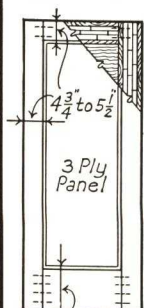
Manufactured in any hardwood with veneered flat panels. Moulded C&B, B&C, or Ovolo Sticking. Face veneers on stiles and rails 1/8" thick before sanding. Core blocks not to exceed 2" in width. Standard thickness of doors 1 5/8" or 1 1/2". Similar construction used for veneered two panel and six panel doors.

STANDARD SIZES FOR VENEERED AND FLUSH TYPE DOORS

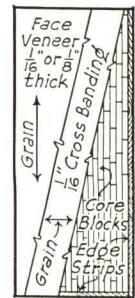
2'-4" x 6'-8"	2'-6" x 6'-6"	2'-8" x 6'-8"	3'-0" x 6'-8"
2'-4" x 7'-0"	2'-6" x 6'-8"	2'-8" x 7'-0"	3'-0" x 7'-0"
2'-6" x 7'-0"			

FLUSH TYPE DESIGN

Manufactured with softwood built-up core, horizontal crossbanding 1/8" thick, with face veneer and edge strips of any hardwood. Face veneers 1/8" thick before sanding. Standard thickness of doors 1 5/8" or 1 1/2". Permissible to use face veneer 1/8" thick, also 1/8" crossbanding. Optional with manufacturer to furnish core made as shown or made up of core block stile, rail and panel units doweled together to make a flush core.



ONE PANEL



FLUSH TYPE

GRADING RULES

PINE SASH DOORS and FRAMES

GENERAL INSTRUCTIONS

The purpose of grades is to maintain a standard or measure of value among factories manufacturing similar products which will permit the buyer to obtain products of approximately the same utility regardless of the factory from which they are shipped. No hard and fast rules can be made without some latitude in the matter of application, and practical common sense must govern to some extent. A shipment of any grade must consist of a fair proportion of the better and the poorer types and, as a whole, be representative of the grade.

Grades as described under this head are applicable to Pine products only and should not be confused with grading rules applying to other woods.

PINE FRAMES

GRADE "A"—Material in Grade "A" Frames shall be practically free from defects in all exposed parts. White sap, light brown water stain, and light red kiln burn are not considered defects. Parts that are not exposed when Frame is in place may contain stain, pitch streaks, sound knots, or any other sound defects that will not affect the strength of the Frame.

Workmanship must be good.

PINE HOUSE DOORS

NO. 1 QUALITY—Material in No. 1 doors shall be practically free from defects. White sap, light brown water stain, and light red kiln burn are not considered defects. Also one (1) carefully repaired pitch seam not over 2½ inches in length is permissible in each stile or bottom rail.

Workmanship must be good.

LAMINATED PANEL DOORS—Panels shall have two good faces practically free from defects and may contain not to exceed 25% pieced faces. Inconspicuous patches shall be admitted.

NO. 2 QUALITY—Material in No. 2 doors may contain light blue stain, medium brown water stain, or medium red kiln burn showing on not to exceed 50% of the area of any piece. Also pitch streaks, checks, pitch pockets, if carefully slivered, tight sound knots not to exceed ⅝ inch in diameter, and other

defects, not one of which shall be more serious in nature than the defects already enumerated. Each stile must contain one (1) such defect, but no piece shall contain more than two (2), and no door shall contain more than eight (8) such defects on each side.

Plugs admitted but regarded as defects.

Slight defects in workmanship admitted.

LAMINATED PANEL DOORS—Panels may contain slight stains and discolorations. Any amount of unmatched pieced faces permissible. Inconspicuous patches shall be admitted.

NO. 3 QUALITY—Material for No. 3 doors may contain all blue stain, brown water stain, or red kiln burn; also worm holes, checks, pitch streaks, pitch pockets, fine shake, tight sound knots not to exceed 1½ inches in diameter, and other defects, not one of which shall be more serious in nature than defects already enumerated. Each stile must contain two (2) such defects, but no piece shall contain more than four (4) and no door shall contain more than twenty (20) such defects on each side.

Plugs admitted but regarded as defects.

Slight defects in workmanship admitted.

LAMINATED PANEL DOORS—Panels may contain medium to heavy stains and discolorations, also pin knots, and other equivalent defects. Any amount of unmatched pieced faces and any number of patches permissible.

PINE GARAGE DOORS

Pine Garage Doors shall be graded according to Pine House Door rules as shown above except mill-run grade which may contain blue stain, brown water stain, or red kiln burn, checks, pitch streaks, pitch pockets, fine shake, tight sound knots not to exceed 2 inches in diameter and other defects, none of which shall be more serious in nature than defects already enumerated.

PINE OPEN SASH AND WINDOWS

Material in No. 1 Sash and Windows shall be practically free from defects. White sap, light brown water stain, and light red kiln burn are not considered defects.

Workmanship must be good.

veneered door guarantee

Veneered doors produced by members of the National Door Manufacturers Ass'n, Inc. are guaranteed by the manufacturer to be of good material and workmanship, free from defects which render them unserviceable or unfit for the use for which they are intended. (A warp or twist of not to exceed ¼ inch shall not be considered a defect in a veneered Flush Door.) Natural variations in the color or texture of the wood are not to be considered as defects.

Veneered doors must be accorded reasonable treatment by the purchaser and must not be stored in damp warehouses or placed

in moist or freshly plastered buildings, or subjected to abnormal heat or dryness, as manufacturer will not assume responsibility for defects resulting from these causes. Top and bottom edges of all doors must be thoroughly painted or varnished to prevent absorption of moisture.

Doors must be inspected upon arrival and all claims or complaints must be filed before painter's finish is applied.

The manufacturer agrees to repair or replace in the white, without charge, any door found to be defective within the meaning of this guarantee.

ROSTER of MEMBERS

• • •

NATIONAL DOOR MANUFACTURERS ASSOCIATION, INC.

CHICAGO, ILL. • • • WASHINGTON, D. C.

Andersen Corporation	Bayport, Minn.
Anson & Gilkey Company	Merrill, Wis.
Carr, Ryder & Adams Company	Dubuque, Iowa
Curtis Companies, Inc.	Clinton, Iowa
Curtis Companies, Inc.	Wausau, Wis.
Deer Park Lumber Company	Deer Park, Wash.
Farley & Loetscher Manufacturing Company	Dubuque, Iowa
Hardwood Products Corporation	Neenah, Wis.
Huttig Manufacturing Company	Muscatine, Iowa
Ideal Company	Waco, Tex.
Kinzua Pine Mills	Kinzua, Ore.
The Long-Bell Lumber Company	Kansas City, Mo.
The R. McMillen Company	Oshkosh, Wis.
Missoula White Pine Sash Company	Missoula, Mont.
Morgan Company	Oshkosh, Wis.
Northern Sash & Door Company	Hawkins, Wis.
Roach & Musser Company	Muscatine, Iowa
Rock Island Sash & Door Works	Rock Island, Ill.
Roddis Lumber and Veneer Company	Marshfield, Wis.
Spokane Pine Products Company	Spokane, Wash.
Western Pine Manufacturing Co., Ltd.	Spokane, Wash.
White Pine Sash Company	Spokane, Wash.

SECTION 15

CONTINUED 

WHITE PINE SASH COMPANY

Window and Door Frames; Normandy Casements; Millwork
SPOKANE, WASHINGTON

FACTORIES: SPOKANE, WASH., and MISSOULA, MONT.

DISTRIBUTING WAREHOUSES: NEW YORK, N. Y., CHICAGO, ILL., and BOSTON, MASS.

JOBBER IN PRINCIPAL CITIES

PINE CRAFT MILLWORK FRAMES

Products

PINE CRAFT WEATHER-PROOF FRAMES.
NORMANDY CASEMENTS.
PINE CRAFT PREFIT SASH.
PERMATOL TREATED FRAMES and SASH.
SCREEN DOORS and WINDOWS.
PINE INTERIOR TRIM.
WHIT-LOCK TRIM.
TRIMPAK.
PINE MILLWORK.



Materials Used:

Ponderosa Pine (Pinus Ponderosa) and
Idaho White Pine (Pinus Monticola).

Guaranteed Frames and Sash

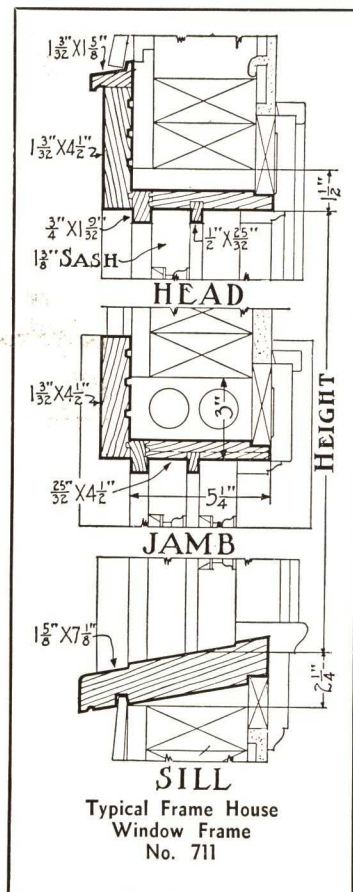
The Pine Craft Permatol treatment protects wood against attack by rot or termites and makes it strongly water-resistant. We guarantee (in writing) against failure from rot or insect attack for a period of twenty-five years, any sash or frame protected by the Pine Craft Permatol treatment.

Special Windows

While we specialize in the quantity production of stock frames and sash, we also have the necessary experience and equipment for the economical production of special

windows. (Sash for Chicago's Merchandise Mart, frames and sash for Milwaukee's Parklawn Housing Project and for San Francisco's Federal Building, etc.)

WEATHER-PROOF WINDOW AND DOOR FRAMES

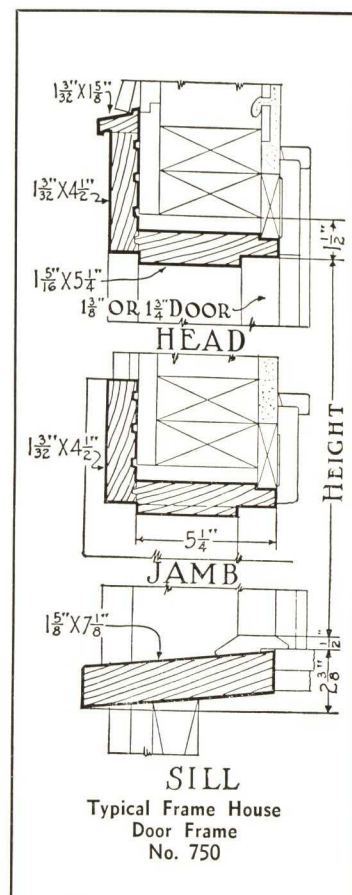


On this page are shown typical stock window and door frames for frame wall construction. Variations of these basic patterns are used in different parts of the country, our jobbers carrying the proper frames for the territory they serve. Where practicable, stock frames should be specified, as they cost less than special patterns and are more quickly available. Our facilities, however, include equipment for the manufacture of any type window, door or cellar frame.

Patent No. 1790428

WEDGE JOINT CONSTRUCTION

The outstanding success of our Pine Craft Weather-Proof Frames is due in no small part to the simplicity of construction. The various parts of the frame are united by wedge-shaped tongues and grooves, milled to exact size and uniting the various parts with a windproof and dustproof joint. These joints also line up the exterior casings. The side casings are parallel and the head casing is parallel with the sill, insuring perfect fitting of screens and storm sash.



NORMANDY CASEMENTS

For Residences, Apartments, etc.

Pine Craft Normandy Casements offer many exclusive features, such as

- No underscreen operators
- No hinges on outside
- No mullions in multiple units
- No sliding hardware
- Sash and screen cleaned from inside

Inside screens open and close the sash. Sash and screen both swing out without interfering with curtains and are cleaned from inside the building without detaching.

Complete Units—Normandy Casements are sold as completely assembled units, including frame, sash, (glazed or unglazed), operating hardware and wood frame screens. Storm sash inserts are optional, creating an effective dead air space 2½ in. wide between the sash and the storm sash.

No Mullions—Type A multiple units have bumper bars between screens. Each sash individually controlled. No mullion shows on outside. Type B multiple units have no bumper bars or mullions. Locking the extreme right or left-hand sash also locks all others. Sliding screens are used on this type. On Type B multiple units all sash must swing same way.

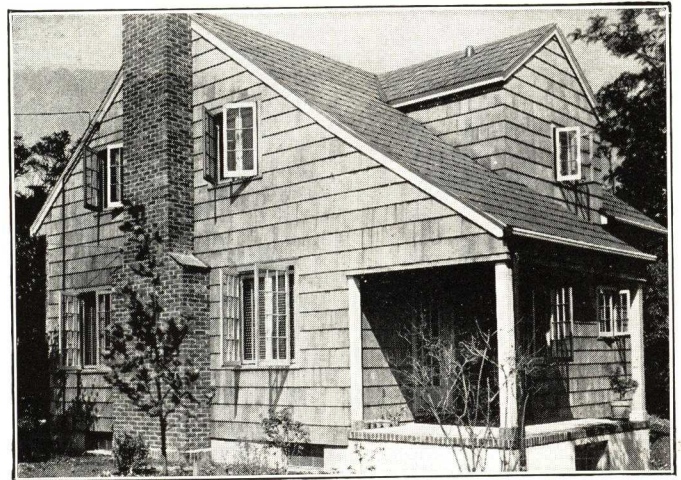
Advantages—The advantages offered by Normandy Casements are many and definite. The sash are factory fitted with proper clearances to prevent binding or sticking in any weather. These clearances are controlled and made weathertight by fine quality spring bronze weatherstrip, applied at the factory. This strip compensates for any shrinkage or swelling of the sash.

The motivating force is applied directly to the center of the sash stile, instead of to the bottom rail as with underscreen operated sash. Thus there is no tendency to warp or distort the sash when opening or closing. The sash are held firmly in place in any position and will not rattle.



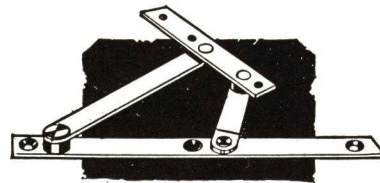
Residence of George Pope, Jr., Hillsborough, Cal.

Awning Type Casements, two and three-sash high help give this residence a distinctive appearance



Newly Completed Residence of Thomas Moore, Union, N. J.

Normandy Casements used throughout. Note that these casements permit the use of Venetian blinds



Rustproof Sash and Screen Adjuster

All motion confined to four self-adjusting brass pivots

Sash and Screen Adjusters

These sash and screen adjusters have been used since 1927. They are specified by Federal and State departments, and also by prominent architects on private homes, apartment houses, etc. Locking handles are solid bronze or brass, in standard finishes.

Wide Range of Sizes

Normandy Casements are made in a wider range of stock sizes than any similar windows. By the use of multiple units almost any desired width can be obtained and there are five sizes of stock heights. Larger units can also be furnished where required, up to three feet wide by seven feet high. Stock sizes are listed below.

Stock Sizes

Sash Widths—1 ft. 4 in., 1 ft. 8 in., 2 lights wide; 2 ft. 0 in., 2 ft. 4 in., 3 lights wide.

Sash Heights—3 ft. 0 in., 3 ft. 6 in., 3 lights high; 4 ft. 0 in., 4 ft. 6 in., 5 ft., 4 lights high.

Awning Type Windows

Awning type windows for residences or apartments offer new possibilities to architects. Furnished one, two or three-sash high. Our Normandy type hardware permits inside screens. Installation and operation are the same as for casements. One or more units may be left unscreened if desired.

Roller screens may be used with Normandy Casements.

MEMORANDA

HARDWARE, DOOR AND WINDOW EQUIPMENT

- SECTION -

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Section Number **1** / **5** Catalog Number

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Door

See Hardware—Finish—Door

HANGARS

Door Hardware

See Hardware—Airplane and Dirigible
Hangar Door

HANGERS

Door, Partition or Gate

(See also Hardware)

Allith-Prouty Inc.16/14
Ball-Kary16/41
Coburn Trolley Track Co.16/15
Detroit Steel Products Co.15/9
ES22/16
Elevator Supplies Co., Inc.22/16
Fenestra15/9
Garcy16/41
Garden City Plating & Mfg.
Co.16/41
Gem16/30; 22/17
Grant Elevator Equipment Corp. 22/17
Louden Machinery Co.21/89
R-W14/42
Richards-Wilcox Mfg. Co., Inc. 14/42
Richmond Fireproof Door Co. 20/26
Ten-Ten16/14
Wagner Mfg. Co.22/18
See also14/1; 14/16;
20/36; 21/89; 27/34

Fire Door

Allith-Prouty Inc.16/14
Coburn Trolley Track Co.16/15
Detroit Steel Products Co.15/9
Fenestra15/9
Fireshield15/9
Kiorac Mfg. Co.14/11
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HANGERS—Cont.

Fire Door—Cont.

(Continued from Previous Column)

R-W14/42
Richards-Wilcox Mfg. Co., Inc. 14/42
Richmond Fireproof Door Co. 14/26
Swing-Fold14/26
Syracuse Fire Door Corp.14/19
See also14/1
Specifications14/26

Garment

(See also Garment—Carrier Equipment;
Closet—Racks and Equipment)

DeSaussure21/93
K-Veniences16/42
Kason Hardware Corp.16/42a
Knap & Vogt Mfg. Co.16/42
Peterson21/92
Vogel Peterson Co., Inc.21/92
Whitney Duplicating Check Co. 21/93
Specifications21/92

HARDWARE

(See also Specific Product)

Adjusters—Screen and Storm

Sash

Casement Hardware Co.16/31
Getty, H. S., & Co., Inc.16/33
Hope's Windows Inc.15/14
Mesker Bros. Iron Co.15/17
Normandy15/33
White Pine Sash Co.15/33
Win-Dor16/31

Airplane and Dirigible Hangar Door

(See also Doors—Airplane Hangar)

Allith-Prouty Inc.16/14
Overhead Door Corp.14/41
R-W14/42
Richards-Wilcox Mfg. Co., Inc. 14/42

Astragal

Von Duprin16/39
Vonnegut Hardware Co.16/39

Awning

See Awning—Rollers and/or Operating
Mechanisms

Bar

Garcy16/41
Garden City Plating & Mfg. Co. 16/41

Barn Door

Clay Equipment Corp.21/88

Bolts—Cremone (Cremorne)

See Bolts—Cremone

Builders

See Hardware—Specific Item

Bumpers—Unlatching

See also28/40

Butts

See Hinges—Butt

Cabinet

American Cabinet Hardware
Corp.16/40
DeLuxe16/40
Ives, H. B., Co.16/35
Kason Hardware Corp.16/42a
Luster-Chrome16/40
Master16/40
McKinney Mfg. Co.16/19

Canopy

Astrup Co.16/101

Casement Window—Adjusters and/or Stays

(See also Hardware—Transom)

Casement Hardware Co.16/31
Ceco Steel Products Corp.15/6
Crittall-Federal, Inc.15/7
Dalmo-Simplex16/28
Detroit Steel Products Co.15/9
Econwin15/14
Ellison Bronze Co., Inc.14/6
(Continued on Next Page)

HARDWARE—Cont.

Casement Window—Adjusters and/or Stays—Cont.

(Continued from Previous Page)

Fenestra	15/9
Getty, H. S., & Co., Inc.	16/33
Grant Pulley and Hardware Co.	16/30
Gullborg, John S., Mfg. Co.	16/32
Holford	15/14
Hope's Windows Inc.	15/14
Ives, H. B., Co.	16/35
Lundell-Eckberg Mfg. Co., Inc.	15/16
MacDonald Hardware Mfg. Co.	16/28
Mesker Bros. Iron Co.	15/17
Norman	15/7
Normandy	15/33
Norton Door Closer Co., Div. of the Yale & Towne Mfg. Co.	16/27
Queen	16/30
Rixson, Oscar C., Co., Inc.	16/24
Stanwin	15/7
Sterling	16/32
Thorn, J. S., Co.	15/22
Thru-Screen	16/31
Truscon Steel Co.	15/23
Universal	15/7; 15/17
Whitco	16/36
White Pine Sash Co.	15/33
Whitney, Vincent, Co.	16/36
Win-Dor	16/31
Zimmerman, G. F. S., Co., Inc.	16/37
See also	15/10
Specifications	16/31; 16/33

Casement Window—Cleaning Hinge

Campbell Metal Window Corp., Div. of American Radiator & Standard Sanitary Corp.	15/5
Casement Hardware Co.	16/31
Whitco	16/36
Whitney, Vincent Co.	16/36

Casement Window—Fasteners and Bolts

See Bolts—Casement Window

Casement Window—Sash Lifting Butts and Pivots

See Hinges—Casement Sash Lifting—Butts and Pivots

Doors Hangers

See Hangers—Door, Partition or Gate

Door—Holders

See Holders—Door

Finish—Door

American Cabinet Hardware Corp.	16/40
Bommer Spring Hinge Co.	16/21
Chicago Spring Hinge Co.	16/22
DeLuxe	16/40
Getty, H. S., & Co., Inc.	16/33
Ives, H. B., Co.	16/35
Lawson-Milwaukee	16/23; 20/19
Luster-Chrome	16/40
Lynch, Kenneth, Inc.	13/25
Master	16/40
McKinney Mfg. Co.	16/19
Mills Co.	20/8
Milwaukee Stamping Co.	16/23; 20/19
Nu-Jamb	16/23
Philipp Mfg. Co.	14/16
Pryanco Dorgriels	26/62
Pryne & Co., Inc.	26/62
Sanymetal Products Co., Inc.	20/21
Von Duprin	16/39
Vonnegut Hardware Co.	16/39
Weis, Henry, Mfg. Co., Inc.	20/22
WeiSteel	20/22
See also	13/28; 16/15
Specifications	20/22

Fire Door and Shutter

See Hangers—Fire Door

HARDWARE—Cont.

Folding Door or Partition

(See also Hangers—Door, Partition or Gate)

Coburn Trolley Track Co.	16/15
R-W	14/42
Richards-Wilcox Mfg. Co., Inc.	14/42
Richmond Fireproof Door Co.	20/26

Garage Door

Allith-Prouty Inc.	16/14
Barber-Colman Co.	14/39
Barcol OVERdoor	14/39
Canton Drop Forging & Mfg. Co.	16/18
Coburn Trolley Track Co.	16/15
Frantz Mfg. Co.	16/17
Kinnear Mfg. Co.	14/33; 16/16
Majestic Co.	26/139
Over-The-Top	16/17
Overhead Door Corp.	14/41
R-W	14/42
Richards-Wilcox Mfg. Co., Inc.	14/42
Slidaside	14/42
Slidetite	14/42
Stanley Works	14/44
Swing-up	14/44
Tip-TOP	14/33; 16/16
Topflite	14/42
Specifications	14/33; 14/42; 14/44; 16/17

Hangers

See Hardware—Folding Door or Partition; Hangers

Hinges

See Hinges

Overhead Type Door

(See also Doors—Overhead Type)

Allith-Prouty Inc.	16/14
Barber-Colman Co.	14/39
Barcol OVERdoor	14/39
Coburn Trolley Track Co.	16/15
Frantz Mfg. Co.	16/17
Kinnear Mfg. Co.	16/16
Overhead Door Corp.	14/41
Over-The-Top	16/17
Push-Over	16/14
R-W	14/42
Richards-Wilcox Mfg. Co., Inc.	14/42
Stanley Works	14/44
Swing-Over	16/15
Swing-up	14/44
Tip-TOP	16/16
Topflite	14/42
Specifications	14/44; 16/17

Reversible Window

(See also Windows—Reversible)

Dalmo-Simplex	16/28
MacDonald Hardware Mfg. Co.	16/28
Whitco	16/36
Whitney, Vincent, Co.	16/36
Williams Pivot Sash Co.	16/29
Specifications	16/29

Reversible Window—Remote Control

Dalmo-Simplex	16/28
MacDonald Hardware Mfg. Co.	16/28

Sash Chain or Cord

See Chain—Sash; Cord—Sash

Sash Operators

See Operators—Sash

Sash Pulleys

See Pulleys—Sash

Screen—Door and Window

(See also Screens—Insect)

Burrowes Corp.	16/47
Casement Hardware Co.	16/31
Chamberlin Metal Weather Strip Co., Inc.	16/48
Crittall-Federal, Inc.	15/7

(Continued in Next Column)

HARDWARE—Cont.

Screen—Door and Window—Cont.

(Continued from Previous Column)

Getty, H. S., & Co., Inc.	16/33
Lundell-Eckberg Mfg. Co., Inc.	15/16
Mesker Bros. Iron Co.	15/17
Norman	15/7
Thorn, J. S., Co.	15/22
Truscon Steel Co.	15/23
Universal	15/17
Watson Mfg. Co., Inc.	16/60

Shelving—Adjustable

Garcy	16/41
Garden City Plating & Mfg. Co.	16/41
Kason Hardware Corp.	16/42a
K-Veniences	16/42
Knappe & Vogt Mfg. Co.	16/42
Peerless	16/42

Show Case or Counter

(See also Cases—Display; Cases—Museum or Treasure Room)

Ball-Kary	16/41
Garcy	16/41
Garden City Plating & Mfg. Co.	16/41
Kason Hardware Corp.	16/42a

Sliding Door

See Hangers—Door, Partition or Gate

Tent

Astrup Co.	16/101
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Transom Operators and Lifters

Getty, H. S., & Co., Inc.	16/33
Gullborg, John S., Mfg. Co.	16/32
Rixson, Oscar C., Co., Inc.	16/24
Sterling	16/32
Whitco	16/36
Whitney, Vincent, Co.	16/36
Zimmerman, G. F. S., Co., Inc.	16/37
See also	21/74

Wardrobe

See Hangers—Door, Partition or Gate

Window—Fixture

(See also Specific Type of Hardware)

Andersen Corp.	15/27
Bayley, William, Co.	15/4
Caldwell Mfg. Co.	16/1
Campbell Metal Window Corp., Div. of American Radiator & Standard Sanitary Corp.	15/5
Casement Hardware Co.	16/31
Crittall-Federal, Inc.	15/7
Croft-Lemco	15/8
Dalmo-Simplex	16/28
Duplex Inc.	16/2
Ellison Bronze Co., Inc.	14/6
Getty, H. S., & Co., Inc.	16/33
Grant Pulley and Hardware Co.	16/30
GripLox	16/34
Hoffman, Andrew	16/34
Hope's Windows Inc.	15/14
Ideal Ventilator Co.	16/75
Ives, H. B., Co.	16/35
MacDonald Hardware Mfg. Co.	16/28
Mesker Bros. Iron Co.	15/17
Normandy	15/33
Norton Door Closer Co., Div. of the Yale & Towne Mfg. Co.	16/27
Pullman Mfg. Co.	16/4
Tabor	16/30
Thorn, J. S., Co.	15/22
Truscon Steel Co.	15/23
Universal	15/17
Win-Dor	16/31
White Pine Sash Co.	15/33
Williams Pivot Sash Co.	16/29
See also	15/10
Specifications	16/1; 16/2; 16/29

HINGES

Butt—Ball Bearing

McKinney Mfg. Co.	16/19
Rixson, Oscar C., Co., Inc.	16/24

HINGES—Cont.

Butt—Double and/or Single Acting

Bommer Spring Hinge Co.	16/21
Chicago Spring Hinge Co.	16/22
Ever Ready	16/21
Giant	16/23
McKinney Mfg. Co.	16/19
Milwaukee Stamping Co.	16/23
Nu-Jamb	16/23
Simplex	16/22
Triplex	16/22

Butt—Forged and Wrought Iron, Brass, etc.

McKinney Mfg. Co.	16/19
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Butt—Spring

See Hinges—Spring Butt

Cabinet Door

American Cabinet Hardware Corp.	16/40
DeLuxe	16/40
Luster-Chrome	16/40
Master	16/40

Casement—Cleaning Hinge

See Hardware—Casement Window—Cleaning Hinge

Casement—Sash Lifting Butts

Grant Pulley and Hardware Co.	16/30
Queen	16/30

Casement—Sash Lifting Pivots

Mesker Bros. Iron Co.	15/17
Truscon Steel Co.	15/23
Whitco	16/36
Whitney, Vincent Co.	16/36

Casement Window

See Hardware—Casement Window—Cleaning Hinge

Checking

See Checks and Closers—Door

Closet Seat

See	16/22
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Friction

Rixson, Oscar C., Co., Inc.	16/24
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Garage Door

Allith-Prouty Inc.	16/14
Coburn Trolley Track Co.	16/15
R-W	14/42
Richards-Wilcox Mfg. Co., Inc.	14/42

Gate—Spring Pivot—Checking

Rixson, Oscar C., Co., Inc.	16/24
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Gate—Spring Pivot or Spring Butt

Bommer Spring Hinge Co.	16/21
Chicago Spring Hinge Co.	16/22
Milwaukee-Lawson	16/23
Milwaukee Stamping Co.	16/23
Rixson, Oscar C., Co., Inc.	16/24
Sagless	16/22
Simplex	16/22
Triplex	16/22
Universal	16/23

Gravity—Warehouse and Loading Platform

Shelby Spring Hinge Co.	16/25
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Heavy Duty

Coburn Trolley Track Co.	16/15
Kason Hardware Corp.	28/40
R-W	14/42
Richards-Wilcox Mfg. Co., Inc.	14/42
Rixson, Oscar C., Co., Inc.	16/24

Invisible

Soss Mfg. Co., Inc.	16/20
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HINGES—Cont.

Lavatory and Toilet Door

Atlantis Steel Products Corp.	20/16
Bommer Spring Hinge Co.	16/21
Chicago Spring Hinge Co.	16/22
Fiat Metal Mfg. Co.	20/17a
Lawson Universal	16/23
Lustron	20/20
Mills Co.	20/8
Milwaukee Stamping Co.	16/23
Porcelain Products Co.	20/20
Rixson, Oscar C., Co., Inc.	16/24
Sagless	16/22
Sanymetal Products Co., Inc.	20/21
Triplex	16/22
Weis, Henry, Mfg. Co., Inc.	20/22
WeiSteel	20/22
Specifications	16/23; 20/21; 20/22

Pivot—Ball Bearing

Bommer Spring Hinge Co.	16/21
Matchless	16/23
Milwaukee-Lawson	16/23
Milwaukee Stamping Co.	16/23
Sanymetal Products Co., Inc.	20/21

Spring Butt

Bommer Spring Hinge Co.	16/21
Chicago Spring Hinge Co.	16/22
Ever Ready	16/21
Milwaukee-Lawson	16/23
Milwaukee Stamping Co.	16/23
Simplex	16/22
Triplex	16/22

Spring Pivot—Floor

Bommer Spring Hinge Co.	16/21
Chicago Spring Hinge Co.	16/22
Matchless	16/23
Milwaukee-Lawson	16/23
Milwaukee Stamping Co.	16/23
Premier	16/22
Relax	16/22

Spring Pivot—Floor—Checking

Bommer Spring Hinge Co.	16/21
Rixson, Oscar C., Co., Inc.	16/24
Shelby Spring Hinge Co.	16/25

Stall Door

See	13/25
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Vertical Lifting

Grant Pulley and Hardware Co.	16/30
Queen	16/30

HOLDERS

Casement Window—Stays

See Hardware—Casement Window—Adjusters and/or Stays

Door

Ellison Bronze Co., Inc.	14/6
Getty, H. S., & Co., Inc.	16/33
Norton Door Closer Co., Div. of the Yale & Towne Mfg. Co.	16/27
Rixson, Oscar C., Co., Inc.	16/24
Von Duprin	16/39
Vonnegut Hardware Co.	16/39
See also	14/1
Specifications	16/27

Shutter

See Fasteners—Shutter

KICK

Plates

See Plates—Door—Kick or Push

KNOBS

Cabinet

American Cabinet Hardware Corp.	16/40
DeLuxe	16/40
Luster-Chrome	16/40
Master	16/40

Door

See Hardware—Finish—Door

KNOCKERS—DOOR

Cast Brass or Bronze

See Hardware—Finish—Door

LIGHTPROOF

Curtains

See Shades—Lightproof

LOCKS

Emergency Exit

See Exit—Devices—Fire or Panic

Sliding—Glass or Wood Door

K-V	16/42
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Stall Door—Barn

See	13/25
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LOUVERS

Door—Ventilating

American 3 Way-Luxfer Prism Co.	7/1
Aiolite Co.	16/76
Brasco Mfg. Co.	19/1
Ellison Louvre Co., Inc.	16/77
Kawneer Co.	19/6
Panelouvre	16/79; 19/12
3 Way-Luxfer	7/1
Van Zile Ventilating Co.	16/78
Ventadoor	16/78
Ventilouvre Co., Inc.	16/79; 19/12
See also	14/12
Specifications	16/76; 16/78; 16/79

Lightproof

See Ventilators—Window Lightproof

OPERATORS

Awning

See Awnings—Rollers and/or Operating Mechanisms for

Casement Windows

See Hardware—Casement Window—Adjusters and/or Stays

Door—Garage—Electric

Aut-O-Dor	14/42
Barber Colman Co.	14/39
Better Bilt Door Co.	14/38
Huck-Gerhardt Co., Inc.	14/45
Overhead Door Corp.	14/41
R-W	14/42
Richards-Wilcox Mfg. Co., Inc.	14/42
Wel-Bilt	14/45

Door—Garage—Radio Control

Barber-Colman Co.	14/39
Canton Drop Forging & Mfg. Co.	16/18
Specifications	14/39

Door—Photo-electric Unit

Kinnear Mfg. Co.	14/33
Magic Doors	14/30
Stanley Works	14/30
See also	21/55

Door—Sliding, Swinging, Folding, Rolling, etc.

Aut-O-Dor	14/42
Babcock-Davis Corp.	14/29
Barber-Colman Co.	14/39
Better Bilt Door Co.	14/38
Circle A	20/25
Croft-Lemco	15/8
Huck-Gerhardt Co., Inc.	14/45
Johnson, Geo. W., Mfg. Co.	14/32
Kinnear Mfg. Co.	14/33
Magic Doors	14/30
McKee Door Co.	14/40
Mono-Tandem	14/29
Mono-Wheel	14/29
New Castle Products	20/25
Norton Door Closer Co., Div. of the Yale & Towne Mfg. Co.	16/27

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OPERATORS—Cont.

Door—Sliding, Swinging, Folding, Rolling, etc.—Cont.

(Continued from Previous Page)

Over-R-Way	14/42
R-W	14/42; 20/27
Richards-Wilcox Mfg. Co., Inc.	14/42; 20/27
Richmond Fireproof Door Co.	14/26
RoL-TOP	14/33
Ro-Way	14/43
Rowe Mfg. Co.	14/43
Security Fire Door Co.	14/28
Slidetite	14/42
Stanley Works	14/30
Uni-Motor	14/28
Wel-Bilt	14/45
See also	21/55
Specifications	14/26; 14/28; 14/39; 14/42; 14/43

Sash

American 3 Way-Luxfer Prism Co.	7/1
Bayley, William, Co.	15/4
Campbell Metal Window Corp., Div. of American Radiator & Standard Sanitary Corp.	15/5
Casement Hardware Co.	16/31
Ceco Steel Products Corp.	15/6
Crittall-Federal, Inc.	15/7
Croft-Lemco	15/8
Detroit Steel Products Co.	15/9
Duplex	16/38
Federal	15/7
Fenestra	15/9
G-K	16/38
Gibson & Kirk Co.	16/38
Hitchings & Co.	21/74
Ives, H. B., Co.	16/35
Lord & Burnham Co.	21/74
Mesker Bros. Iron Co.	15/17
Midget	16/38
RPM	7/9
Rixson, Oscar C., Co., Inc.	16/24
Robertson, H. H., Co.	7/9
Thorn, J. S., Co.	15/22
Truscon Steel Co.	15/23
Vent-O-Lite Co.	7/13
Vento Steel Products Co.	15/24
Win-Dor	16/31
See also	6/31; 15/10; 16/33; 21/55; 21/75
Specifications	15/5; 15/7; 15/17

Transom

See Hardware—Transom

OVERHEAD

Door Hardware

See Hardware—Overhead Door; Hardware—Garage

PANELS

Door—Ventilating

See Louvers—Door—Ventilating

PANIC

Exit Devices

See Exit Devices—Fire or Panic

PARTING

Beads—Metal Interlocking

Sager Metal Weatherstrip Co. 16/73

PARTITION

Hardware

See Hangers—Door, Partition or Gate; Hardware—Folding Door or Partition

PIVOTS

Sash or Door

Grant Pulley and Hardware Co.	16/30
Mesker Bros. Iron Co.	15/17
Queen	16/30
Rixson, Oscar C., Co., Inc.	16/24

PLATES

Door—Kick or Push

Brasco Mfg. Co.	19/1
Desco	19/3
Detroit Show Case Co.	19/3
Ellison Bronze Co., Inc.	14/6
Formica Insulation Co.	11/30
Himco	19/4
Himmel Brothers Co.	19/4
Kawneer Co.	19/6
Protex Weatherstrip Mfg. Co.	16/71
Zouri Store Fronts	19/13
See also	13/30; 13/32; 16/62; 16/69; 19/11

PLUGS

Boiler Repair

Croissant Machine Works	16/44
Mollys	16/44

Wall—Fiber Anchoring

Rawlplug Co., Inc.	16/46
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PULLEYS

Sash—Cast Iron

Ace	16/30
Cleveland Lock Works	16/7
Gem	16/30
Grant Pulley and Hardware Co.	16/30
Lee	16/30
Star	16/30
See also	26/78; 27/55

Sash—Overhead

Cleveland Lock Works	16/7
Grant Pulley and Hardware Co.	16/30

Sash—Pressed Steel

Grand Rapids Hardware Co.	16/3
Grant Pulley and Hardware Co.	16/30

PULL-OUT

Garment Carriers

See Garment—Carrier Equipment

RACKS

Tie

DeLuxe	16/42
K-Veniences	16/42
Knappe & Vogt Mfg. Co.	16/42

REMOTE CONTROL

Apparatus—Door Operating

Barber-Colman Co.	14/39
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ROLLERS

Awning

See Awnings—Rollers and/or Operating Mechanisms for

Door

See Sheaves—Sliding Door; Hangers—Door

Window Shade

See Shades—Window—Rollers for

ROLLING

Blinds

See Blinds—Rolling—Outside

Window Screens

See Screens—Insect—Rolling

ROOF

Awning Sockets

See Awnings—Roof

SAFETY DEVICES

Window—Cleaners' Belts

See Window—Cleaners' Safety Devices

SASH

(See also Specific Type of Window)

Balances

See Balances—Sash

SASH—Cont.

Centers or Pivots

See Pivots—Sash or Door

Chain

See Chain—Sash

Cord

See Cord—Sash

Operating Devices

See Operators—Sash

Pulleys

See Pulleys—Sash

SCREEN CLOTH

Burrowes Corp.	16/47
Chamberlin Metal Weather Strip Co., Inc.	16/48
Chase Brass & Copper Co., Inc.	16/49
Cincinnati Fly Screen Co.	16/50
Cinmanco	16/50
Copbronze	16/47

SCREENS

Insect—Casement Window

See Specific Type of Screen—Insect

Insect—Frameless

Cincinnati Fly Screen Co.	16/50
Zip-in	16/50

Insect—Metal Frame

All-metal	16/53
American 3 Way-Luxfer Prism Co.	7/1
Apexon	16/47
Bayley, William, Co.	15/4
Berger Mfg. Div. Republic Steel Corp.	9/1
Berloy	9/1
Burrowes Corp.	16/47
Campbell Metal Window Corp., Div. of American Radiator & Standard Sanitary Corp.	15/5
Ceco Steel Products Corp.	15/6
Chamberlin Metal Weather Strip Co., Inc.	16/48
Cincinnati Fly Screen Co.	16/50
Cinmanco	16/50
Comet	16/51
Corry Metal Corp.	16/51
Crittall-Federal, Inc.	15/7
Croft-Lemco	15/8
Croft Steel Windows, Inc.	15/8
Detroit Steel Products Co.	15/9
Donley Brothers Co.	26/135
Durever	16/54
Economy	16/60
Efficiency	16/60
Everhard Mfg. Co.	16/52
Fenestra	15/9
General Bronze Corp.	15/13
Higgin Products, Inc.	16/53
Hope's Windows Inc.	15/14
Jamestown	15/56
Johnson Metal Products Co.	16/54
Kane Mfg. Corp.	16/55
Kay	16/52
Lundell-Eckberg Mfg. Co., Inc.	15/16
Mesker Bros. Iron Co.	15/17
Norquist Products, Inc.	16/56
Nu-Stile	16/48
Orange Screen Co.	16/57
Panelouvre	16/79
Permatite	15/13
Phoenix	15/18a
Primus	16/47
Regis	16/47
Rex	16/47
Russell, F. C. Insulation Co.	15/18a
Sentinel	16/56
Standard	16/51
Thorn, J. S., Co.	15/22
3 Way	7/1
3 Way-Luxfer	7/1
Truscon Steel Co.	15/23

(Continued on Next Page)

SCREENS—Cont.

Insect—Metal Frame—Cont.

(Continued from Previous Page)

Twentieth Century	16/60
Ventilouvre Co., Inc.	16/79
Vento Steel Products Co.	15/24
Watson Mfg. Co., Inc.	16/60
See also	15/10; 16/22
Specifications	15/6; 15/17; 16/47; 16/51; 16/54; 16/57

Insect—Pivoted Steel Window

All-metal	16/53
Campbell Metal Window Corp., Div. of American Radiator & Standard Sanitary Corp.	15/5
Ceco Steel Products Corp.	15/6
Chamberlin Metal Weather Strip Co., Inc.	16/48
Detroit Steel Products Co.	15/9
Everhard Mfg. Co.	16/52
Fenestra	15/9
Fenmark	15/9
Higgins Products, Inc.	16/53
Johnson Metal Products Co.	16/54
Kane Mfg. Corp.	16/55
Mesker Bros. Iron Co.	15/17
Norquist Products, Inc.	16/56
Nu-Stile	16/48
Orange Screen Co.	16/57
Truscon Steel Co.	15/23
Watson Mfg. Co., Inc.	16/60
Specifications	15/6; 15/17; 16/54; 16/57

**Insect—Projected In or Out—
Steel Window**

All-metal	16/53
Chamberlin Metal Weather Strip Co., Inc.	16/48
Everhard Mfg. Co.	16/52
Higgin Products, Inc.	16/53
Johnson Metal Products Co.	16/54
Kane Mfg. Corp.	16/55
Mesker Bros. Iron Co.	15/17
Orange Screen Co.	16/57
Specifications	15/17; 16/57

Insect—Rolling

All-metal	16/53
Burrowes Corp.	16/47
Chamberlin Metal Weather Strip Co., Inc.	16/48
Cincinnati Fly Screen Co.	16/50
De Luxe	16/58
Efficiency	16/60
Fli-Bac	16/50
Higgins Products, Inc.	16/53
Kane Mfg. Corp.	16/55
Norquist Products, Inc.	16/56
Nu-Roll	16/48
Orange Screen Co.	16/57
Pella	16/58
Roll-up	15/23
Rolscreen Co.	16/58
Sentinel	16/56
Truscon Steel Co.	15/23
Twentieth Century	16/60
Universal Roller Screen Co.	16/59
Watson Mfg. Co., Inc.	16/60
Specifications	16/58

Insect—Wood Frame

Burrowes Corp.	16/47
Chamberlin Metal Weather Strip Co., Inc.	16/48
Cincinnati Fly Screen Co.	16/50
Curtis Companies Service Bu- reau	15/28
Everhard Mfg. Co.	16/52
E-Z	16/50
Farley & Loetscher Mfg. Co.	15/29
Higgin Products, Inc.	16/53
Kane Mfg. Corp.	16/55
New Century	16/47
Norquist Products, Inc.	16/56
Orange Screen Co.	16/57
Panelouvre	16/79
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SCREENS—Cont.

Insect—Wood Frame—Cont.

(Continued from Previous Column)

Qualitybilt	15/29
Sentinel	16/56
Ventilouvre Co., Inc.	16/79
Watson Mfg. Co., Inc.	16/60
See also	15/33
Specifications	16/47; 16/57

SCREW

Anchors

See Anchors—Screw—Concrete, Plas-
ter, etc.

SCREWS

Lag

Paine Co.	16/45
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Machine

Paine Co.	16/45
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SHADES

Light Arrestors for

Beckley-Cardy Co.	21/18
Peerless	21/18

Lightproof

Athey Co.	16/92
Bar-Ray Products, Inc.	10/53
Beckley-Cardy Co.	21/18
Columbia Mills, Inc.	16/82
Diffuselite	14/37
Higgin Products, Inc.	16/98
Kane Mfg. Co.	16/55
LaSalle	16/100
Light-Tight	16/98
Lite-Tite	16/100
Mastermade	16/100
Perennial	16/92
Rolltex	16/100
Rowles, E. W. A., Co.	16/100
Simon Ventilighter Co., Inc.	16/86
Sunvent Metal Awning Co.	16/105
Supertex	21/18
Universal Roller Screen Co.	16/59
Vellmo	16/82
Ventilighter	16/86
See also	16/89; 16/103; 21/63
Specifications	10/53

Lightproof—Motor Operated

Babcock-Davis Corp.	16/94
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Skylight

See Skylights—Shades

Window—Adjustable

Athey Co.	16/92
Beckley-Cardy Co.	21/18
Perennial	16/92

Window—Brackets for

Hartshorn, Stewart, Co.	16/97
Specifications	16/97

Window—Cloth or Fabric for

Albert	16/99
Bancroft	16/99
Bontex	16/95
Chouaguen	16/97
Claysmith	16/99
Columbia Mills, Inc.	16/82
Columbus Coated Fabrics Corp.	16/95
Crescent Tint	16/82
Damasko Hevi-Duty	16/82
Diana	16/97
du Pont de Nemours, E. I., & Co., Inc.	16/96
Hartshorn, Stewart, Co.	16/97
Interstate Shade Cloth Co.	16/85
Inter-Twill	16/85
Joanna	16/97
LaSalle	16/100
Lite-Tite	16/100
London	16/99
Niagara	16/82
No-Lite	16/85
Oswego	16/97
Paragon	16/85
(Continued in Next Column)	

SHADES—Cont.

**Window—Cloth or Fabric for—
Cont.**

(Continued from Previous Column)

Pyroxylin	16/82
Rock-Fast	16/99
Rolltex	16/100
Rowles, E. W. A., Co.	16/100
Satin Finish	16/97
Smith, Albert D., & Co.	16/99
Smith's Oil	16/99
Stand-Fast	16/99
Sun-Fast	16/99
Sunlite	16/85
Tint Cloth	16/97
Tontine	16/96
Vellmo	16/82
Venetian Stripe	16/99
Vulcan Triplex	16/97
See also	16/103
Specifications	16/97; 16/82; 16/85

Window—Lightproof

See Shades—Lightproof

Window—Rollers for

Columbia Mills, Inc.	16/82
Hartshorn, Stewart, Co.	16/97
Interstate Shade Cloth Co.	16/85
Rolrite	16/85
Specifications	16/97

**Window—Skylight, etc.—Venti-
lating**

Aerolux	16/93
Aeroshade Co.	16/93
Germain Mfg. Co.	16/84
Simon Ventilighter Co., Inc.	16/86
Ventilighter	16/86

Window—Washable Fabric

Columbia Mills, Inc.	16/82
Pyroxlin	16/82
Specifications	16/82

Window—Wood Fabric

Aerolux	16/93
Aeroshade Co.	16/93
See also	16/89

X-Ray

Columbia Mills, Inc.	16/82
Hartshorn Stewart, Co.	16/97
Lite-Tite	16/100
Mastermade	16/100
Oswego	16/97
Rowles, E. W. A., Co.	16/100
Universal Roller Screen Co.	16/59
Vellmo	16/82

SHEAVES

Sliding Door

K-V	16/42
Kason Hardware Corp.	16/42a
Knap & Vogt Mfg. Co.	16/42

SHIELDS

Expansion

See Bolts—Expansion; Anchors—Screw
—Concrete, Plaster

SHOE

Racks and Cabinets

(See also Closet—Racks and Equip-
ment)

DeSaussure	21/93
K-Veniences	16/42
Knap & Vogt Mfg. Co.	16/42
Peterson	21/92
Vogel Peterson Co., Inc.	21/92
Whitney Duplicating Check Co.	21/93

SHOWCASE

Brackets

See Brackets—Showcase

SHUTTER

Holders

See Fasteners—Shutter

SHUTTERS

Lightproof

See Shades—Lightproof

Ventilating

See Louvres—Door—Ventilating

Wood

See Blinds—Venetian—Wood—Outside

SKYLIGHTS

Sash Operating Devices for

See Operators—Sash

Shades or Screens for

(See also Shades—Window, etc.)

Athey Co.16/92

Kane Mfg. Corp.16/55

Perennial16/92

Simon Ventilighter Co., Inc.16/86

Ventilighter16/86

Wood Slat Shades for

See Blinds—Venetian

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Anchoring Bolt

Rawl-Anchor16/46

Rawlplug Co., Inc.16/46

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Drawer

See Drawer—Slides

SOCKETS

Roof Awning

See Awnings—Roof

STAPLES

BX16/45

Paine Co.16/45

STAYS

Casement Window

See Hardware—Casement Window Adjusters and/or Stays

Door

See Holders—Door

STOPS

Door

(See also Strikes—Door and Gate)

Aristocrome27/94

Chicago Spring Hinge Co.16/22

Fairfacts Co., Inc.27/92

Fiat Metal Mfg. Co.20/17a

Hall-Mack27/94

Hallenscheid & McDonald27/94

Miami Cabinet Div., Philip Carey Co.27/98

Miami-Carey27/98

Sanymetal Products Co., Inc.20/21

Triplex16/22

United States Quarry Tile Co.11/10

See also16/15

Specifications20/17a

STORE FRONT

Awnings—Built-in

Astrup Co.16/101

Fanner Mfg. Co.16/102

Kloes, F. J., Inc.16/103

NYACO16/104

New York Awning Co., Inc.16/104

Tenso-Lok16/101

Specifications16/101; 16/102;

16/103; 16/104

STRIKES

Door and Gate

Bommer Spring Hinge Co.16/21

Chicago Spring Hinge Co.16/22

Flush-Metal Partition Corp.20/18

Triplex16/22

STRIPES

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See Weatherstrips—Metal—for Double Hung Windows, Casements, Doors, Transoms, etc.

SUBSILLS

Stormproof—Casement or Vertically Pivoted Windows

See Hardware—Casement Window

THRESHOLDS AND SADDLES

Weatherstrip Combination

(See also Door Bottoms—Weatherstrip)

Accurate Metal Weather Strip Co.16/61

Allmetal Weatherstrip Co.16/62

Barland Weatherstrip Material Co.16/64

Beauty-Tread16/64

Ceco Steel Products Corp.15/6

J & L3/5

Jones & Laughlin Steel Corp.3/5

Master Metal Strip Service.16/69

MetaLane16/70

Monarch Metal Weatherstrip Corp.16/70

Protex Weatherstrip Mfg. Co.16/71

Reese Metal Weather Strip Co.16/72

Sager Metal Weatherstrip Co.16/73

Spanjers, A. J., Co.16/74

Super-Seal16/64

Specifications16/61

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Cabinet Door Sliding

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K-V16/42

Knap & Vogt Mfg. Co.16/42

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See Hangers—Door, Partition or Gate; Hardware—Folding Door or Partition

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See Hardware—Casement Window—Adjusters and/or Stays; Hardware—Transom

Catches and Chain

See Chain—Sash

Operators and Lifters

See Hardware—Transom Operators and/or Lifters

Ventilators

See Louvres—Door Ventilating

TRANSOMS

Weatherstrip

See Weatherstrip—Metal

TRIM

Hardware

See Hardware—Finish Door

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Window—Metal

Lite-Tite16/100

Rowles, E. W. A., Co.16/100

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See Garment—Carrier Equipment

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See Blinds—Venetian

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See Shades—Window, Skylight, etc.—Ventilating

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See Cord—Sash

VENTILATORS

Door Panel, Transom, etc.—Louvered

See Louvres—Door Ventilating

Projection Room

Airolite Co.16/76

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See Ventilators — Window — Brackets for

Wall—Partitions, Closet, etc.

American Foundry & Furnace Co.26/71

Ellison Louvre Co., Inc.16/77

Panelouvre16/79

Ventilouvre Co., Inc.16/79

Specifications16/79

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Croft-Lemco15/8

Detroit Steel Products Co.15/9

Everhard Mfg. Co.16/52

Fenestra15/9

Henderson Bros.18/9

Hope's Windows Inc.15/14

Ideal Ventilator Co.16/75

Invisigard15/20

No-Draft18/9

Panelouvre16/79

Security Products Co.15/20

Sturtevant, B. F., Co.26/58

Tilt-in15/9

Ventilouvre Co., Inc.16/79

Ventrolite15/20

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Window—Brackets for

(See also Hardware)

Ideal Ventilator Co.16/75

Window—Lightproof

Universal Roller Screen Co.16/59

Specifications10/53

Window—Noise Excluding

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Truscon Steel Co.15/23

WASHERS

Heel

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WEATHERSTRIPS

Metal—for Double Hung Windows, Casements, Doors, Transoms, etc.

Accurate Metal Weather Strip Co.16/61

Adjusto-Seal16/72

All-metal16/68

Allmetal Weatherstrip Co.16/62

Andersen Corp.15/27

Athey Co.16/63

Barland Weatherstrip Material Co.16/64

Bed-Dor-Seals16/74

Chamberlin Metal Weather Strip Co., Inc.16/65

Dennis-AA Combination16/66

Dennis, W. J., & Co.16/66

Flexo-Seal16/72

Gold-Seal16/72

Higgin Products, Inc.16/68

Kane Mfg. Co.16/55

Knight-Triple-Interlocking16/64

Leakproof16/73

Master Metal Strip Service.16/69

MetaLane16/70

Monarch Metal Weatherstrip Corp.16/70

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Metal—for Double Hung Windows, Casements, Doors, Transoms, etc.—Cont.

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N. S. W. Co.	15/30
Protex Weatherstrip Mfg. Co.	16/71
Pyramid Metals Co.	11/40
Reese Metal Weather Strip Co.	16/72
Rotproof Sill	16/73
Sager Metal Weatherstrip Co.	16/73
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Slide-Ezy	16/69
Spanjers, A. J., Co.	16/74
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Wing Flex	16/66
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Metal—Rubber Combination—Doors, Windows, Refrigerators, Buses, etc.

Gail, G. W., Inc.	16/67
Pi-R	16/67

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(See also Door—Bottoms—Weatherstrip)

Accurate Metal Weather Strip Co.	16/61
Allmetal Weatherstrip Co.	16/62
Barland Weatherstrip Material Co.	16/64
Beauty-Tread	16/64
Higgin Products, Inc.	16/68
Master Metal Strip Service	16/69
MetaLane	16/70
Monarch Metal Weatherstrip Corp.	16/70

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WEATHERSTRIPS—Cont.

Threshold Combination—Cont.

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Ackerman	16/12
Harrison-Weise Co.	16/13
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Norton Door Closer Co., Div. of the Yale & Towne Mfg. Co.	16/27

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See Fascias—Window

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See Windows—Reversible

Fixtures—Reversible

See Windows—Reversible

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Sash Balances

See Balances—Sash

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See Chain—Sash

Sash Cord

See Cord—Sash

Screens

See Screens—Insect

Shade Cloth

See Shades—Window—Cloth or Fabric for

Shade Rollers

See Shades—Window—Rollers for

Shades

See Shades

Shades—Ventilating

See Shades—Window, Skylight, etc.—Ventilating; Blinds—Venetian

Strips

See Weatherstrips—Metal—for Double Hung Windows, Casements, Doors, Transoms, etc.

WINDOWS

Casement—Hardware for

See Hardware—Casement Window

Casement Screened

See Screens—Insect

Reversible

See Hardware—Reversible Window

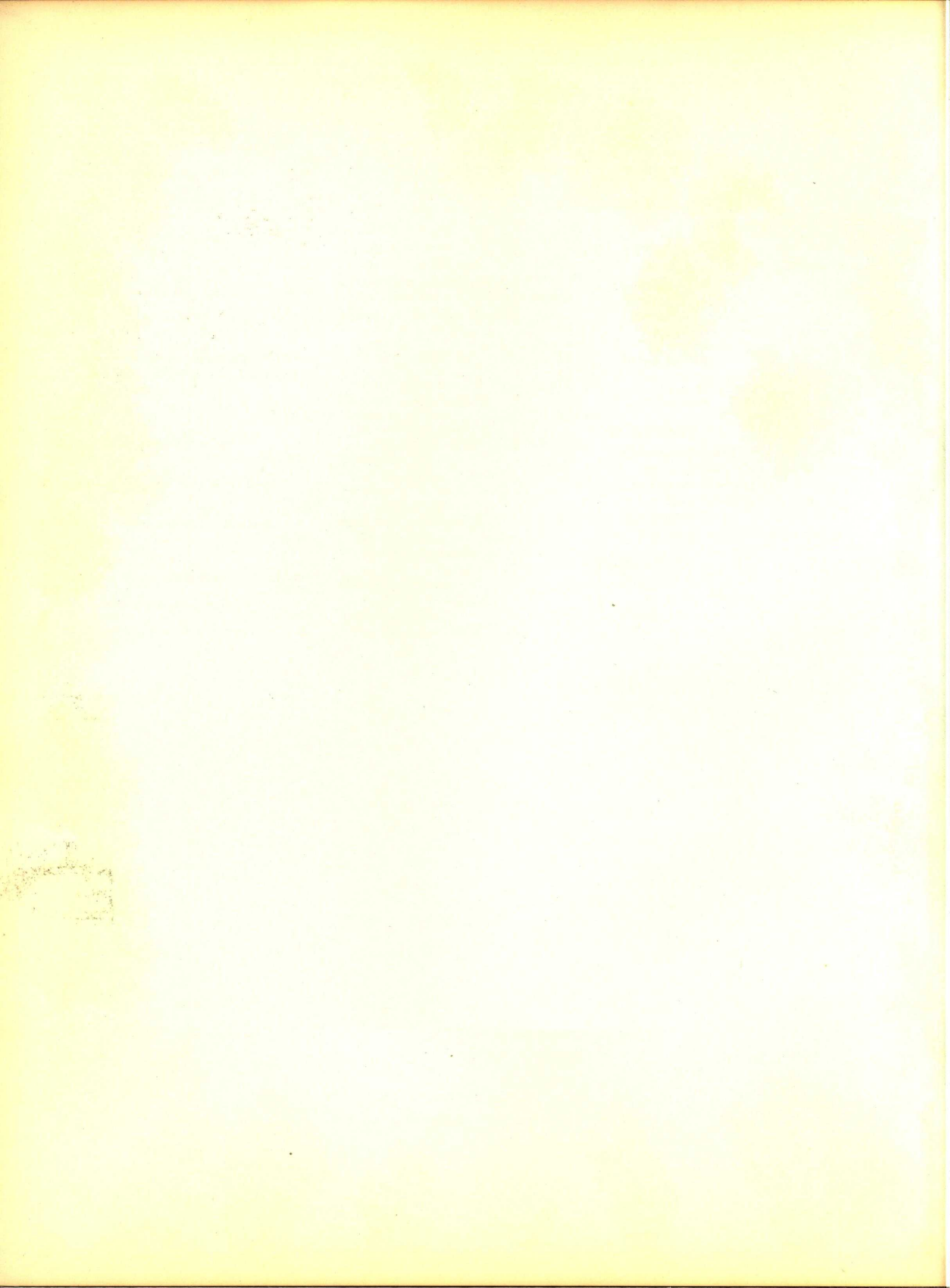
WIRE

Cloth

See Screen Cloth

Reels

See 16/102



DUPLEX INCORPORATED

Manufacturers of Duplex Flat, Adjustable Sash Balances for
Double and Triple Hung Windows

634 North LaPeer Drive, LOS ANGELES, CALIF.

JOBBER OUTLETS

ARIZONA, PHOENIX, Clem Lumber Co., 1724 Grand Ave.
CALIFORNIA, LOS ANGELES, Main Office and Factory
SAN DIEGO, Lert Sharp, 2372 1st Ave.
SAN FRANCISCO, F. G. Norman & Son, 890 Valencia St.
COLORADO, DENVER, Associated Builders Supply Co., 2150 Curtis St.
FLORIDA, MIAMI, J. P. Guerry & Son, Inc., 29 N. E. 22nd St.
GEORGIA, SAVANNAH, Savannah Planing Mill, 746 Wheaten St.
IDAHO, BOISE, Boise Payette Lumber Co.
ILLINOIS, CHICAGO, Schuham Hardware Co., 3411 West Chicago Ave.
INDIANA, GARY, Ellsworth & Co.
IOWA, DAVENPORT, Gordon Van Tine Co., 702 Federal St.
MARYLAND, BALTIMORE, W. F. Keen & Co., 4317 York Road
MICHIGAN, FLINT, Flint Sash & Door Co., Davidson Road
GRAND RAPIDS, Grand Rapids Sash & Door Co., 1593
Buchanan, S. W.
ROYAL OAK, Royal Oak Wholesale Co., 216 E. Harrison St.
MINNESOTA, ST. PAUL, Farwell, Ozmun, Kirk & Co.

MISSOURI, ST. LOUIS, Huttig Sash & Door Co., 1000 South Vandeventer Ave.
NEBRASKA, SCOTTSBLUFF, Standard Hardware Co.
NEW YORK, FLUSHING, D. Ginsburg & Sons, Inc., Northern and Wilets
Point Blvds.
OHIO, CLEVELAND, Lumberman's Door & Trim Co., 16161 Euclid Ave.
OREGON, PORTLAND, Builders Hardware Service Co., Security Bldg.
PENNSYLVANIA, PHILADELPHIA, Murta, Appleton & Co., 12th & San-
som St.
PITTSBURGH, Commercial Sash & Door Co., 33rd &
P. R. R.
TEXAS, EL PASO, Western Fuel & Lumber Co., Piedras & Myrtle St.
HOUSTON, Houston Sash & Door Co., 801 McKee St.
SAN ANTONIO, Geo. C. Vaughan & Sons, 608 Buenna Vista St.
UTAH, SALT LAKE CITY, Alder Sales Corp., 120 West Broadway
WASHINGTON, SEATTLE, R. M. Johnston, 520 Denny Way
SPOKANE, Spokane Sash & Door Co., 825 No. Superior St.
TACOMA, Tacoma Sash & Door Co.
WISCONSIN, MILWAUKEE, W. A. Getzel & Co., 2712 So. 28th St.

Duplex Adjustable Sash Balances can be purchased at any of the above write factory for name of nearest representative.

jobber outlets or at your local hardware or lumber dealer. If necessary,

DUPLEX IS THE ONLY SASH BALANCE OFFERING ALL THREE OF THESE OUTSTANDING FEATURES

(1) Adjustable

By the simple twist of a screwdriver Duplex may be adjusted, after installation, to perfect balance. Duplex eliminates faulty installation by allowing for variation in weight of sash. Four sizes handle all windows from 4 to 48 lb. weight each sash.

(2) Installed Flat in Pulley Stile

Duplex Adjustable Sash Balance fits flat within an opening $3\frac{1}{4}$ in. wide by $6\frac{1}{4}$ in. high in the standard pulley stile. Balances No. 1 and No. 2, recommended for sash weighing less than 25 lb., require a depth of only $\frac{3}{4}$ in. Balances No. 4 and No. 5, for sash weighing more than 25 lb., require only $1\frac{1}{2}$ in. depth. Bulky weight boxes are entirely eliminated, extremely narrow casing and mullions may be used.

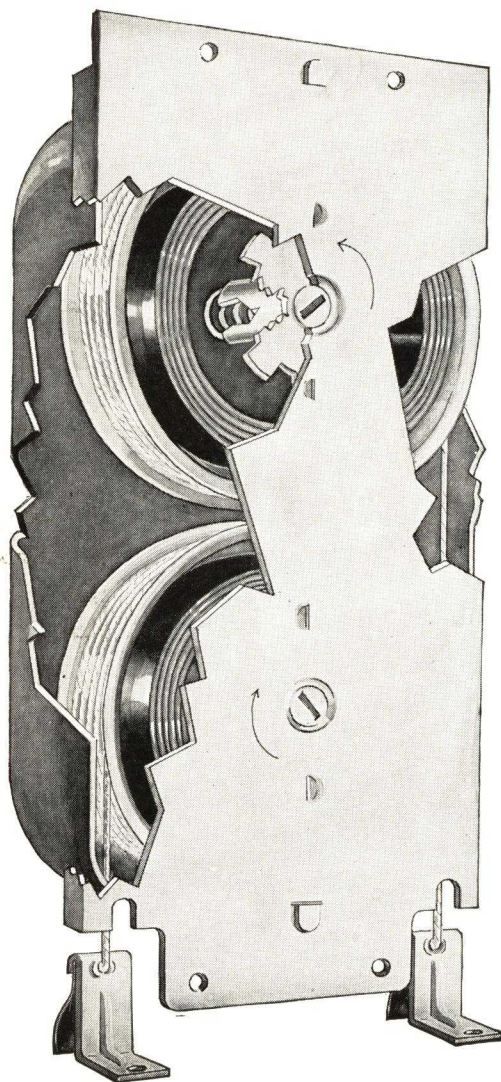
(3) One Balance for Both Sash

Duplex Adjustable Sash Balance is two balances in one case. It will hang both the upper and lower sash of the ordinary double or triple hung window. (For sash wider than 36 in., two units are recommended, one on each side of the window frame.) Exclusive Duplex double feature cuts initial cost, cuts installation cost, and produces a better looking and more satisfactory job.

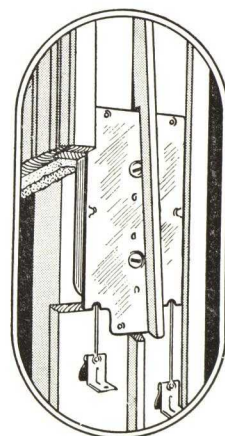
DUPLEX INSTALLATION

Note slots for adjusting upper and lower sash with a screwdriver *after* installation; *flat* installation *within* the depth of the pulley stile; sash hooks with patented self-adjusting gliders, to be fastened to both upper and lower sash. These gliders eliminate bucking, or rattling in the wind.

The Duplex Adjustable Sash Balance is amazingly simple to install. Completely foolproof, it is permanently lubricated and enclosed in a plaster-tight steel case.



Duplex Adjustable Sash Balance



Advantages

Duplex is an *adjustable* spring sash balance, installed *flat* in the pulley stile, requiring only *one* balance to hang *two* sash. It assures a smoothly operating, silent window which can be raised or lowered without jangle of sash weights.

Duplex accomplishes savings in millwork, labor and handling charges. It is installed in a minimum amount of time and can be replaced by removing one stop and one parting bead. Airtight construction at the pulley stile. Lower first cost and minimum upkeep. Guaranteed for years of troublefree service.

Construction

The Duplex Adjustable Sash Balance is constructed from the highest grade American materials. Finely tempered clock spring steel assures uniform tension. Airplane cable with patented winding device prevents breaking, doubling or sticking. Duplex springs have been tested to 100,000 operations without fatigue or breaking. The cable used is capable of carrying a load fifty times that of the window.

Duplex is plaster-tight, and all working parts are enclosed and permanently lubricated. Though rugged in construction, the Duplex Balance is light in weight. Example: 500 windows, weighing 48 lbs. each, would require 24,000 lbs. of weights. Duplex Balances for these same 500 windows would weigh only 1250 lbs.

Triple Hung Windows

The Duplex Adjustable Sash Balance now makes it practical for architects to specify triple hung windows in their plans. For it eliminates the mechanical difficulties which are usually to be encountered in this type of window structure.

Duplex makes possible all the beauty and advantages of triple hung windows with none of the disadvantages. It is instantly adjustable to any weight sash and is guaranteed to operate silently and smoothly for the life of the building. Duplex permits the use of very narrow mullions and eliminates the old-fashioned weight pocket.

Tests

The Duplex Adjustable Sash Balance has been laboratory tested to the equivalent of 50 years' service without the slightest decrease in operating efficiency. Practical tests have proved that the Duplex Balance will give complete satisfaction for the life of the building. The steel enclosed working parts require no additional lubrication at any time.

A revolutionary improvement in sash balance design, the Duplex, with more than four million units installed, guarantees unlimited service.

Duplex Costs Less

Quite aside from the smooth, quiet operation of the Duplex Adjustable Sash Balance, actual comparison proved Duplex costs less than average sash weight installations, and less than non-adjustable single spring balances. Duplex also means savings in frame construction, labor, and operating costs. Duplex protects the reputation of the architect and assures satisfaction for the owner.

Weatherstripping

Duplex Adjustable Balance installation permits the use of your favorite weatherstripping because music wire cables are located on opposite edge of sash from that occupied by strip.

Architects' Specifications

Specify: All double hung windows in the building to be hung on Duplex Flat Adjustable Sash Balances of the proper size and number required according to the schedule of sizes and directions of the manufacturer.

Guarantee

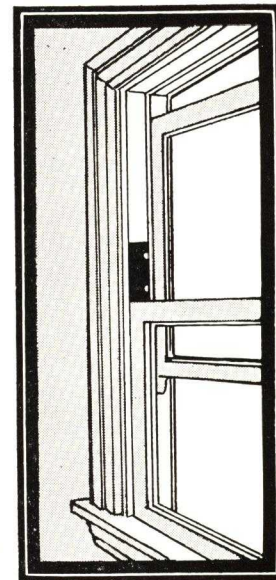
The manufacturer guarantees the Duplex Balance against breakage when properly installed and used in accordance with the manufacturer's schedule of sizes and directions. Balances proving defective or broken under above conditions may be returned to our factory and we will replace them free of charge.

Simple to Install

The installation of the Duplex Sash Balance is the simplest ever devised. It may be placed on either right or left hand side of window (or both). From blind stop inward cut a rectangular opening $3\frac{1}{4}$ in. wide by $6\frac{1}{4}$ in. high through the pulley stile. Bottom of this opening to line up with top rail of lower sash.

Double hung windows of various sizes and weights can be perfectly balanced with the Duplex. This is made possible by the adjustment feature.

Only one Duplex Balance is required to balance upper and lower sash in ordinary windows under 36 in. wide.



One Duplex Balances Both Sash; Is Adjusted After Installation

SCHEDULE OF SIZES

Single Installation (One Duplex One Side Only)				Double Installation (One Duplex Each Side)			
Wt. each sash	Max. width of sash	Max. height each sash	Quan. and size bal. required	Wt. each sash	Max. width of sash	Max. height each sash	Quan. and size bal. required
4 to 8 lbs.	36"	36"	1 only No. 1	8 to 16 lbs.	No limit	36"	2 only No. 1
8 to 12 lbs.	36"	36"	1 only No. 2	16 to 24 lbs.	No limit	36"	2 only No. 2
12 to 18 lbs.	36"	42"	1 only No. 4	24 to 36 lbs.	No limit	42"	2 only No. 4
18 to 24 lbs.	36"	42"	1 only No. 5	36 to 48 lbs.	No limit	42"	2 only No. 5

GRAND RAPIDS HARDWARE COMPANY

Manufacturers of "Grand Rapids" Sash Pulleys

GRAND RAPIDS, MICH.

FOR NARROW TRIM

Dependable Sash Hanging with Pulleys and Weights

To the many architects who believe that Pulley and Weight hung sash give greatest service over a period of years, we offer two really satisfactory methods of obtaining side trim as narrow as $2\frac{1}{4}$ inches and mullion trim as narrow as 3 inches as follows:

1st: $1\frac{1}{2}$ -inch wheel Pulleys and Flat Weights in all frames.

2nd: $1\frac{1}{2}$ -inch wheel Pulleys and Flat Weights in mullions and 2-inch wheel Pulleys and Round Weights in single frames and in outside jambs of double frames.

Details of both methods are shown on the opposite page.

PULLEY SPECIFICATIONS

For use with Flat Weights:

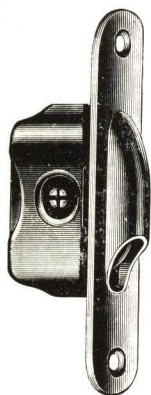
Number	Wheel	Face Size	Face Type	Axle
150	$1\frac{1}{2}$ "	1 x $4\frac{1}{2}$ "	Covered	$\frac{1}{4}$ "
151	$1\frac{1}{2}$ "	1 x $4\frac{1}{2}$ "	Open	$\frac{1}{4}$ "
153	$1\frac{1}{2}$ "	$1\frac{1}{8}$ x $4\frac{1}{2}$ "	Covered	$\frac{1}{4}$ "
154	$1\frac{1}{2}$ "	$1\frac{1}{8}$ x $4\frac{1}{2}$ "	Open	$\frac{1}{4}$ "
155	$1\frac{1}{2}$ "	Overhead Type		$\frac{1}{4}$ "

These Pulleys are guaranteed to carry any residential sash.

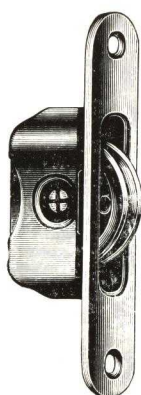
When 2-inch wheel Pulleys are to be used with round weights in single frames and in outside jambs of double frames, with $1\frac{1}{2}$ -inch Pulleys and Flat Weights in the

mullions, the following numbers that match the above $1\frac{1}{2}$ -inch Pulleys in faceplate size and type of face should be specified:

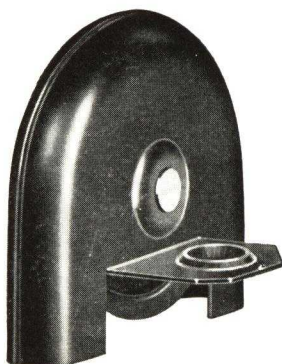
No. 150	($1\frac{1}{2}$ " Covered)	.....	No. 103	(2" Covered)
No. 151	($1\frac{1}{2}$ " Open )	.....	No. 18	(2" Open)
No. 153	($1\frac{1}{2}$ " Covered)	.....	No. 102	(2" Covered)
No. 154	($1\frac{1}{2}$ " Open )	.....	No. 140	(2" Open)



150-153



151-154



155—Overhead

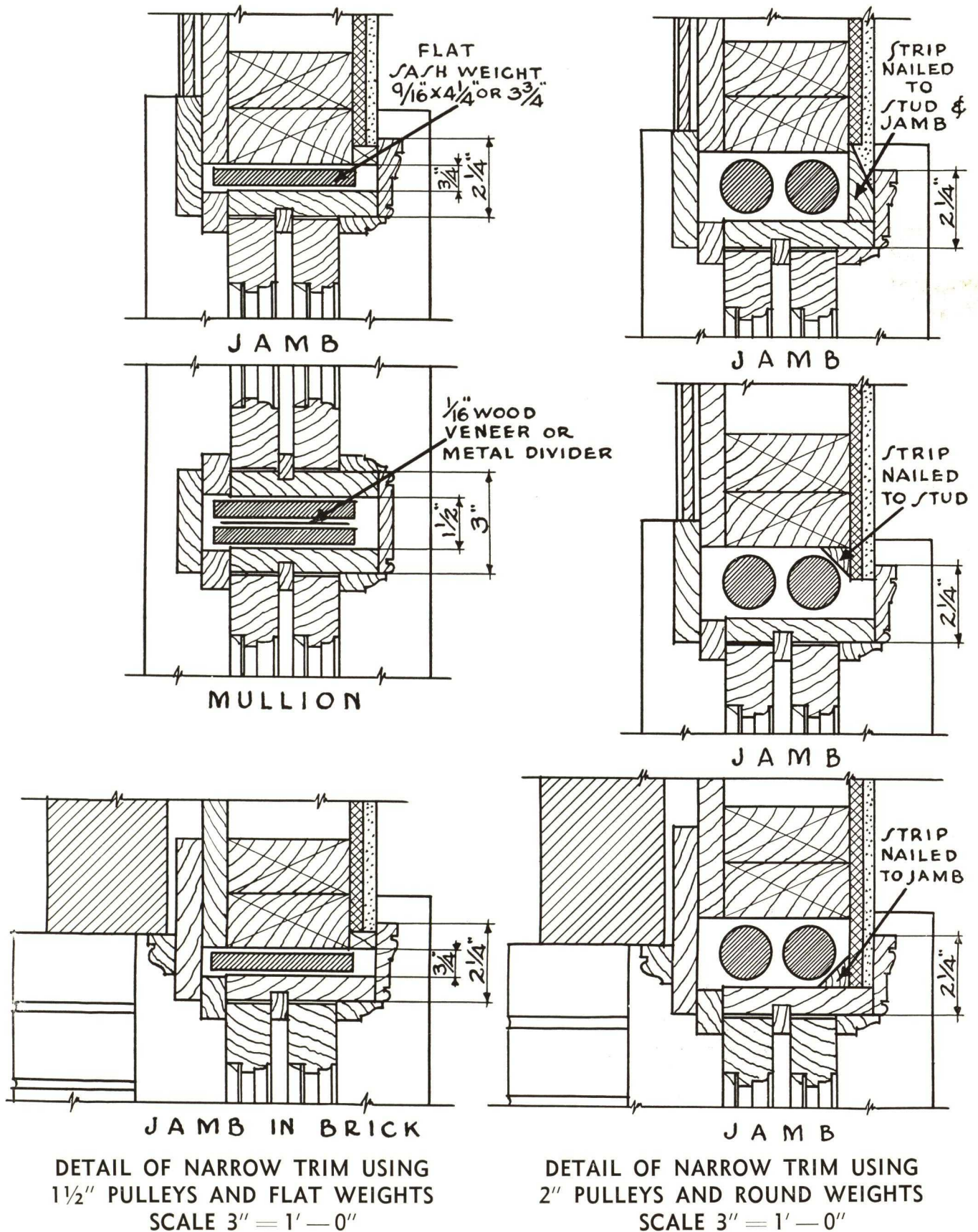


102-103



18-140

PRACTICAL METHODS OF OBTAINING NARROW TRIM USING "GRAND RAPIDS"
SASH PULLEYS



PULLMAN MANUFACTURING CORPORATION

Manufacturers of Unit Sash Balances

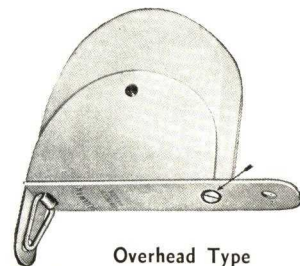
ROCHESTER, N. Y.

NEW PULLMAN ADJUSTABLE SASH BALANCE

The most radical and important improvement in Spring Sash Balances in forty years. An ordinary screwdriver makes the adjustment without removing the Balance or sash. Re-adjustment is possible at any time to permanently maintain a perfectly balanced window. The tension of the inside coiled spring is actually changed, insuring smooth, easy and quiet operation impossible with any other type of adjustment. All pressed steel construction—light in weight and non-breakable. All working parts are entirely incased so that no foreign matter can penetrate inside the housing and interfere with free action of the moving parts. No pulleys, weights or cords. Double hung opening completely installed in 10 to 15 minutes.

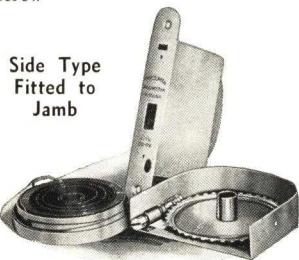


Adjusting screw



Overhead Type

Fitted in head of frame for narrow mullions



Side Type
Fitted to
Jamb

Principle of Construction

The Pullman Balance consists of a pressed steel casing enclosing a steel aluminum tape, (or, if desired, brass tape is furnished without extra charge), wound on a revolving drum. Inside this drum is a spring of the finest clock steel, uniform in tension and temper.

Units A-A and L-A can be removed or re-installed without disturbing stops, sash or frame by means of our patented Tape Hook device.

Pullman Sash Balances More Economical Than Weights and Cords

Expensive box frames, weights and cords are eliminated. Pockets for reaching weights are unnecessary. Sash are grooved in one operation instead of two. Less lumber and labor required throughout.

The springs are durable, remain uniform in tension and do not require oiling. Installations of 40 years ago are working satisfactorily. Tight construction. No leakage of air as with pulley opening. Saves fuel bills.

Substantial savings are effected in freight and cartage and in handling to and on the job. Labor costs reduced to a minimum. Tonnage reduced 90% as compared with weights and cords.

Finishes

All units have special rust resisting finish. No additional protective coating is necessary. Finishes last indefinitely.

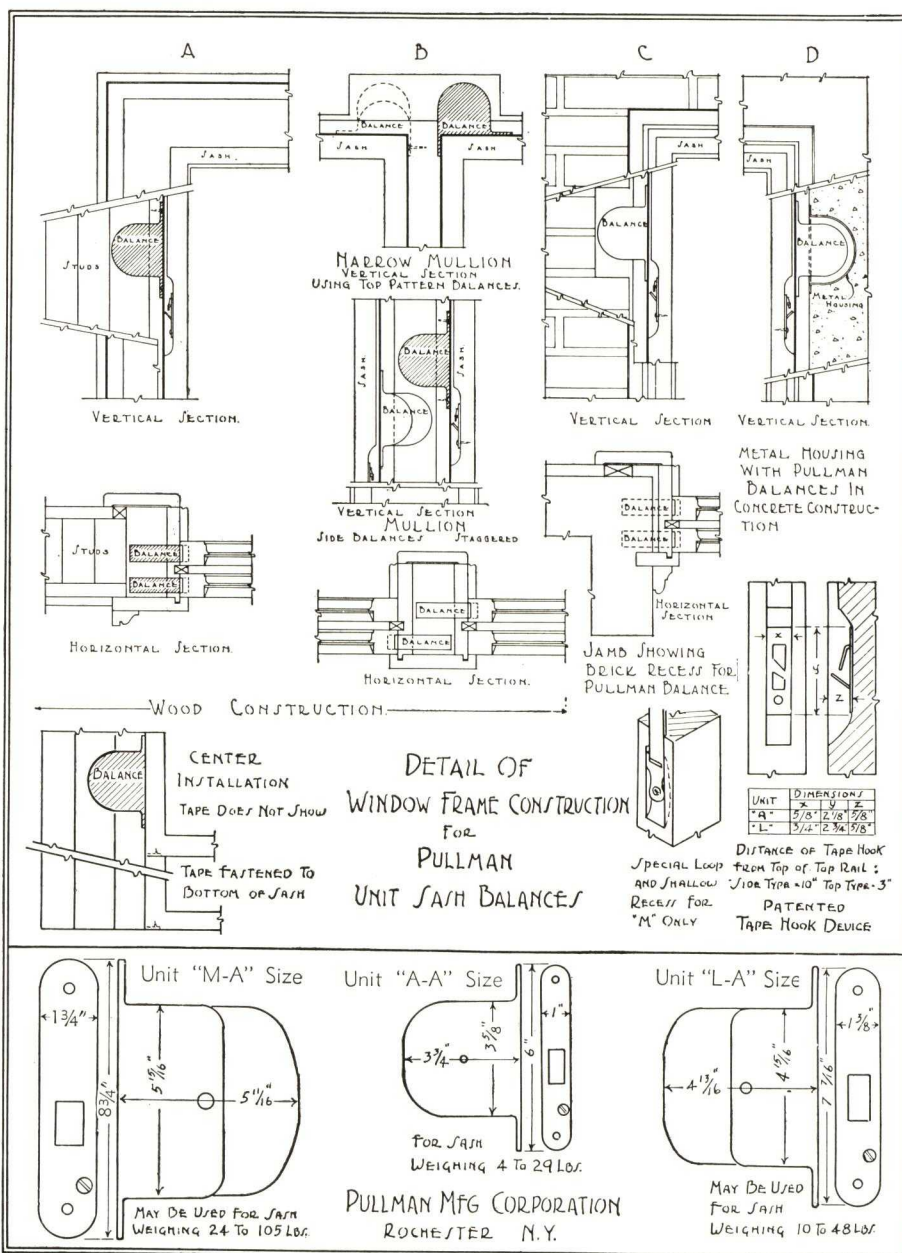
Brass, nickel, bronze or other architectural finishes can be obtained at a small additional cost. Special finishes should be clearly specified and sample of similarly finished hardware submitted if possible.

Guaranteed for the Life of the Building

When each sash is accurately weighed and our instructions are followed for putting them in, we guarantee our Balances for the life of the building against imperfect workmanship or material and will repair or replace at our factory free of charge, any imperfect or broken Balances.

How to Order

Specify exact weight by scales of each individual sash, listing upper and lower sash separately. The mill usually so marks the sash. Never give weight of entire window. Be sure sufficient space is left for Balances. Use overhead type if no room in side jamb.



Note: The drawings and dimension schedules shown must not be used for mortising purposes. Always send to us for templates (supplied gratis) before the mortising is done. The template is absolutely necessary for correct mortising.

Complete illustrated catalog, "Standard Specifications and Architectural Details," may be had upon request.

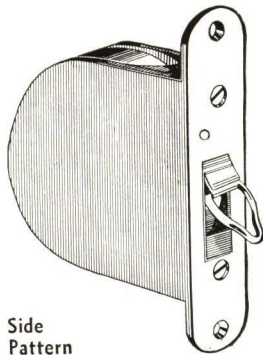
ROCHESTER SASH BALANCE CO., INC.

Manufacturers of Sash Balances for All Purposes

192 Mill Street
ROCHESTER, N. Y.

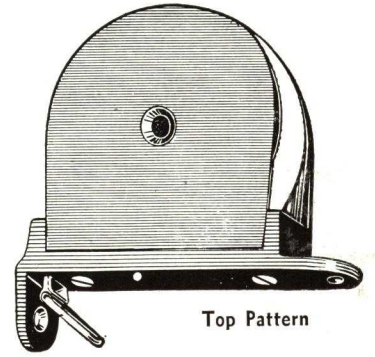
ROCHESTER SASH BALANCES

For New or Old Buildings



Side Pattern

The Rochester Sash Balance is a simple, compact device for perfectly counter-balancing double-hung windows of all kinds, including special types, car, show and wall case, marine (bronze) etc. Their use permits substantial savings in construction—only a plain window frame being required—box frames, sash cord and sash weights are dispensed with. They eliminate cold air infiltration thus contributing to fuel economy and comfort. They add to fire protection. The metal suspending tape cannot burn and there is no danger of sparks from smouldering sash cord falling into weight pockets. With Rochester Sash Balances it is possible to use narrow mullion double-hung windows in rows to produce the casement effect, assuring the maximum amount of light. They are ideal for re-modeling old buildings as it is not necessary to alter either the frame or the sash in any way.



Top Pattern

Features of Rochester Sash Balances

Material—Frame and face of fine gray iron. Spring of best quality steel uniform in temper and tension. Special alloy bronze tape. Drum revolves between two steel plates resulting in a smooth, noiseless working balance.

Adjustable—Moderate variation in weight of sash can be regulated by two adjusting screws in face. For steel windows glazed on the job this feature is particularly valuable.

Types—Made in two types:

Side Balance—For installation in the side jamb.

Top Balance—For application in the head stile where narrow mullions are desired.

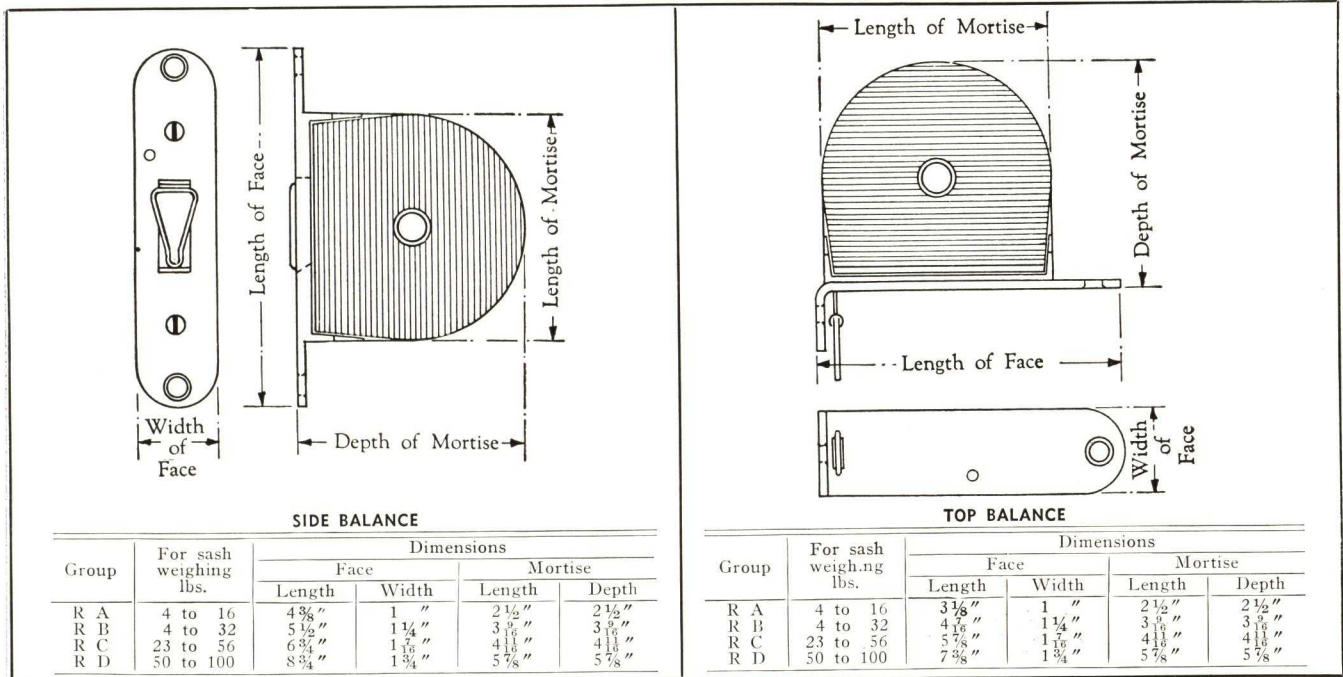
Sizes—Furnished in four mortise sizes for sashes ranging in weight from 4 to 100 lbs.

Finishes—Regular finish is *rust-resisting* Amber Bronze. Electro-plated finishes to match hardware furnished at slight additional cost.

Guarantee

When each sash is accurately weighed and the proper size Balance installed, we guarantee Rochester Sash Balances will counter-balance the sash perfectly during the life of the building.

DIMENSIONS OF ROCHESTER SASH BALANCES



Recommended Specification for Rochester Sash Balances

Insert the following in the Millwork portion of the specification:
 "All double-hung windows to be counter-balanced with Sash Balances manufactured by ROCHESTER SASH BALANCE CO., INC., of Rochester, N. Y. Frames to be mortised at the mill in accordance with template furnished (free) by manufacturer.
 Insert the following in the finish Carpentry specifications:
 "The Contractor shall furnish and install Rochester Sash


Balances as manufactured by the ROCHESTER SASH BALANCE CO., INC., of Rochester, N. Y., on all double-hung windows. Sash shall not be ploughed for the tape. All sash shall be accurately weighed and the proper size Sash Balance used in each case, as required in the manufacturer's guarantee, which is "To counter-balance sashes perfectly for the life of the building."

UNIQUE BALANCE CO., INC.

296 East 134th Street, NEW YORK, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

THE UNIQUE SASH BALANCE AND WHY IT IS A PERFECT BALANCE



To the left is shown the Unique Sash Balance before assembly, showing the rust-proofed, hot-dipped galvanized metal tubing in which is housed the oil-tempered spring, the rust-proofed accelerated rod, and the sash fastener. To the right, the Unique Balance is shown after it has been assembled forming a complete unit. All Unique Balances are adjustable to variations in the weight of sash to be balanced, and can be installed or removed with sash in position in frame.

The Unique Sash Balance functions as a perfect balancing device complete within itself and maintains a true balance at any point in the run of the sash. It is not a holding or friction device for the reason that it utilizes a basic mechanical principle which assures the constant and everlasting flow of power back and forth between the balance and the sash just as surely as water runs down hill.

This principle is the one of the creating and control of power. In the Unique Sash Balance, power is created in the spring by the revolving of the bushing at its lower end around the twisted rod, and the power so created is controlled by the changing pitch of the turns of the twisted rod.

In other words, as additional lifting power is created in the spring by the revolving of the bushing, this additional lifting power is absorbed in the added work required of the spring to lift the sash up the steeper pitch of the rod. The power created in the spring is synchronized with the pitch of the twisted accelerated rod with the result that a *perfect balance* of power is created between the two at any point.

All working parts of the Unique Sash Balance are concealed, the rigid tubing being the only exposed part. There is *no other sash balance* that has this *fool-proof feature*.

Universal Distribution

Unique Sash Balances are sold through all lumber and millwork dealers, the majority of whom carry them in stock. Unique frames are manufactured and stocked by practically all jobbers and can be supplied by lumber and millwork dealers.

Specifications for Unique Sash Balances

Specify Under Millwork

Counterbalancing Sash—The sash shall be counterbalanced with Unique Sash Balances manufactured by the UNIQUE BALANCE COMPANY, INC., 296 East 134th Street, New York, N. Y., and shall be of the proper type to correctly counterbalance the sash.

Frames—All window frames shall be as detailed or shall be regular stock frames (state which) as manufactured for Unique Sash Balances eliminating pulleys, pockets, and weight boxes.

Sash—All sash shall be as detailed or shall be regular stock sash (state which). Stiles shall be grooved full length in center. For Type C and Type D balances the groove shall be $\frac{5}{8}$ in. wide. If prefit sash the groove shall be $\frac{5}{8}$ in. deep. If other than prefit sash the groove shall be $\frac{3}{4}$ in. deep to allow for fitting sash. For Type M and Heavy Duty Balances the grooves shall be $\frac{15}{16}$ in. wide by $\frac{15}{16}$ in. deep after fitting of sash.

A Unique Sash Balance for Practically Every Weight of Window

There are four types of Unique Sash Balances: Type D for sash weighing 1 to 20 lbs. each, or a 40-lb. window not exceeding 5 ft. 10 in. in sash opening height. Type C for sash weighing 1 to 30 lbs., or a 60-lb. window, any height up to 12-ft. sash opening. Type M for sash weighing from 30 to 60 lbs. each, or a window of 120 lbs.; and Heavy Duty Balances for sash from 60 to 100 lbs. each, or a 200-lb. window.

Results of Laboratory Test

Test Number 2295

COLUMBIA UNIVERSITY TESTING LABORATORIES
April 11, 1932, W. J. Krefeld, Engineer of Tests

Test of Operation

A. Method of Test:

1. Sash operating up and down in a frame simulating window action.
- Test continued for 50,000 cycles.

B. Results of Test:

1. Operating characteristics unchanged.
2. The weight supporting ability of the balance unchanged.
3. Twisted rod showed no appreciable wear.
4. Rotating bushing slot showed some wear but without any appreciable effect on operation.

Test of Corrosion

Made by Colin G. Fink, Ph.D.

A. Method of Test:

1. Salt Spray Test of 80 hours as described by U. S. Bureau of Standards.

B. Results of Test:

1. Spring almost entirely free of rust.
2. Spiral and tube showed several minor rust spots.
3. In the opinion of Professor Fink, these sash balances when used as intended, may, in-so-far as corrosion resistance is concerned, be expected to last indefinitely.

Conclusion:

50,000 cycles is equivalent to opening and closing any window in actual operation once a day for 137 years. We think this is conclusive.

Definite Advantages

(1) Narrow trim of any size, from 1 in. up, as there is no weight box to be covered.

(2) A perfectly balanced sash at all times.

(3) Narrow mullions, 2 in. wide.

(4) Permits plaster return on masonry walls 8 in. thick or over, or on 2 x 4-in. stud walls without extra labor or blocking out.

(5) Allows freedom of architectural design and planning.

(6) Weathertight construction, as there are no pulley holes or weight boxes for cold air to seep through.

(7) Solid construction, as studs or brick set tight against frame jamb.

(8) Balances are installed much faster than weights and cords.

(9) The balance is rust-proofed.

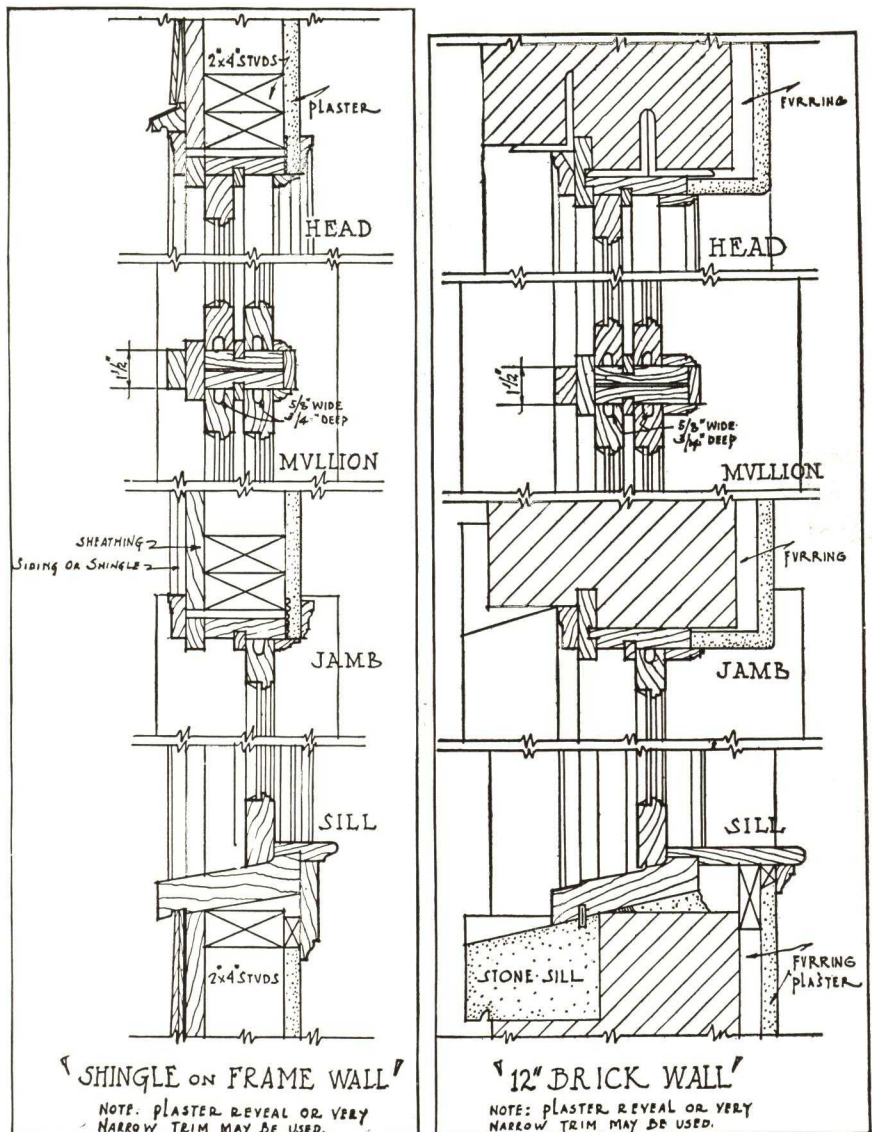
Columbia University proved this by the United States Bureau of Standards salt spray test.

(10) Durable. Proven by Columbia University Test No. 2,295. This test equalled sash operation for a period of 137 years.

(11) No cord to break or rot.

(12) The balance can be installed or removed after the window has been trimmed, painted and completed.

(13) If desired, a sash may be pre-fitted in the shop, balances installed and the complete unit of frame, sash and balances sent to the building, ready to be set in place.



Economy

Unique Sash Balances are used with plank frames which are much less expensive than regular pulley frames. This saving, and the saving in the cost of the weights and cords more than offsets the cost of Unique Sash Balances. Where narrow trim is used, which is more modern and desirable than wide trim, a further considerable saving results.

These Unique type openings cost no more than obsolete weighted type openings and in most cases the ultimate cost is less.

Right:

(1) No weight boxes or pulleys here. Brick, stone or studding are built tight to window frame.

(2) Modern, narrow trim. The wood sash shown will not sweat in cold weather nor will water accumulate on sash or sill and run down the wall under the window.

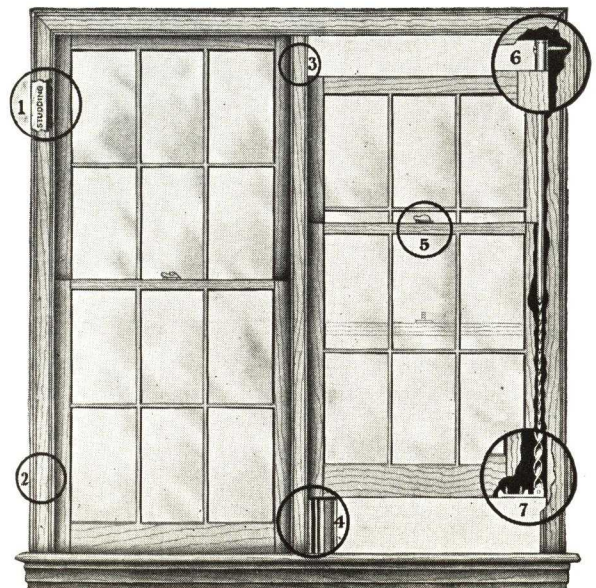
(3) Narrow mullion which permits maximum light.

(4) Here the lower sash is raised a few inches and note the upper sash is lowered. This results in perfect ventilation, the fresh air coming in below, the foul air going out above. The amount of air is controlled by the raising or lowering of sash.

(5) Here is shown the division of lights to suit any design of building.

(6) The Unique Sash Balance and how it is fastened to jamb.

(7) How the Unique Sash Balance is fastened to sash.



CLEVELAND LOCK WORKS

FORMERLY COLUMBIAN LOCK DIVISION

Manufacturers of Sash Pulleys
1290 East 53rd Street, CLEVELAND, OHIO

LOS ANGELES, CAL., 443 So. San Pedro Street
PORTLAND, ORE., 316 S. E. Madison Street

NEW ORLEANS, LA., 3728 So. Prieur Street
NEW YORK, N. Y., 16 Warren Street

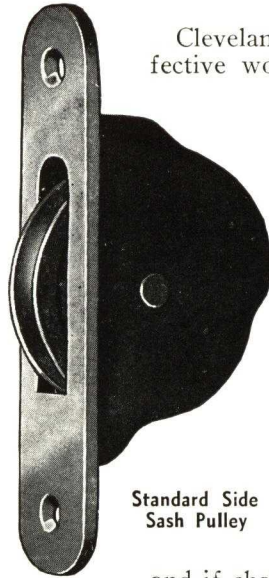
CLEVELAND SASH PULLEYS

The standard line of Cleveland Sash Pulleys in table is made of finest grade gray iron housings and wheels in our own foundries, and machined and assembled in our own shops. Circular design of housings as well as ends of face plates permit easy mortising with standard mortising machines.

Cleveland Pulleys can be furnished in a wide selection of finishes as noted in table. Catalogue numbers in table cover pulleys with *plain axles* unless specified otherwise, in which case they can be equipped with ball bearing, roller bearing, noiseless wood bushing, steel bushings, bronze bushings, self-lubricating bushings, etc., by making such notation after catalogue number.

Wheels are furnished with *combination groove*, applicable for cord or chain and double square groove for chain only can be furnished at no extra cost by writing in words "Chain Groove" after catalogue number. Wheels are all accurately machine grooved to perfect smooth finish. Due to accurate machine methods of locating axle holes, all wheels are concentric, assuring a true running wheel.

Pulleys are packed in boxes with screws to match finish of face.



Standard Side
Sash Pulley

Guarantee

Cleveland Sash Pulleys are guaranteed against defective workmanship and material. All orders taken by selling agents are subject to approval and acceptance. Notification of incorrect orders should be made promptly on receipt of shipment. No responsibility is assumed on any work in connection with pulley installation.

Guide for Architectural Specifications or Ordering

Refer to Table "A" to determine the correct series of pulley to use according to weight of sash. Then refer to Table "B" to select catalogue number in required series according to the selection of finish desired. Catalogue numbers below are furnished with *plain axle* and *combination groove wheel*. If roller bearing, ball bearing, etc., are required note this selection,

and if chain groove wheel is preferred, specify accordingly.

Specification Data

Table A—

Sash up to 20 lb., 100 series
Sash 20 to 40 lb., 200 series

Sash 40 to 100 lb., 300 series
Sash 100 lb. and over, 400 series

CLEVELAND SPECIFICATIONS—TABLE B

Diameter, in.	Standard wheel sash pulley					Heavy duty wheel pulley	
	2	2¼	2½	2¾	3	3½	4
Faces, in.	1½x5	1½x5	1½x5½	1½x5¾	1½x6	1½x6	1½x6½
Finish	No.	No.	No.	No.	No.	No.	No.
No finish, plain.....	100-0	200-0	220-0	300-0	320-0	400-0	420-0
Polished and lacquered.....	100-01	200-01	220-01	300-01	320-01	400-01	420-01
Electro-plated dull bronze.....	100-02	200-02	220-02	300-02	320-02	400-02	420-02
Electro-plated bright bronze.....	100-1D	200-1D	220-1D	300-1D	320-1D	400-1	420-1
Electro-plated bright brass.....	100-1	200-1	220-1	300-1	320-1	400-1D	420-1D
Electro-plated dull brass.....	100-12	200-12	220-12	300-12	320-12	400-12	420-12
Electro-plated nickel.....	100-13	200-13	220-13	300-13	320-13	400-13	420-13
Plain coppered.....	100-5	200-5	220-5	300-5	320-5	400-7½	420-5
Dead black.....	100-7½	200-7½	220-7½	300-7½	320-7½	400-5	420-7½
Wrought bronze face plate.....	100-33	200-33	220-33	300-33	320-33	400-33	420-33
Wrought brass face plate.....	D106-1	D206-1	D226-1	D306-1	D326-1	D406-1	D426-1
	D106-12	D206-12	D226-12	D306-12	D326-12	D406-12	D426-12

Note: Series 200 and 220 pulleys can be furnished with 2½-in. wheel if specified; otherwise 2¼-in. wheel will be furnished.

GOVERNMENT SPECIFICATIONS AS RELATED TO CLEVELAND SPECIFICATIONS

Gov't type	Wheel, in.	Face, in.	Cleveland type
1249	2	1½x5	No. 100
1249	2¼	1½x5	No. 200
1249	2½	1½x5¾	No. 300
1249 A	2	1½x5	No. 100 roller bearing
1249 A	2¼	1½x5	No. 200 roller bearing
1249 A	2½	1½x5¾	No. 300 roller bearing
1250 A	2	1½x5	D106-1 brass wheel—steel bushed—roller bearing
1250 A	2¼	1½x5	D206-1 brass wheel—steel bushed—roller bearing
1250 A	2½	1½x5¾	D306-1 brass wheel—steel bushed—roller bearing
1250 B	2	1½x5	D106-1 brass wheel—steel bushed—ball bearing
1250 B	2¼	1½x5	D206-1 brass wheel—steel bushed—ball bearing
1250 B	2½	1½x5¾	D306-1 brass wheel—steel bushed—ball bearing
1250 E	Single double hung window		Cleveland single overhead set
1250 E	Twin double hung window		Cleveland twin overhead set
1250 E	Triple double hung window		Cleveland triple overhead set

Specify U. S. Finish
in addition to Cleveland
numbers according to
individual specification.

Example—

Conditions require a pulley for heavy sash up to 100 lbs. Refer to Table "A" which recommends Series No. 300 for above weight. If wrought bronze metal face plate in this series is desired according to Table "B" the catalogue number is D-306-1.

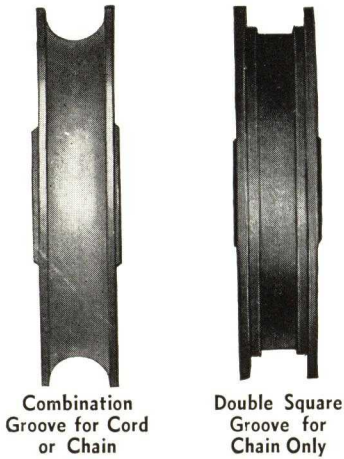
For roller bearing and chain groove specify accordingly. Complete specification for above requirements is—

"Furnish Cleveland Sash Pulley D-306-1, roller bearing, chain groove."

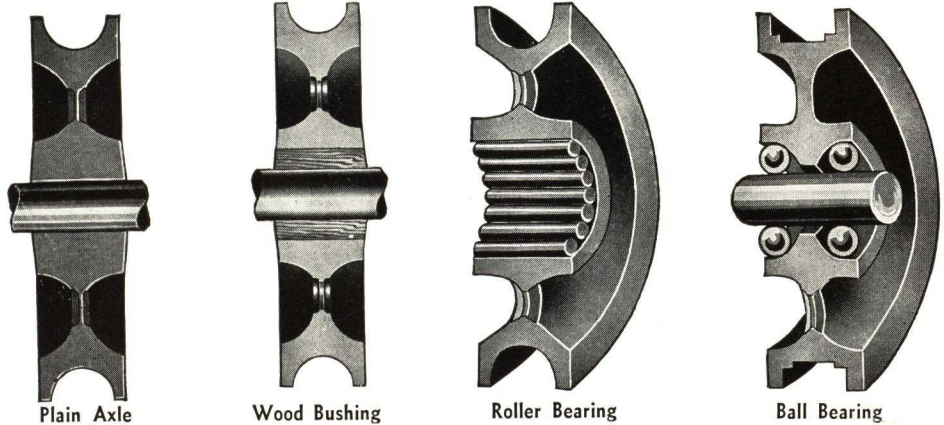
(For specification of pulleys of cast metals other than gray iron, see Note*.)

Note*—Cleveland Pulleys catalogued above can also be furnished in cast metals, such as bronze, brass, aluminum, etc., if required. Use catalogue numbers in specifying and mention that pulleys are to have housing and wheels or possibly housings only or wheels only of brass, bronze, etc.

Standard Grooves



Standard Bearings and Bushings



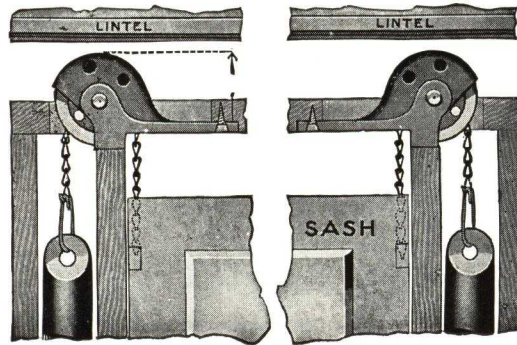
In addition to bearings and bushings illustrated, other types also furnished; such as, bronze bushing, self-lubricating bronze bushing, steel bushing; ball bearing contained in race, etc.

CLEVELAND OVERHEAD PULLEYS

Removable Type, Conforming to U. S. Government Specifications

Cleveland O. H. Mullion Sets make narrow mullion possible by eliminating intermediate weight boxes. Overhead pulleys are also made for single windows as they provide additional travel for weights, allowing larger light areas and permitting the use of iron weights, instead of lead.

All Cleveland overhead pulleys are easily removable without disturbing the window frame in the event of chain breakage,



Overhead Pulleys for Single Windows

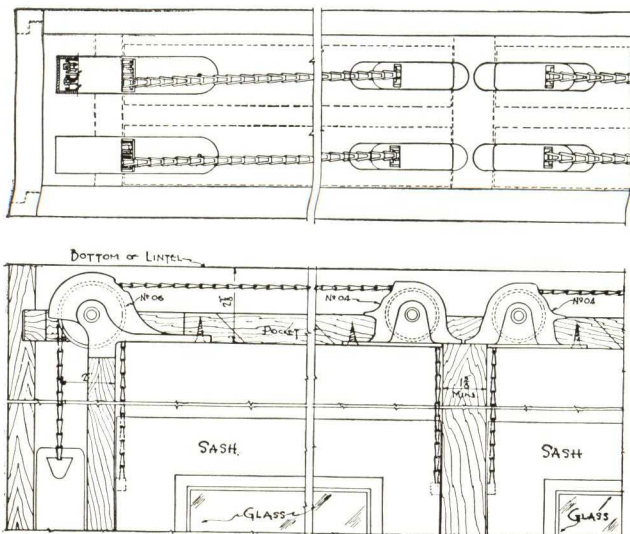
Single overhead set consisting of four No. 4028 pulleys, wrought bronze face, plain axle, two 1/2-in. wheel chain groove.

If other finish, bearing, wheel size or groove is desired, so specify

etc. Chain grooved wheels, plain axles, and wrought bronze face are furnished on all Cleveland Overhead pulleys unless otherwise specified. The same variety of finishes and bearings may be furnished as shown for side pulleys.

Arrangements for Quadruplicate, Quintet frames, etc., will be furnished upon request.

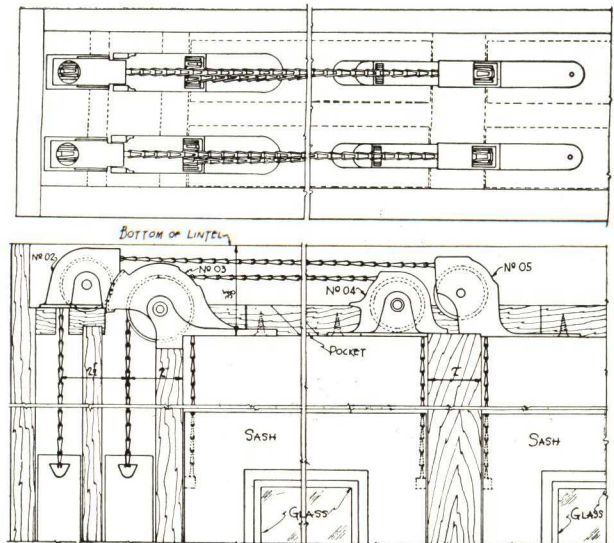
We furnish samples gratis for mortising purposes.



Overhead Pulleys for Twin Windows

Consisting of four No. 06 and four No. 04 pulleys, wrought bronze face, plain axle, chain groove.

If other finish, bearing or groove is desired, so specify



Triple Overhead Pulleys for Windows

Consisting of four each No. 02, No. 03, No. 04 and No. 05 pulleys with wrought bronze face, plain axle, chain groove wheel. If other finish, bearing or groove is desired, so specify.

Note: No. 02 and No. 03 pulleys are interlocked, making this the only triple set in which all pulleys are removable. This is a patented feature

AMERICAN CHAIN DIVISION

AMERICAN CHAIN & CABLE COMPANY, INC.

GENERAL SALES OFFICE
BRIDGEPORT, CONNECTICUT

DISTRICT SALES OFFICES

NEW YORK, N. Y., 230 Park Ave.
YORK, PA., E. Princess and Charles Sts.

PITTSBURGH, PA., 701 American Bank Bldg.
DETROIT, MICH., 12-251 General Motors Bldg.

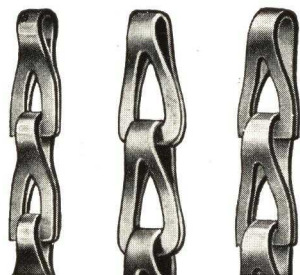
CHICAGO, ILL., 400 W. Madison St.
SAN FRANCISCO, CALIF., 630 Third St.

AMERICAN SASH CHAIN

SPECIFICATIONS

New No.	Old No.	For single sash weighing not over	Metal gauges	Tensile strength		Weight per 500 ft. reel
				Steel	Bronze	
25	60	50 lbs.	.042	425 lbs.	375 lbs.	25 lbs.
30	0	60 lbs.	.028	375 lbs.	350 lbs.	24 lbs.
35	80	100 lbs.	.035	500 lbs.	425 lbs.	30 lbs.
40	100	150 lbs.	.042	600 lbs.	550 lbs.	35 lbs.
45	130	175 lbs.	.050	750 lbs.	675 lbs.	46 lbs.
50	250	200 lbs.	.060	900 lbs.	800 lbs.	57 lbs.
60	AA	.....	.062	925 lbs.	900 lbs.	74 lbs.
65	XXXX	.....	.072	1200 lbs.	1275 lbs.	96 lbs.

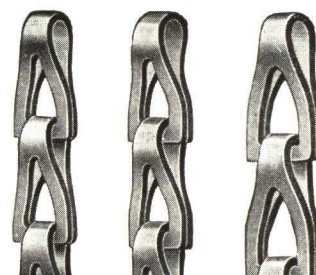
Nos. 60 and 65 are not illustrated.



No. 25

No. 30

No. 35



No. 40

No. 45

No. 50



Actual No. 8 Size

Permanent—American Sash Chain is so strongly made and so resistant to wear and deterioration that it will normally last longer than the building in which it is used.

Easy to Operate—As shown in illustration each link is flat, flexible, and has free play. This makes it non-kinking, almost noiseless and allows the chain to run smoothly over pulley.

Fireproof—Being all-metal the American Sash Chain is naturally fireproof. This is in accordance with modern building requirements and construction methods.

Easy to Install—Proper fixtures have been designed especially for use with American Sash Chains. Installation is fast and simple.

MATERIALS

Copper-Bearing Steel—The American Sash Chain made from this metal offers high resistance to rust and corrosion. It is strong and durable. As stated below, it comes in a large variety of practical finishes.

American Bronze—Under some atmospheric, or industrial conditions an absolutely non-corrosive sash chain must be supplied. For this purpose American Bronze should be specified. It is a hard alloy specially mixed and will give perfect satisfaction.

FINISHES

American Sash Chain is regularly furnished in the following finishes: Bright—Hot Galvanized—Electro Galvanized (S.R.P.)—Coppered—Hercules Finish (Copper plating over hot galvanized)—Acco (Copper plating over S.R.P.) This gives it the

appearance of bronze. Where price is an argument Hercules Finish is an excellent substitute for bronze and is considerably less in price.

PACKING

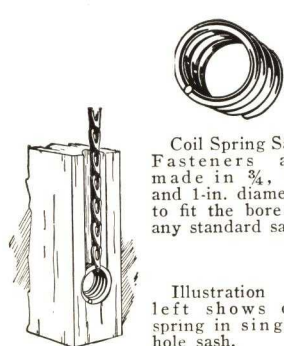
With the exception of No. 8 in the table above, American Sash Chain in either steel or bronze is shipped on steel reels each containing 500 ft. of chain. Two reels are enclosed in one wooden case. American Sash Chain No. 8 is not only shipped on reels as above but also comes packed in strong cloth bags—100-ft. chain approximating 4 lbs. complete. With the chains sufficient fixtures are



American Sash Chain

packed for seven complete double hung windows. Dealer's counter display cartons of No. 8 Acco Sash Chain contain four pieces of chain, each piece 4 ft. long with sufficient fixtures for one complete double hung window.

FIXTURES



Coil Spring Sash Fasteners are made in $\frac{3}{4}$, $\frac{7}{8}$, and 1-in. diameter to fit the bore of any standard sash.



Weight Hooks are made of hard drawn steel wire coppered.



Illustration to right shows use of coil spring in two-hole sash.

ACCO SASH CHAIN No. 8

Acco Sash Chain No. 8 is a popular, permanent, noiseless and fireproof chain for double hung windows. It is famous for its flexibility and long life. It operates smoothly and with perfect satisfaction over any sash cord pulley. It is a favorite specification for apartments and other residential property.

American Sash Chain No. 8 is supplied in Coppered (Copper Plating over Hot Galvanized), Acco Copper Plating over S.R.P. (Electro-Galvanized) or any standard finish as shown here.



Showing Acco No. 8 Sash Chain fitting perfectly in groove of cord pulley.

THE BEAD CHAIN MANUFACTURING COMPANY

76 Mt. Grove Street, BRIDGEPORT, CONN.

BEAD CHAIN FOR PLUMBING, ELECTRICAL FIXTURES, VENTILATOR CONTROL, AND VENETIAN BLINDS

What Bead Chain Is

BEAD CHAIN, as the name implies, is a type of chain formed of hollow metal beads, joined together by metal connectors. It is strong, flexible, non-kinkable and attractive.



Trade Mark Reg. U. S. Pat. Off.

For Plumbing and Heating

BEAD CHAIN is specified for utility, service and better appearance, for attachment to rubber stoppers in basins and baths, for shower curtain holdbacks and for high wall tanks. It is ideal for the smooth operation of all register and damper controls.

Electrical Fixtures

BEAD CHAIN has, for many years, been universally used on pull sockets, and is most practical and decorative for the suspension and ornamentation of electric light fixtures. Illuminating engineers specify BEAD CHAIN for suspension on luminous bowl fixtures because of its flexibility and ease of adjustment.

Ventilator and Air Conditioning Controls

BEAD CHAIN, because of its rounded surfaces and non-kinking characteristics, operates smoothly over pulleys of small diameter, and has therefore been adopted with success on many types of dampers and ventilators.

Air Conditioning

In the development of automatic and other regulators for air conditioning, BEAD CHAIN is rapidly being adopted by the manufacturers of such units. Wherever smoothness of operation is desired, and particularly where its use is visible, architects and engineers are specifying BEAD CHAIN on air conditioning installations.

Venetian Blinds

BEAD CHAIN is now generally specified with the modern tilting devices for Venetian blinds. It is "slip-proof." For decorative purposes it is frequently used for the entire length, but operating lengths can be firmly spliced to cord with No. 10-V Cord and Chain Connectors.

Cord and Chain Connector

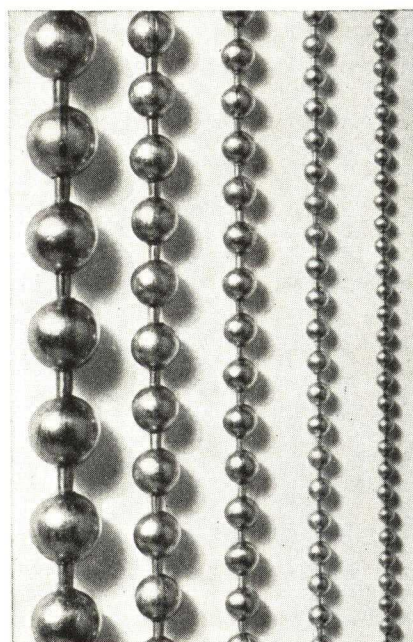
A smooth strong connection is readily made with BEAD CHAIN and cord, by our 10-V Connector, particularly adapted to use with Venetian Blinds.



10-V Cord and Chain Connector

Bead Chain Attachments

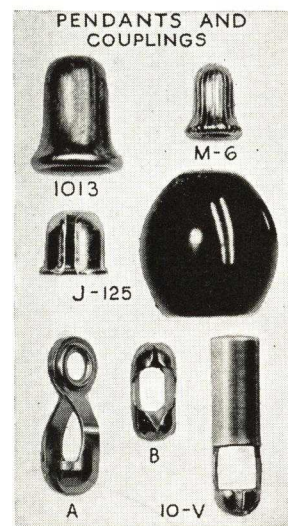
A great variety of detachable and non-detachable pendants are regularly available, as well as end rings and couplings for all uses, splicing links, and cord and chain connectors.



No. 20 No. 13 No. 10 No. 6 No. 3
Bead Chain
Illustrations Actual Size

SIZES AND APPROXIMATE STRENGTH

Size No.	Diam. of bead, in.	Approx. tensile strength, lbs.
3	.093	15-20
6	.125	25-30
10	.187	45-50
13	.250	85-100
20	.375	175-200



Materials and Finishes

BEAD CHAIN is made in brass, bronze, gliding metal, nickel silver and aluminum, and finished either in the natural metal or with chromium, nickel, gold and silver plate.

How to Specify Bead Chain

When specifying BEAD CHAIN state the size number, material and finish wanted, as well as the assembly desired or the purpose for which it is to be used.

Experimental Samples and Information

Our Engineering Department is prepared to furnish sample lengths and attachments and assist in the design of assemblies and attachments where the use of BEAD CHAIN is necessary or desirable.

SAMSON CORDAGE WORKS

89 Broad Street
BOSTON, MASS.

Products

Manufacturers of BRAIDED COTTON CORD in all sizes and colors for all purposes, including SAMSON SPOT CORD, SAMSON WIRE CENTER CORD and other SASH CORDS.

Also manufacturers of Clothes Line, Ventilator Cord, Curtain and Shade Cord, Awning Line, Masons' Line, Dumbwaiter Rope, Arc Lamp and Trolley Cord, Signal Cord, Venetian Blind Cord, Cotton Twine, etc.

Samson Cord

All cord bearing the trade-mark of Samson and the Lion is made of *extra quality* stock; is carefully inspected, and is guaranteed free from the rough places which destroy common cords so quickly.

The SAMSON CORDAGE WORKS manufactures several grades of sash cord, but the lower grades, made for competing trade in cheap work, do not bear the Samson trade-mark. They do not fill specifications for Samson cord, which is much more economical in the end.



TRADE-MARK

Samson Spot Sash Cord

Samson Spot Cord is made in *one quality only*, the best sash cord we can produce after more than fifty years' experience. The colored spots are our trade-mark, used only with this extra quality. They serve as a means of identification after the label is removed.

Spot Cord will wear many times longer than common cord, made of inferior yarn roughly braided, poorly finished, and usually adulterated with loading material, causing early destruction by abrasion on the pulley. It is noiseless.

Specifications—Architects' specifications should read:

"Windows to be hung with Samson Spot Cord; size of cord and size of pulleys to agree with manufacturer's list." (See lower left-hand corner of this page.)

Sample Cards—Sample cards, showing proper sizes for use with different weights and pulleys, will be gladly sent to architects and builders.

Samson Wire Center Sash Cord



Recommended for use in hanging heavy windows or where for any reason a metallic device is desired.

The cover is made of the same extra quality cotton yarn as used in Samson Spot Cord, with special steel wire center, manufactured under specifications for running over pulleys and of entirely different quality from ordinary wire.

The weight of the window is borne chiefly by the wire center, the cotton cover merely acting as a cushion, thus avoiding contact of metal with metal which causes wear and makes an unpleasant noise.

It is carried in mahogany color, marked with the same trade-mark as our Samson Spot Sash Cord, i.e., spots of a different color from the body of the cord. Carried in two sizes: Nos. 8 and 10.

No. 8 is suitable for weights up to 30 lbs. if used with pulleys not less than 2 in. in diameter, or for weights up to 50 lbs. with pulleys not less than 2½ in. in diameter.

No. 10 is suitable for weights up to 75 lbs. if used with pulleys not less than 2½ in. in diameter, or for weights up to 100 lbs. with pulleys not less than 3 in. in diameter.

Special Cords

Cords made to order for any purpose, in special braid, finish or color.

Territory

Samson Spot Cord and this company's other goods are sold all over the world, and are carried by dealers in all parts of the United States.

Catalogues

Send for catalogues and sample cards.

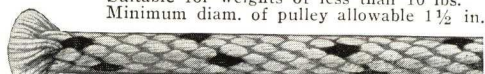
Samson Spot Sash Cord

The number indicates the diameter in 32nds of an inch. Usually put up in 100 ft. hanks, 1 dozen hanks in a package.



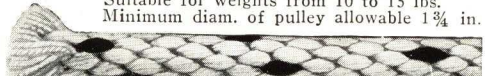
Size No. 6. Diam. $\frac{3}{16}$ In.

About 18 lbs. per doz.; about 66 ft. per lb.
Suitable for weights of less than 10 lbs.
Minimum diam. of pulley allowable 1½ in.



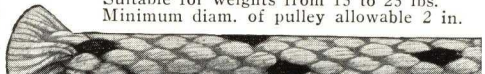
Size No. 7. Diam. $\frac{7}{32}$ In.

About 22 lbs. per doz.; about 55 ft. per lb.
Suitable for weights from 10 to 15 lbs.
Minimum diam. of pulley allowable 1¾ in.



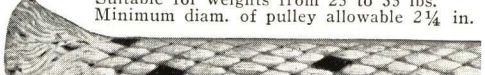
Size No. 8. Diam. ¼ In.

About 27 lbs. per doz.; about 44 ft. per lb.
Suitable for weights from 15 to 25 lbs.
Minimum diam. of pulley allowable 2 in.



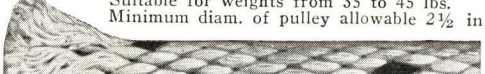
Size No. 9. Diam. $\frac{9}{32}$ In.

About 33 lbs. per doz.; about 36 ft. per lb.
Suitable for weights from 25 to 35 lbs.
Minimum diam. of pulley allowable 2¼ in.



Size No. 10. Diam. $\frac{5}{16}$ In.

About 44 lbs. per doz.; about 27 ft. per lb.
Suitable for weights from 35 to 45 lbs.
Minimum diam. of pulley allowable 2½ in.



Size No. 12. Diam. $\frac{3}{8}$ In.

About 60 lbs. per doz.; about 20 ft. per lb.
Suitable for weights from 45 to 60 lbs.
Minimum diam. of pulley allowable 3 in.

THE SMITH & EGGE DIVISION OF THE TURNER & SEYMOUR MFG. CO.

Smith & Egge Sash Chain and Fixtures
TORRINGTON, CONN.

REPRESENTATIVES

ATLANTA, GA., J. A. Buchanan, 1125 St. Louis Place
BOSTON, MASS., C. E. Harris Co., 44 Bromfield Street
CATONSVILLE (BALTIMORE COUNTY), MD., A. William Zimmerman,
40 Ridge Road
CHICAGO, ILL., R. A. Twadell, 40 So. Clinton Street
CLEVELAND, OHIO, S. Chernikoff, 1200 W. 9th Street
DALLAS, TEX., J. H. North, 1957 Colorado Boulevard
DETROIT, MICH., H. C. Fuller, 18985 Santa Rosa Drive
SAN FRANCISCO, CAL., R. R. Vought Co., 518 Monadnock Building

INDIANAPOLIS, IND., C. F. White, 1939 No. Meridian Street
LOS ANGELES, CAL., A. F. Wheeler, 405 So. Hill Street
NEW ORLEANS, LA., W. V. Leland Co., 7733 So. Claiborne Avenue
NEW YORK, N. Y., Nepperhan Sales Co., 175 Fifth Avenue
OMAHA, NEB., S. M. Hawkins, P. O. Box 300
PHILADELPHIA, PA., K. G. Kredell, 504 Commerce Street
PITTSBURGH, PA., E. D. Randolph, P. O. Box 6332
ST. LOUIS, MO., D. A. McCarthy, 820 No. First Street

Originators of Sash Chain

More than forty years ago Mr. Frederick Egge invented an automatic machine for making sash chain. This was the development that made possible the use of sash chain for hanging windows.

Strength, durability and uniformity of our chain have been so thoroughly tested during more than forty years that today it is known all over the country as the chain of quality.

Such modern buildings as the Gibraltar Building, Prudential Life Insurance Co., Newark, N. J. and the Metropolitan Life Insurance Building are equipped with S & E Sash Chain as are from coast to coast the Matson Building of San Francisco, Missouri Pacific Hospital of St. Louis, Statler Hotel of Detroit, Atlantic Refining Building of Philadelphia. These are but a few of many.

Features

Through years of research the method of manufacture to secure the greatest tensile strength and uniformity has been developed. The required tensile strength may be quickly figured by multiplying the weight of a single sash by four—this gives a safety factor of four to one—considered ample by the Board of Fire Underwriters.

Our Galvanized Steel Sash Chain has been tested and passed by the National Board of Fire Underwriters.

Cable Chain

Various sizes are made in copper and special high carbon steel. Especially recommended for use where great strength is required. Adapted for use on elevator or fire doors, safety gates, etc. Tensile strengths vary according to size of chain.



Cable Chain

Sash Chain Fixtures

Various sizes. Available for each size of sash chain for attaching to weight and sash as illustrated.

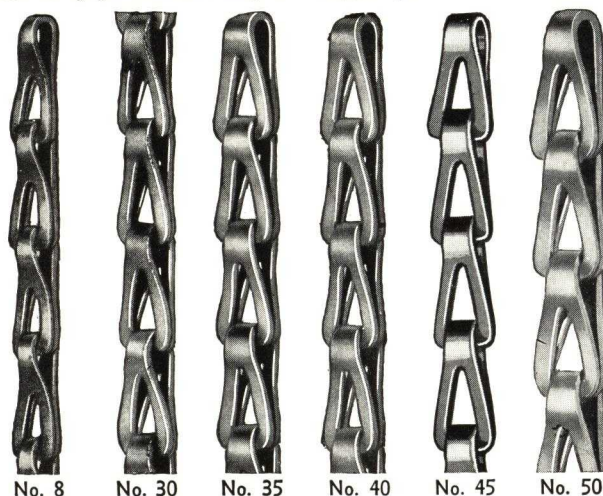
Steel Sash Chain
Nine sizes. Made from special alloy cold rolled steel especially manufactured for this purpose gives it great strength and durability. Can be furnished in plain steel or coppered, sherardized, galvanized, copper plated over sherardized (Sher-El-Copp), copper plated over hot galvanized.

Red Metal Sash Chain

Nine sizes. Made from a special bronze mixture and, with the exception of our Giant Metal, is not surpassed, gauge for gauge, by any other sash chain on the market.

Giant Metal Sash Chain

Six sizes. Made of a super bronze mixture controlled by us and entirely free from any impurities. Its tensile strength and durability have never been surpassed for sash chain. Many times those buying bronze chain in the belief that they are getting the equal of our Giant Metal are actually supplied with chain similar to our Red Metal.



*TABLE OF CAPACITIES, WEIGHTS, ETC.

For single sash weighing not more than, lbs.	New No.	Old No.	Gauge	Giant Metal		Red Metal		Steel	
				Tensile str'gth	Ship. wt. lb.	Tensile str'gth	Ship. wt. lb.	Tensile str'gth	Ship. wt. lb.
65	65	xxxx	.072	1475	228	1275	228	1200	220
60	60	AA	.062	900	126	900	176	925	160
200	50	A	.060	900	126	850	126	900	120
175	45	A30	.050	750	92	675	92	750	99
150	40	1	.042	650	84	550	84	620	74
100	35	2	.035	475	74	425	74	500	71
60	30	0	.028	375	62	350	62	375	58
50	25	00/042	.042	375	68	375	68	425	60
40	8	00	.035	250	56	250	56	250	50

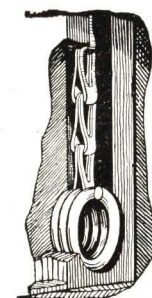
*For convenience both old and new numbers are given.
Data given in this table shows the number, gauge and weight established as standard by the Sash Chain Industry.

Chains for Light Weight Sash

No. 8 sash chain is made in steel and Red Metal. Steel chains in any finish desired are put up in bags containing 100 ft. each and 7 sets of fixtures for attaching chain to weight and sash. Four hooks and four spirals are required for a window of two sashes—attached as shown below.



Attaching Chain to Weight



Attaching Chain to Sash with Spiral



Attaching No. 1 Sash Fixtures

C. MALLOY, President and Treasurer

ACKER & MAN, INC.

H. MALLOY, Vice President

Standard Approved Drop Forged Window Cleaner's Safety Devices and Equipment in Brass and Bronze

TELEPHONE
MURRAY HILL 4-3812

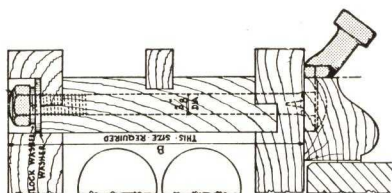
14-16 West 17th Street, NEW YORK, N. Y.

ESTABLISHED
1918

AGENTS IN ALL PRINCIPAL CITIES

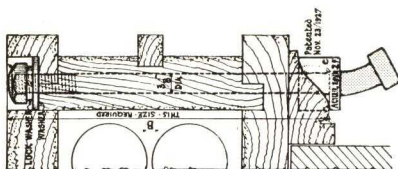
Adaptability

All single head types shown are made with double heads for four-bolt system, and vice versa.



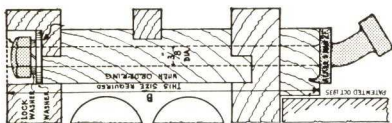
No. 2—For Wood or Kalamein Frames and Mullions

Installed at mill by frame-maker or at job by carpenter contractor



No. 2FC—For Wood or Kalamein Frames and Mullions

Undersurface of shoulder is made concave, flat or convex to match staff bead or plaster. Pat., Nov. 23, 1927



No. 2F—For Wood or Kalamein Frames and Mullions

(Pat., Dec., 1935)



No. 2D—Front View

Double head type for wood or Kalamein frames and mullions



No. 10—Mullion Anchor

For steel sash mullions



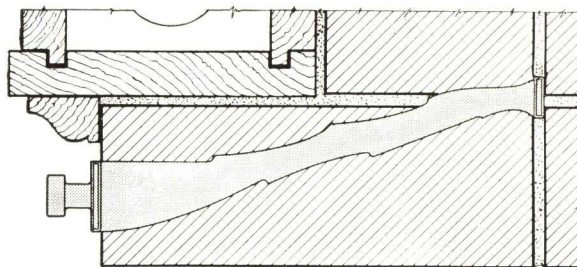
No. 11—Jamb Anchor

For steel sash jambs of the Fenestra, Truscon, William Bailey and similar type windows

Architect's Specifications

All windows, which are to be cleaned from the outside, and which are 6 ft. or more above grade, roof, balcony or fire escape, shall be equipped with Ackerman Window Cleaner's Devices, as manufactured by ACKER & MAN, INC., New York, N. Y.

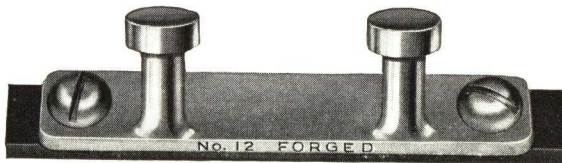
Install two (2) to each window, 46 to 51 ins. above sill. Select the type from illustrations to suit type of construction.



No. 7A—Masonry Anchor Installed by Mason Contractor During Construction

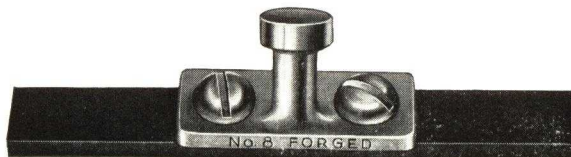


No. 14—Double Head Anchor for Installation in Masonry



No. 12—Double Head Anchor for Hollow Metal Frames

Reinforcing plates are attached by frame maker during fabrication of frames. Can be installed on old buildings



No. 8—Single Head Anchor for Hollow Metal Frames



No. 19—Window Cleaner's Safety Belt

Made of canvas or leather. All hardware is forged

A Few of the Many Buildings Where Our Equipment Is Installed and in Use

NEW YORK—American Telephone & Telegraph Co. General Office Building, Rockefeller Center, Loft Candy Buildings, St. Luke's Hospital, Ritz Tower Hotel and Empire State Building
BROOKLYN—Mergenthaler Linotype Co. and E. R. Squibb & Sons
JERSEY CITY—Colgate Palmolive Peet Co.
PATERSON—General Hospital
NEW BRUNSWICK—Johnson & Johnson Buildings
NEWARK—Military Park Building and Presbyterian Hospital
ELIZABETH—St. Elizabeth's Hospital

HARTFORD—Etna Life Insurance Building
PHILADELPHIA—Warwick Hotel, Bonbright Building and U. S. Navy Buildings
JOHNSTOWN—Garfield Junior High School
BRADDOCK—Carnegie Steel Co.
PITTSBURGH—Lauer-Magee Hospital
ATLANTA—Rhodes Haverly Building
WASHINGTON, D. C.—Agricultural Buildings

Attractive prices on forged brass lag screws.

ALLITH-PROUTY INC.

Manufacturers of Hardware for all Types of Rolling Doors
DANVILLE, ILL.

PRODUCTS

ACCORDION DOOR HARDWARE

AIRPORT DOOR HARDWARE

BARN DOOR HARDWARE

FIRE DOOR HARDWARE (Underwriters)

HOUSE DOOR HARDWARE (Sliding)

INDUSTRIAL DOOR HARDWARE

ROUND HOUSE DOOR HARDWARE

VERTICAL SLIDE DOOR HARDWARE

HEAVY TYPE DOOR HINGES

OVERHEAD CARRIERS

GARAGE DOOR HARDWARE

Folding-Sliding

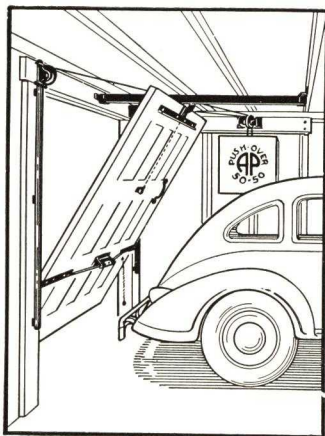
Overhead Type

Round-the-Corner

Straight Sliding

STADIUM SEAT BRACKETS

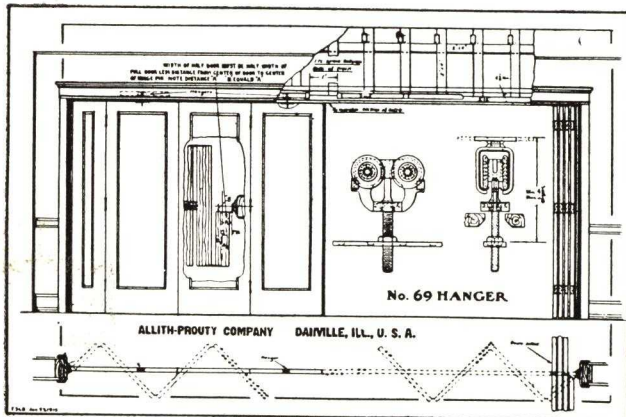
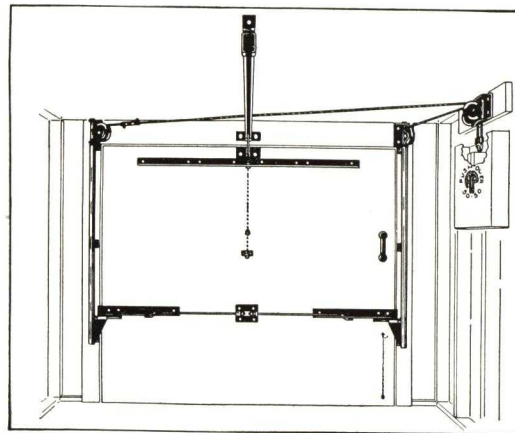
ALLITH "PUSH-OVER" HARDWARE FOR ONE-PIECE OVERHEAD DOOR



Is always economical and efficient. All working parts are simple and sturdy. There are no springs. The door is counterbalanced with a weight box to be filled with sand. The turn-over action as illustrated will clear any modern car with space to spare if rear bumpers clear the door.

The door can be sealed on all four sides with weatherstrips. All hardware parts are inside, protected from the weather. Ideal for basement installations, as only 5½ in. headroom is required.

The positive locking-device holds the door against wind pressure and is designed to be secured with a standard padlock. When wanted, an individual cylinder locking handle can be furnished at a slight increase in price of set.



ALLITH ACCORDION DOOR HARDWARE

The hardware for these installations usually requires special fabrication and drawings. Full information may be obtained by an explanation of the conditions.

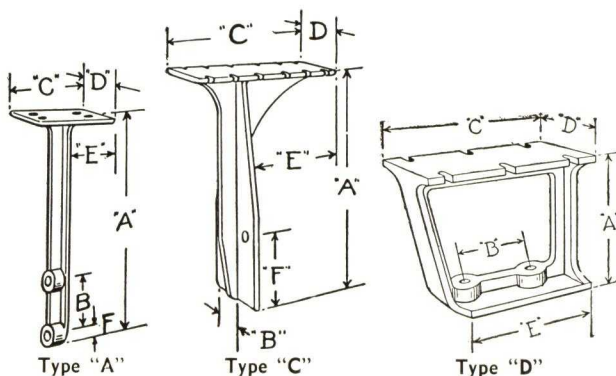
While hangers are usually placed in the center of top rail of doors, they may be placed in any position, including the edges. When installed other than centrally a floor guide is used.

A passage door is permitted.

Accordion arrangements can be used on any of the tracks shown on the opposite page.

ALLITH STADIUM SEAT BRACKETS

- (1) Withstand all loads and shocks
- (2) Economical to install and maintain
- (3) Standard on the largest stadia
- (4) Meet every requirement
- (5) Are permanent
- (6) Rust resisting



SIZES AND DIMENSIONS IN INCHES—ALLITH STADIUM SEAT BRACKETS

Bracket Type	Over-all height "A"	Bolts centers "B"	Length pad "C"	Width pad "D"	Over-hang on riser "E"	Bolt hole location "F"	Size bolt used	Number and size of boards used
A-3	16 1/4	5	9 3/8	3 1/2	4 5/8	1 1/4	5/8	3—2" x 4"
A-5 Stand-ard	15 1/4	4	6	4	3	3/4	5/8	1—2" x 8"
A-6	13 1/4	4	6	4	3	3/4	5/8	1—2" x 8"
A-7	15 1/4	4	8	4	3	3/4	5/8	1—2" x 10"
A-8	15 1/4	4	9 3/8	4	6	3/4	5/8	3—2" x 4"
C-1 Stand-ard	15 1/4	2 3/8	10 3/4	3	6	4	5/8	3—2" x 4"
D-2 Stand-ard	5 3/4	4	9	3	9		1/2	3—2" x 4"

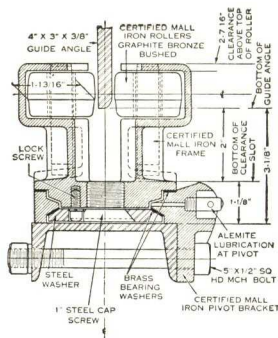
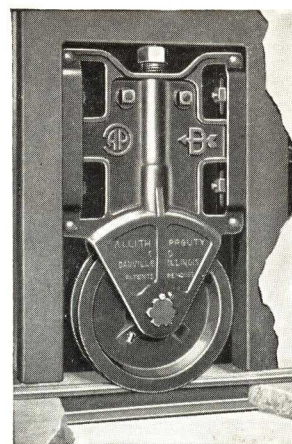
ALLITH AIRPORT DOOR HARDWARE

The rollers illustrated have been made in greater quantities than any other.

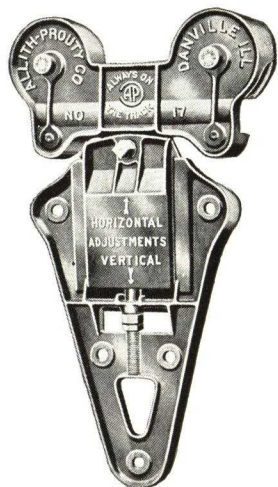
The conditions and variations in construction and size of hangar doors make it necessary to handle each job specially.

Blueprints and specifications to meet any requirement are available.

Illustration at right about $\frac{1}{12}$ actual size.

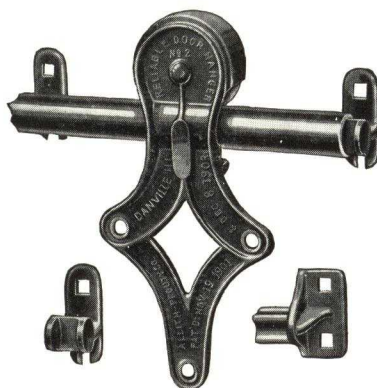


ALLITH DOOR HANGERS AND TRACKS



Allith No. 17 Hanger

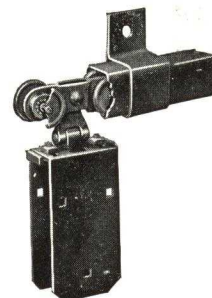
No. 17 hanger shown about $\frac{1}{2}$ actual size. For large straight sliding doors (up to 2000 lbs.) use No. 17 double adjustable roller bearing hangers.



Allith Reliable Round Track Door Hangers

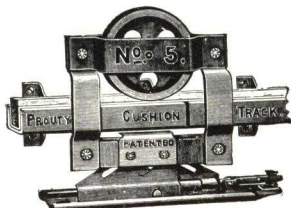
Available in four sizes and many types, to carry doors of any weight. Handles doors in parallel or in continuous runs.

No. 2 Hanger shown about $\frac{1}{4}$ actual size.



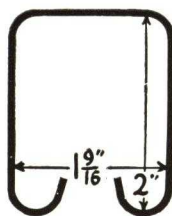
Allith Hangers for Trolley Tracks

Malleable and steel pendants, trucks and door plates. Durable roller bearings. All necessary sizes available. No. 61 Hanger shown about $\frac{1}{8}$ actual size.



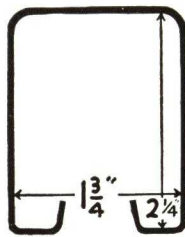
Allith House Door Hanger

The Allith-Prouty No. 5 Hanger is one of the best known and best selling parlor door hangers. Quiet and trouble-proof. Hanger shown about $\frac{1}{2}$ actual size.



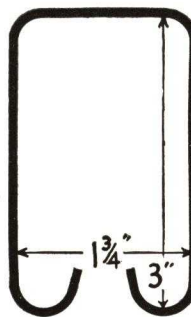
Allith Track

No. 60-X 16 gauge
No. 62-X 14 gauge



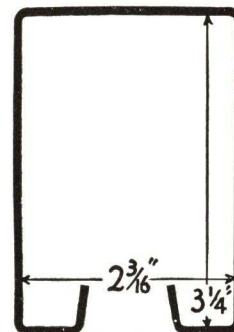
Allith Track

No. 240-X 16 gauge
No. 242-X 14 gauge



Allith Track

No. 71-X 14 gauge

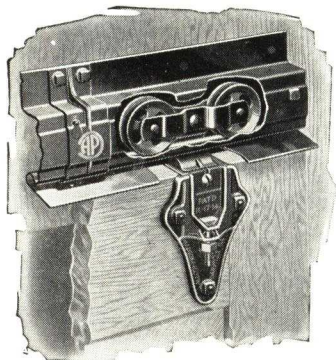


Allith Track

No. 270-X 14 gauge

Brackets available for any of these tracks to meet any condition

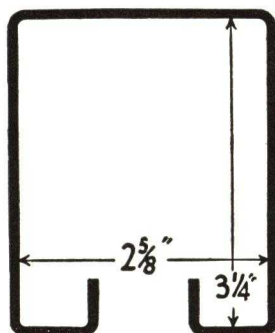
Track sections shown half size



Allith "Ten-Ten"

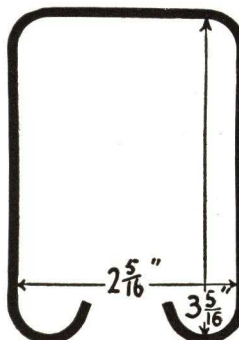
Watershed Hangers and Tracks

Heavy Malleable Hanger provides trouble-proof service for the life of the building. Track is made of 14-gauge steel, formed to insure weathertight construction at top of door. Illustration about $\frac{1}{10}$ actual size. Smaller sizes available.



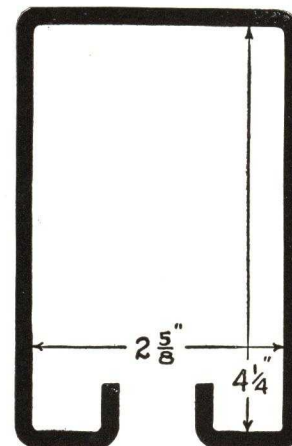
Allith Track

No. 280-X 13 gauge
No. 288-X 10 gauge



Allith Track

No. 67-X 13 gauge
No. 68-X 10 gauge



Allith Track

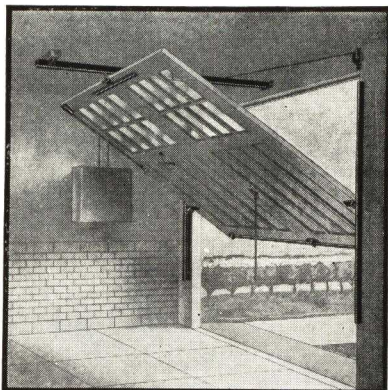
No. 290-X 10 gauge

COBURN TROLLEY TRACK CO.

60 Canal Street, HOLYOKE, MASS.

Coburn No. 500 Hardware Sets

A first-class type of overhead door hardware in the lowest price field. Door is counterbalanced



perfectly by the correct amount of sand in the weight box, and only a slight pull is required to raise or lower the door. Weight box may be located anywhere in the garage, and is frequently placed between the studding or inside an enclosure. Old garage doors of the swinging type may be used or a new one-piece door may be selected. The path of travel of the door will enable it to clear top of any modern automobile, even though rear bumper of the car is close to the door when the door is in vertical position. A safety hinge hasp on the outside permits the door to be locked by the owner's padlock. Installation can be completed in a few hours by following the instructions packed in every set.



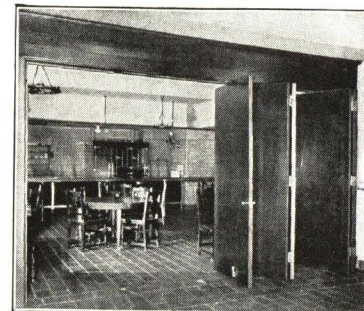
Coburn Rolling Ladders

A rolling ladder for every requirement. Weight is usually carried on floor rollers with a track at the top acting as guide. Sides of ladder may be bent to pass counters or other obstructions. Other types include ladders rolling on the counter ledge and ladders operating in track attached to ceiling. Coburn rolling ladders are always made up special after receipt of full information in regard to the specific conditions. Thirteen different types are illustrated in our new 24-page catalog.



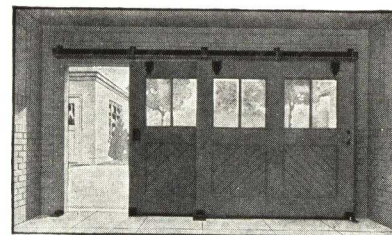
Coburn Folding Partition Hardware

Complete hardware sets are made for folding partitions which are supported by overhead track, and for folding partitions which are carried by floor casters running on a floor track. Overhead type may have all the doors hinged together and to the jamb, or they may be hinged in pairs with each pair acting as a unit. Floor caster type has doors hinged in pairs.



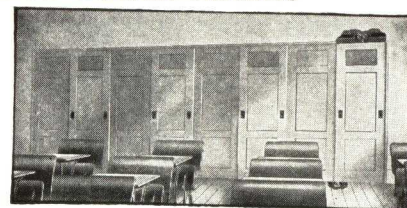
Coburn Sliding Door Hardware

Coburn manufactures a complete line of hardware for every type of sliding door. A large stock of standard items is maintained for immediate shipment, including door hangers, track, floor guides, guide rolls, chafe strip, door stops, bumper shoes, handles, top bolts, foot bolts, cane bolts, and heavy hinges.



Coburn School Wardrobe Hardware

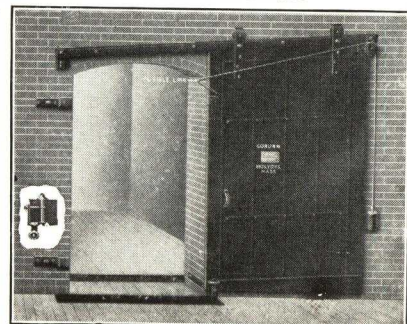
At the right is shown an inexpensive type of school wardrobe. Each alternate door is stationary while the other doors slide back and forth as one unit when any moving door is opened or closed. Sliding doors are supported by door hangers running in an overhead track and guided at bottom by an inverted steel channel which engages with guide rolls.



Coburn Automatic Fire Door Hardware

Manufactured under the supervision of Underwriters' Laboratories, Inc., Coburn automatic fire door hardware complies with the insurance requirements of every locality.

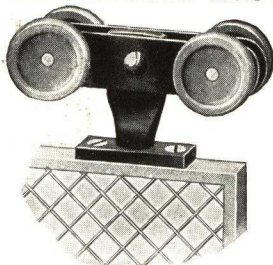
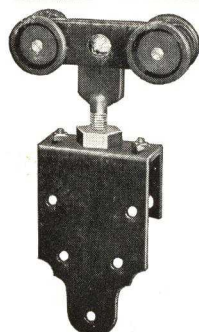
When the fusible link melts, the weight drops to the floor and the door rolls down the inclined track to the closed position. Detailed catalog available on request.



Coburn Track and Door Hangers

The original enclosed track—patented by Coburn in 1888. Made in various sizes for carrying all types of sliding doors. Curved lips give maximum strength to the track and keep the hanger wheels in the exact center position where friction is reduced to the minimum. Moving parts are completely covered and protected from dust and dirt.

Coburn door hangers are recognized everywhere as high quality products. They are built strong and sturdy for a lifetime of service. Equipped with roller bearings or ball bearings they roll smoothly and easily with the heaviest doors. The large vertical and lateral adjustments make them adaptable to varying conditions. The hangers have rigid carriers for use with straight track, knuckle-joint carriers for curved track, and swivel carriers for doors which slide and fold at the same time.

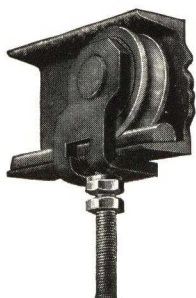


Coburn Sliding Gate Hangers

Wire gate manufacturers can find a large choice of dependable gate hangers in the large Coburn stock which is ready for immediate shipment. Illustration at left is a simple, non-adjustable type. Other gate hangers are provided with vertical adjustment and they are made in different sizes for carrying gates of different weights.

Coburn No. 750 Door Hangers and Track

No opening is too wide and no door is too heavy for this type of track and hanger. Track is made by fastening a special rounded steel section to the lower flange of a standard channel iron or I-beam. Hangers operate smoothly on ball bearings and permit the heaviest doors to roll open with ease. No supporting beam is required as this track in itself is a supporting beam, and can be made an integral part of the building if desired. Both track and hangers are patented by Coburn.



Since 1888 Coburn Products Have Been Dependable

THE KINNEAR MANUFACTURING CO.

Specialized Door Manufacturers for Over 40 Years

820-870 Field Avenue, COLUMBUS, OHIO

PACIFIC COAST FACTORY: 361 Brannan St., SAN FRANCISCO, CALIF.

BRANCH OFFICES

NEW YORK, N. Y., 30 Rockefeller Plaza, R. C. A. Building
BALTIMORE, MD., 210 Fidelity Building
BOSTON, MASS., 6 Jersey Street
CINCINNATI, OHIO, 2335 Reading Road
CLEVELAND, OHIO, 7704 Carnegie Avenue

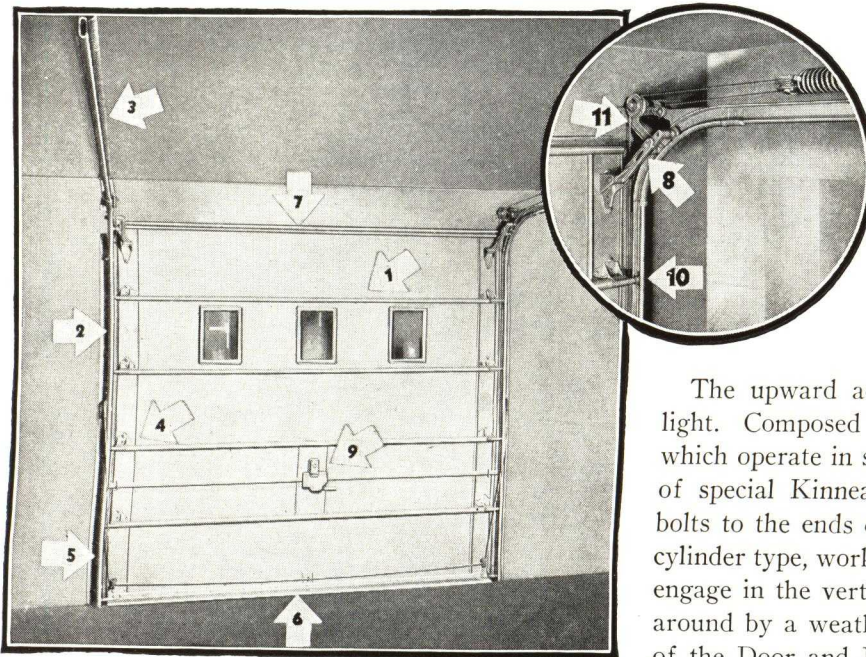
CHICAGO, ILL., 1919 Randolph Wells Building
DETROIT, MICH., 7710 Woodward Avenue
NEW ORLEANS, LA., 529 Hibernia Bank Building
PHILADELPHIA, PA., 1321 Arch Street
PITTSBURGH, PA., 1822 Oliver Building

WASHINGTON, D. C., 410 Bond Building

AGENTS IN PRINCIPAL CITIES



Wood RoL-TOP



All-Steel RoL-TOP

KINNEAR DOORS

See File Index for Complete Covered Catalog Including

Rol-Top (Wood—Sectional overhead type).

All-Steel Rol-Top (overhead type).

Rol-Top Electric Operators and Control Equipment.

Steel Rolling Service Doors (Coiling interlocking slat type).

Akbar Steel Rolling Fire Doors (Automatic Underwriters' label).

Superior Automatic Fire Shutters (Interlocking steel slat type).

Steel Rolling Grilles (also stainless steel, bronze and aluminum).

Door Power Units (Electric).

Bifolding Doors—Wood or Steel (Jack-knife and telescoping type).

Wood Rolling Doors and Partitions (coiling slat type).

Vertical Sliding Doors—Wood or Steel.

KINNEAR ROL-TOP DOORS

Wood or Steel for Residence Garages, Commercial or Industrial Openings

The upward acting door that saves space and admits light. Composed of hinged sections (1) of wood or steel, which operate in steel tracks with ball bearing rollers (10) of special Kinnear design that are bolted with through bolts to the ends of the sections. The lock (9) is of the cylinder type, working in conjunction with locking bars that engage in the vertical tracks. It is made weathertight all around by a weatherstrip at the top (7) and bottom (6) of the Door and Kinnear's (5) Keystone Sealing Device for jamb sealing. This latter is accomplished by the ends of the door sections being tapered slightly so as to fit snug between the adjustable metal strip that is placed in a sloped position on each jamb. Tracks (2) are of the heavy type mounted on the jamb with continuous angles. Hardware (4) on the exterior side is galvanized. Counterbalance is of either the conventional stretch spring (3) type or the single shaft torsion spring type, depending upon individual preference and size of door. For other details and for electric motor operators be sure to see Kinnear's complete catalog within this file.

FRANTZ MANUFACTURING CO.

STERLING, ILLINOIS

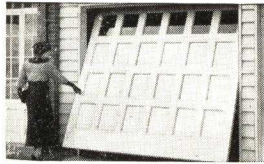
NEW YORK, N. Y., 71-73 Murray Street

DENVER, COLO., 430 Charles Bldg.

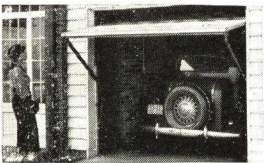
LOS ANGELES, CAL., 420 So. San Pedro Street



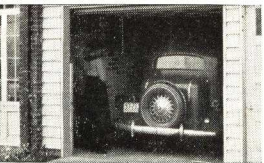
OVER-THE-TOP² DOOR EQUIPMENT



A slight pull on the automobile type handle-lock starts the door up



The door continues upward to a full open position without further aid



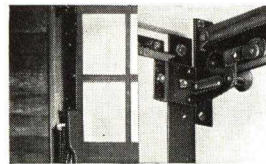
It's up, out of the way in 3 seconds. Closing is just as simple

"Over-the-Top" Door Equipment is manufactured and sold by makers of Frantz Guaranteed Builder's Hardware; it is backed by 25 years' experience in the building field.

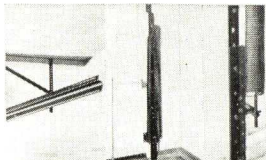
Features

"Over-the-Top" Door Equipment introduced a new principle for the operation of doors overhead. Instead of requiring the customary special, horizontal section doors, it is quickly applicable to old or new standard vertical doors. Strong angle irons furnished join doors into a solid, single unit.

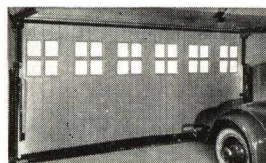
"Over-the-Top" Door Equipment is, we believe, the simplest and most foolproof device made for overhead operating doors. The one-piece door is supported overhead by two silent, roller bearing hangers, each running in a length of track at either side of the opening. The power to operate the door upward is supplied to two channel bar-lifting arms by heat treated and oil tempered coil springs. These springs are adjustable to balance the weight of



All-steel weatherstripping simplifies installation. Hanger runs noiselessly



Only 2 lengths of track needed. Powered by 2 oil-tempered springs



Applicable to door openings from 7x7 ft. to 18x12 ft. (see details below)

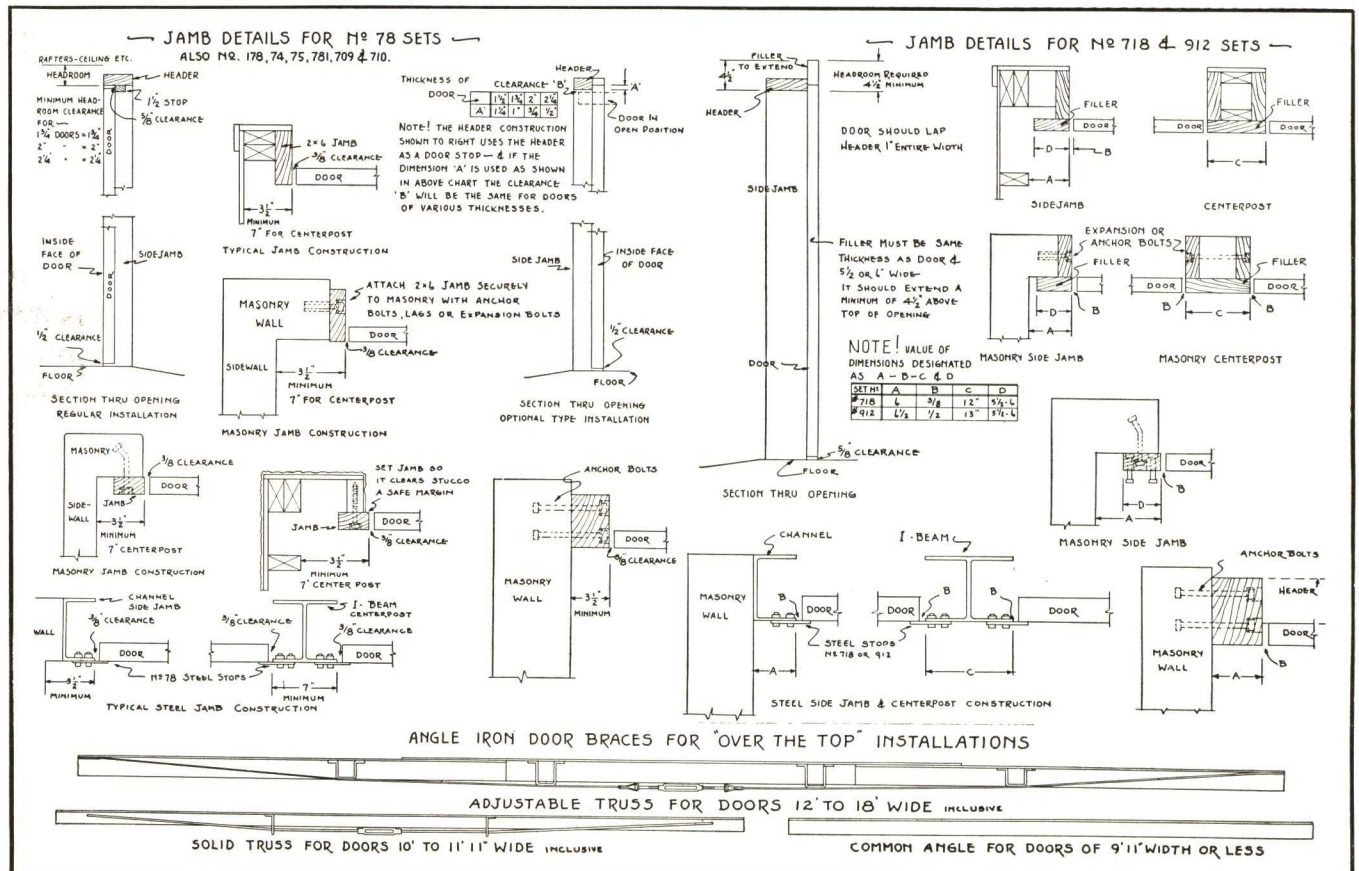
the door so perfectly that, once started, the upward movement is automatic. An automatic brake on each arm stops the door as it reaches full open or closed position, preventing slamming. All-steel weatherstrip with holes located for bolts and other hardware not only assures a permanently weathertight job but also simplifies installation and eliminates guess work.

Installation

Installation of "Over-the-Top" Door Equipment is but a matter of a few hours. After the door has been fitted to the opening, the hardware can be quickly bolted in place. Once properly adjusted, an installation should never require servicing.

Specifications

"Over-the-Top" Door Equipment is made in 35 sizes — for openings ranging from a minimum of 7 ft. wide by 6 ft., 6 ins. high, up to a maximum of 18 ft. wide by 12 ft. high. Write for brochure, "Garage Door Magic," which gives complete information and specifications.



THE CANTON DROP FORGING & MFG. CO.

CANTON, OHIO

CANTON AUTOMATIC GARAGE DOOR OPERATOR

Use—Operators are designed for residential and commercial garage doors.

Control—Operator is magnetically controlled from moving car (patented feature, Patent No. 1795477) through two contact points—the driveway contact switches and from inside momentary contact switch.

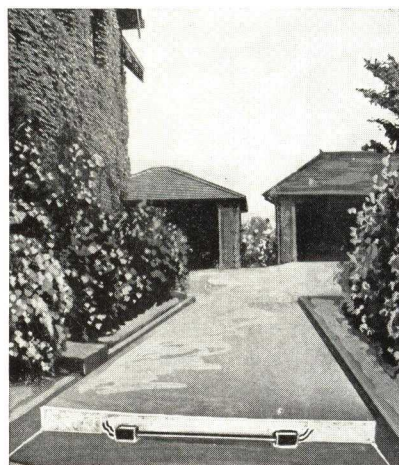
Magnetic Driveway Contact Switches—Completely sealed in copper casing, 1½ in. square, 30 in. long placed 2 to 4 in. beneath surface of driveway with concealed wires leading to garage. These switches are actuated by a special magnet equipped car, driving over, or within a 36-in. range of same, and the car can maintain a speed up to 40 m.p.h.

Momentary contact switch control is provided for manual operation within the home or garage for the purpose of opening garage doors when preparing to leave and for closing doors after the car has been placed within the garage.

Momentary switch is ordinarily placed in the same panel as the combination circuit switch and circuit breaker which is also furnished.

Equipment Furnished—Complete operating unit consists of operator proper, door hinge, pulley assembly and overhead guide rail for use in connection with operator, momentary contact switch, circuit switch, cover plate, magnetic driveway contact switches and car control equipment. These items will permit a complete mechanical installation.

Door Requirement—Operators can be applied to garage doors designed for manual control and to old and new doors of the various types. Minimum ceiling depth required is door



Switches are completely concealed beneath driveway surface. They are actuated from moving car and control door operator in garage

height plus approximately 4½ ft. Minimum overhead clearance required is 2½ in.

Lights—Operator automatically controls 200 watts, 110-volt linear power circuit to turn on lights when door begins to open and turn off lights when door is completely closed. Plug on control box accommodates one light bulb; any additional system of illumination is wired direct to control box.

Safety—Operator cable system is designed so that the force exerted in the closing cycle can be regulated and should there be any obstruction in path of door, the cable will slip around operator winding drum and door will remain at a standstill until obstruction is removed.

Door can be mechanically disconnected from operator by removing pin from door hinge assembly.

Operator is equipped with combination circuit switch and circuit breaker which will cut off power in case of overload and will also permit operator to be electrically disconnected at will.

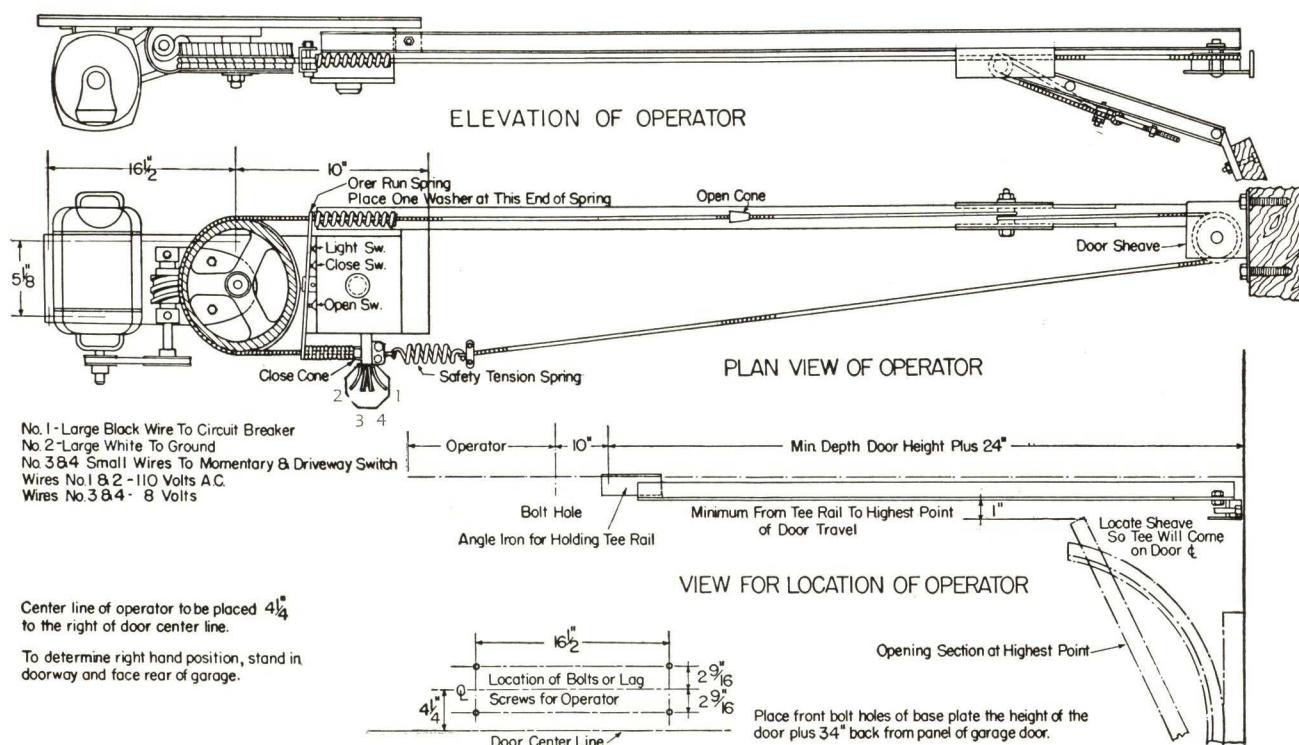
Operator automatically locks door when door is closed. No locks needed on door.

Guarantee—Operator is guaranteed for one year against mechanical defects.

Rating—Lift: 130 foot pounds per second. Power: ¼ or ⅓ h.p.

Power Supply—Volts: 110 or 220. Amperes: 10. Cycles: 60. Phase: 1. Low voltage wiring leads to both control points—the magnetic driveway contact switches and the momentary contact switch.

Operator Dimensions—Over-all length: 27½ in. Over-all depth: 7½ in. Over-all width: 8 in. Operator weight: 80 lbs.



McKINNEY MANUFACTURING COMPANY

Manufacturers of Forged Iron Hardware and All Types of Butt Hinges

MAIN OFFICE AND FACTORY

PITTSBURGH, PA.

SALES OFFICES

NEW YORK, N. Y., McKinney Manufacturing Co., 11 Warren St.
BOSTON, MASS., McKinney Manufacturing Co., 207 A St.

CHICAGO, ILL., McKinney Manufacturing Co., 318 W. Randolph St.
SAN FRANCISCO, CAL., McKinney Manufacturing Co., 193 Second St.
MONTREAL, QUE., Adcock & Co., Ltd., Coristine Building

WAREHOUSES: CHICAGO, ILL., NEW YORK, N. Y., SAN FRANCISCO, CAL., and BOSTON, MASS.

GENUINE McKINNEY FORGED IRON HARDWARE IN THREE PRICE RANGES

McKinney now offers Genuine Forged Iron Hardware in three price ranges that keep hardware costs proportionately in line for the large mansion, the medium size home, or the modest cottage. This price structure brings McKinney Forged Iron Hardware within

the price range of every home owner, and the authenticity of McKinney designs is the architect's assurance of hardware that reflects the true spirit of the period—not only on the front entrance, but throughout the entire home.

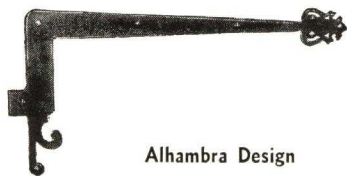
DESIGN SUGGESTIONS FOR THE LARGE HOME

Warwick—Alhambra—Heavy, Massive

Warwick dates back to the early days of England.
Alhambra reflects the early styles of Southern Europe.



Warwick Design Hinge Strap



Alhambra Design



Entrance Handle



Drop Ring Door Pull



Alhambra Design



NEW DESIGNS POPULAR FOR SMALL HOMES

Bedford-Dorchester

These Early American designs have proven popular for modest homes. Highest quality and texture maintained as in higher price designs.



Bedford Design



Dorchester Design



**FORGED IRON HARDWARE OF AUTHENTIC DESIGN—
PLUS ACCURACY FOR MODERN APPLICATION**

Back in the ancient days a blacksmith put into his work the same feeling and spirit, as did the master silversmith, Benvenuto Cellini. McKinney has not only caught the beauty and the spirit of these ancient artists, but adds the accuracy and detail necessary to modern application. It is no longer necessary to have Forged Iron made-to-order or pay the price which such work necessitates.

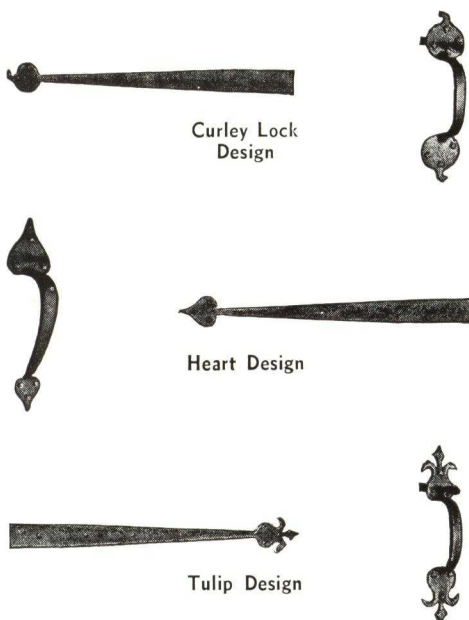
All designs are easily available from Builders' Hardware Merchants, and well within the price range of even the most modest home owner. The designs illustrated on the preceding page are representative of a complete line which, for lack of space, we cannot completely illustrate here. For complete specifying data write for our New Catalog No. 7 for your 27-B File.



**DESIGNS FOR THE MEDIUM
SIZE HOME**

Curly Lock—Heart—Tulip

Reflecting the true Colonial spirit.
Graceful yet sturdy.



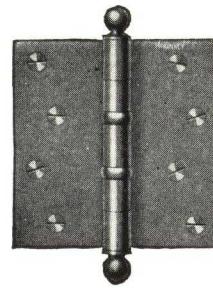
*Etruscan Design not illustrated—for Southern
European Architecture*

**McKINNEY HINGES FOR EVERY PURPOSE—
THREE GRADES**

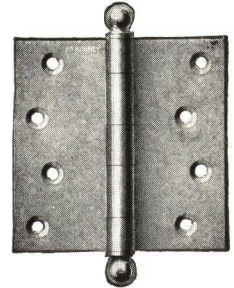
(1) Extra Fine Butt Hinges in brass, bronze and steel, beveled to form a perfect joint, outer edges are milled square and true. Ball tips of pins are perfect spheres with square collars.

(2) Fine Butt Hinges in brass, bronze and steel.

(3) Planished Steel Butt Hinges have none of the refinements above. Steel is smooth, not polished. They are used for ordinary work where cost is the deciding factor.



**Oilite Bearing Butt
Hinge**
No. A 3714 and
No. A 2714



Plain Bearing Butt Hinge
Planished or polished
No. 2714 and
No. 3714

McKINNEY OILITE BEARINGS

Made from Oilite—the self-lubricating metal used so successfully in the vital working parts of automobiles, tractors, refrigerators, etc. Adapted exclusively to hinges by McKinney.

Use with either steel, bronze or brass butt hinges. Rust and weatherproof. Permanently silent. Guaranteed equal to ball bearings in wearing qualities.



Oilite Bearing
A new solid type of bearing, self-lubricating and guaranteed equal to ball bearings. This bearing is not affected by weather conditions

BALL BEARINGS

Hardened balls and races enclosed in metal jackets.

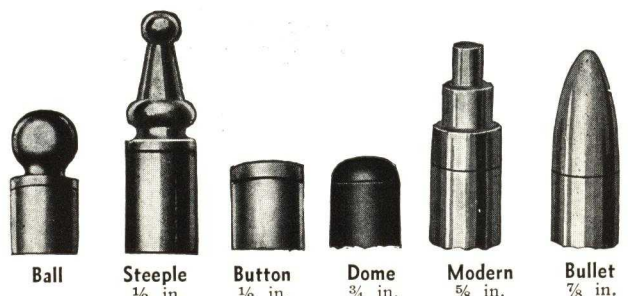
McKinney Bearing Hinges are available in either Ball Bearing or Oilite Bearing for the same price.



**Ball Bearing
Washer**
The bearings and runways in the ball bearing washers are snugly enclosed in jackets

TIP STYLES McKINNEY BUTT HINGES

Butts may be had in any of the six styles of pin types illustrated. Most ball tip butt hinges may also be had in either button, steeple, modern or bullet tips.



Ball **Steeple** **Button** **Dome** **Modern** **Bullet**
 $\frac{1}{2}$ in. $\frac{1}{2}$ in. $\frac{3}{4}$ in. $\frac{5}{8}$ in. $\frac{7}{8}$ in.

SOSS MANUFACTURING COMPANY, INC.

Manufacturers of Invisible Hinges

ROSELLE, N. J.

REPRESENTATIVES IN ALL PRINCIPAL CITIES



INVISIBLE HINGES

The Outstanding Advantages of the Improved Soss Invisible Hinge

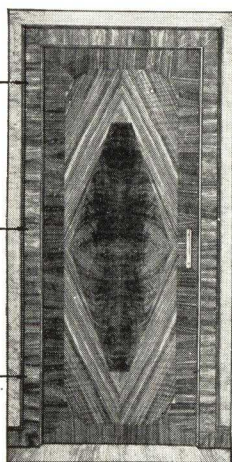
The new construction and design of the Soss Invisible Hinge eliminate *any and all possible sag* to the door—no matter how heavy or large the door may be, or the service it receives.

It is designed for all types of doors used in buildings, folding partitions, secret panels, cupboards, closets, cabinets; furniture—such as sewing machines, cabinet radios, cabinets, concealed bars, Welsh dressers, secretaries, clocks, desks, tables, smoking humidors, bookcases, chests, pianos and benches, etc., or wherever a butt or hinge can be used.

No portion of the hinge is visible when a door is closed—leaving the entire outer surfaces of door and frame free from any projections and for any desired treatment or decoration.

Sagging of doors eliminated if the proper size hinge is used.

As Soss Hinges fit snugly in mortise cut into the door and frame, the greater portion of the weight or pull is removed from the screws, thereby preventing any possibility of wear and looseness. It



is the new idea in hinge installation.

Actuated with the ease of roller bearings, with no sag, makes them ideal for case-ment windows—of the single, double, or multiple sash type, and there is no looseness in the hinge to permit the windows to rattle.

Safer for hospitals and schools—nothing against which anyone might strike or fall and be injured. No projecting parts to collect dust or that require painting or polishing.

When the door or window is locked, it is impossible to locate, much less get at, any part of the Soss Invisible Hinge, and consequently it affords that security and safety which everyone seeks in a door or window and which is not always found in doors equipped with ordinary butts.

Easily and quickly installed—no top—no bottom—no right—no left—and each size interchangeable with one another. Nothing to wear, due to scientific design.

Doors can be set to show only a hairline between door and frame, if desired.

Types are supplied to take care of offsetting door where heavy mouldings or trim is used.

How to Select the Proper Hinge

In order that you may have a fairly accurate rulestick to guide in the selection of the size and style hinge to specify for every standard condition, we list below our recommendations for doors marked "K".

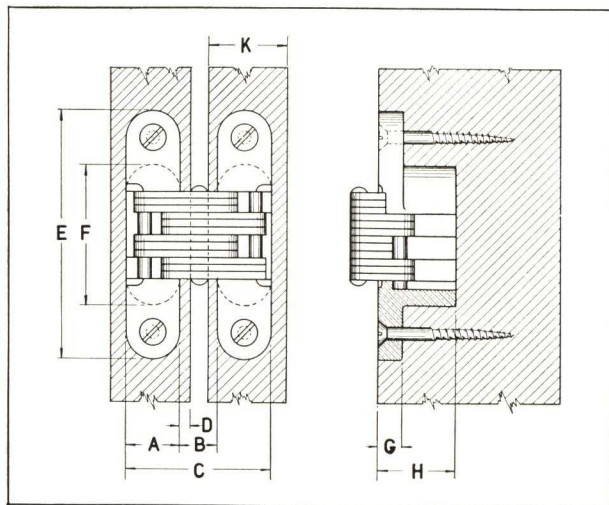
Finish

The standard finish for all hinges listed below is *dull brass*. Hinges can be supplied, however, in any desired finish at a slight additional cost.



Pat. No. 1984092

No. 204 (Actual Size)



DIMENSIONS OF SOSS INVISIBLE HINGES

Hinge No.	A	B	C	D	E	F	G	H	K	Size of screw, in.
203	1 1/2	23/64	1 23/64	1 1/8	1 3/4	3/4	3/16	23/32	3/4	No. 6x1
204	1 1/2	23/64	1 23/64	1 1/8	2 3/8	1 1/4	3/16	23/32	3/4	No. 7x1 1/4
208	1 1/2	23/64	1 15/64	1 1/8	2 3/4	1 1/4	3/16	23/32	3/4	No. 8x1 1/4
212	1 1/2	17/32	2 1/32	1 1/8	3 1/4	2 1/16	3/8	1 1/8	1 1/8	No. 10x1 1/4
216	1 1/2	23/32	2 23/32	1 1/8	4 3/8	2 1/16	15/32	1 7/16	1 3/8	No. 14x1 1/2
218	1 1/2	7/8	3 1/8	1 1/8	4 3/8	2 1/16	15/32	1 7/16	1 3/8	No. 10x1 1/2
220	1 1/2	1 1/16	3 13/16	1 1/8	5 1/2	2 1/16	15/32	1 7/16	2	No. 12x1 1/2

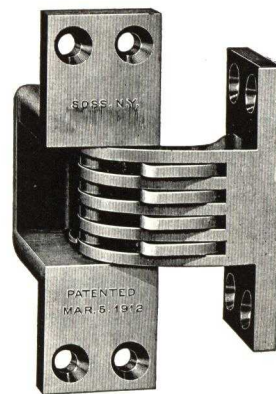
Dimension "D" is maximum thickness.
Dimension "K" is average thickness of door.

For Special Conditions

Send us sketch showing details of door and jamb with complete dimensions and we will gladly recommend the proper size Soss Hinge for the job.

Catalog

Send for latest catalog showing complete line and blueprint templates.



No. 117 (Half Size)

For House Doors and Secret Panels with projecting mouldings

BOMMER SPRING HINGE COMPANY

TELEPHONE
Prospect 9-7600

ESTABLISHED 1876

251-271 Classon Avenue, BROOKLYN, N. Y.

WESTERN SALES OFFICE, 180 North Wacker Drive, CHICAGO, ILL.
PACIFIC COAST SALES REPRESENTATIVE: John T. Rowntree, Inc., LOS ANGELES, CALIF.
BOSTON REPRESENTATIVE: Walter H. Cutler, 37 Pearl Street, BOSTON, MASS.

Products

SPRING BUTT HINGES, CHECKING FLOOR HINGES, GATE PIVOT HINGES and PIVOTS for all kinds of doors. LAVATORY HARDWARE: Strikes, Bolts, Latches and Fittings for office buildings, hospitals, theaters, public buildings, etc.

The Quality and Prices of Bommer Products

Standard for over 60 years, and kept up-to-date. The superiority of Bommer Spring Hinges is officially attested by consensus of expert opinion the world over through numerous inter-nation awards of competent juries over all competitors.



Reg. U. S. Pat.
Office

Countless fine buildings throughout the world are equipped with Bommer Spring Hinges.

Prices are guaranteed to be no higher than those for goods of corresponding type.

Specifications

Architects, in specifying these products, should use the word "Bommer" and in addition thereto, specify the size and finish required.

Hardware dealers and lock manufacturers can include them in their contracts.

Templet drawings and general catalog on request.

BOMMER SPRING BUTT HINGES

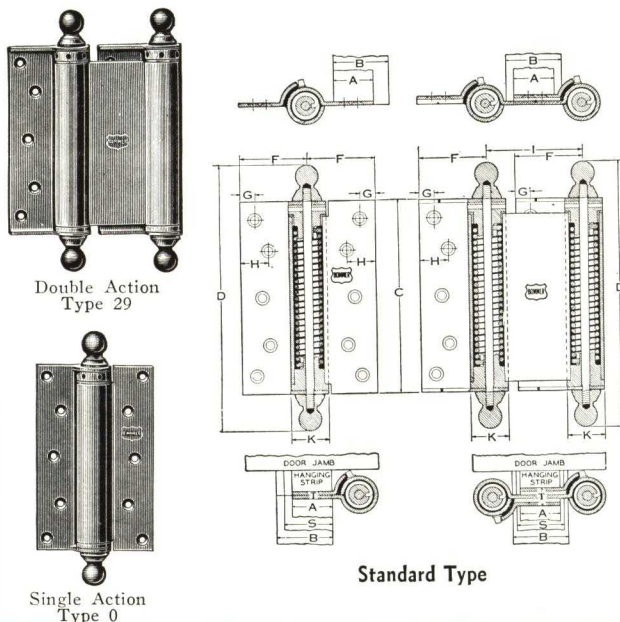
Bommer Standard spring butt hinges require a hanging strip for fastening hinges to the door jamb. They permit the door to be opened 180° if suitably hung. Bommer Ever Ready do not require a hanging strip and are fastened to surface of door jamb.

They are made of wrought steel, bronze and brass in all finishes. Spring barrels and their connecting plate integral and

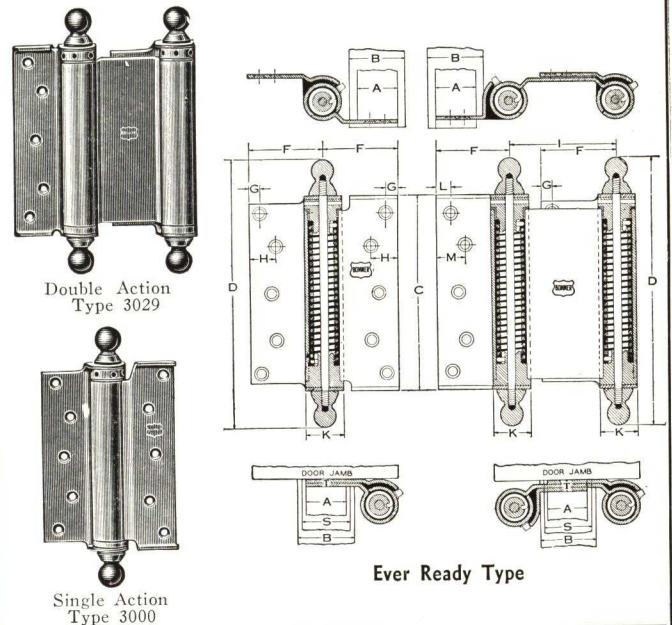
exceptionally strong and of uniform thickness. Springs are of large diameter and unusual length, made of best oil tempered steel, have great resilience and power and never go lame. The pintle and flange are interlocked, preventing the ball tips from working loose.

Note: Always use the largest size hinge the thickness of the door will permit. Any special finish to match other hardware can be furnished promptly.

Standard Spring Butt Hinges



Ever Ready Spring Butt Hinges



DIMENSIONS OF STANDARD SPRING BUTT HINGES

Size of hinge, C	Width of door	Weight of door	Depth of hanging strip*	Double Action										Single Action									
				A	B	D	F	G	H	I	K	S	T	A	B	D	F	G	H	K	S	T	
3"	2'-2"	30 lbs.	1 1/2"	3 3/4"	1"	4 3/8"	13 3/8"	5 1/8"	1 1/2"	2 1/2"	29 3/8"	7 3/8"	7 1/8"	3 1/2"	1"	4 3/8"	13 3/8"	5 1/8"	1 1/2"	29 3/8"	7 3/8"	7 1/8"	11 1/4"
4"	2'-4"	42 lbs.	1 5/8"	4 1/2"	1 1/4"	5 1/8"	15 1/8"	5 1/8"	1 3/4"	2 3/4"	31 1/8"	8 1/8"	7 3/8"	4 1/2"	1 1/4"	5 1/8"	15 1/8"	5 1/8"	1 3/4"	31 1/8"	8 1/8"	8 1/8"	11 3/4"
5"	2'-6"	56 lbs.	1 7/8"	5 1/2"	1 1/2"	6 1/8"	17 1/8"	5 1/8"	1 7/8"	3 1/8"	33 1/8"	9 1/8"	7 3/8"	5 1/2"	1 1/2"	6 1/8"	17 1/8"	5 1/8"	1 7/8"	33 1/8"	9 1/8"	9 1/8"	12 1/4"
6"	2'-8"	72 lbs.	2"	6 1/2"	1 3/4"	7 1/8"	19 1/8"	5 1/8"	2"	3 3/8"	35 1/8"	10 1/8"	7 3/8"	6 1/2"	1 3/4"	7 1/8"	19 1/8"	5 1/8"	2"	35 1/8"	10 1/8"	10 1/8"	12 3/4"
7"	2'-9"	90 lbs.	2 1/8"	7 1/2"	1 7/8"	8 1/8"	21 1/8"	5 1/8"	2 1/8"	3 7/8"	37 1/8"	11 1/8"	7 3/8"	7 1/2"	1 7/8"	8 1/8"	21 1/8"	5 1/8"	2 1/8"	37 1/8"	11 1/8"	11 1/8"	13 1/4"
8"	2'-10"	110 lbs.	2 1/4"	8 1/2"	2"	9 1/8"	23 1/8"	5 1/8"	2 1/4"	4 1/8"	39 1/8"	12 1/8"	7 3/8"	8 1/2"	2"	9 1/8"	23 1/8"	5 1/8"	2 1/4"	39 1/8"	12 1/8"	12 1/8"	13 3/4"
10"	3'-0"	150 lbs.	2 3/4"	10 1/2"	2 1/4"	10 3/8"	25 1/8"	5 1/8"	2 3/4"	4 3/8"	41 1/8"	13 1/8"	7 3/8"	10 1/2"	2 1/4"	10 3/8"	25 1/8"	5 1/8"	2 3/4"	41 1/8"	13 1/8"	13 1/8"	14 1/4"
12"	3'-2"	190 lbs.	3"	12 1/2"	2 3/4"	11 3/8"	27 1/8"	5 1/8"	3"	4 7/8"	43 1/8"	14 1/8"	7 3/8"	12 1/2"	2 3/4"	11 3/8"	27 1/8"	5 1/8"	3"	43 1/8"	14 1/8"	14 1/8"	14 3/4"

*Hanging Strip to be used for Double Acting Hinges.

DIMENSIONS OF EVER READY SPRING BUTT HINGES

Double Action														Single Action													
Size of hinge, C	Width of door	Weight of door	A	B	D	F	G	H	I	K	L	M	S	T	Size of hinge, C	Width of door	Weight of door	A	B	D	F	G	H	K	S	T	
3"	2'-2"	30 lbs.	3 7⁄8"	1"	4 3⁄8"	11 1⁄2"	9 3⁄8"	15 1⁄8"	27 1⁄8"	29 3⁄8"	9 3⁄8"	15 1⁄8"	7 3⁄8"	15 1⁄8"	3"	2'-2"	30 lbs.	3 7⁄8"	1"	4 3⁄8"	11 1⁄2"	9 3⁄8"	15 1⁄8"	29 3⁄8"	7 3⁄8"	11 1⁄4"	
4"	2'-4"	42 lbs.	4 7⁄8"	1 1⁄4"	5 1⁄2"	11 1⁄6"	11 1⁄6"	5 8"	29 1⁄6"	19 1⁄6"	11 1⁄6"	5 8"	11 8"	1 1⁄4"	4"	2'-4"	42 lbs.	4 7⁄8"	1 1⁄4"	5 1⁄2"	11 1⁄6"	5 8"	11 8"	1 1⁄6"	1 1⁄8"		
5"	2'-6"	56 lbs.	1 1⁄8"	1 1⁄2"	6 1⁄16"	21 1⁄6"	2 1⁄6"	3 4"	27 1⁄6"	11 1⁄6"	5 1⁄6"	3 4"	13 8"	9 3⁄16"	5"	2'-6"	56 lbs.	1 1⁄8"	1 1⁄2"	6 1⁄16"	21 1⁄6"	5 1⁄6"	3 4"	13 1⁄6"	3 1⁄6"		
6"	2'-8"	72 lbs.	1 1⁄4"	1 3⁄4"	8"	21 1⁄6"	2 1⁄6"	13 1⁄8"	37 1⁄6"	13 1⁄6"	3 1⁄6"	13 1⁄6"	11 1⁄2"	9 3⁄16"	6"	2'-8"	72 lbs.	1 1⁄4"	1 3⁄4"	8"	21 1⁄6"	5 1⁄6"	13 1⁄6"	13 1⁄6"	3 1⁄6"		
7"	2'-9"	90 lbs.	1 1⁄8"	2"	9 1⁄8"	23 1⁄6"	2 1⁄6"	15 1⁄8"	35 1⁄6"	15 1⁄6"	2 1⁄6"	15 1⁄8"	13 1⁄8"	3 3⁄8"	7"	2'-9"	90 lbs.	1 1⁄8"	2"	9 1⁄8"	23 1⁄6"	5 1⁄6"	13 1⁄6"	13 1⁄6"	1 1⁄4"		
8"	2'-10"	110 lbs.	1 1⁄2"	2 1⁄4"	10 1⁄8"	29 1⁄6"	2 1⁄6"	13 1⁄8"	41 1⁄6"	17 1⁄6"	13 1⁄6"	13 1⁄6"	2"	3 3⁄8"	8"	2'-10"	110 lbs.	1 1⁄2"	2 1⁄4"	10 1⁄8"	29 1⁄6"	5 1⁄6"	17 1⁄6"	2"	1 1⁄4"		

BOMMER CHECKING FLOOR HINGES**Single Action — Double Action**

For Entrance, Vestibule and Interior Doors in Office Buildings, Theatres, Stores, Schools, Hospitals, Churches, Apartments, Etc.

Also for Residential Pantry and Dining Room Doors

These hinges embody every improvement with the highest degree of precision not usually employed in mechanism of this kind, and most reliable and strong.

The checking mechanism is of valve and piston type and holds door under control, operates smoothly and closes the door without noise. The spring tension is adjustable. The closing speed of the door is regulated by a *needle valve*, accessible through the floor plate.

The opening resistance of the door is made as low as possible consistent with the closing force required.

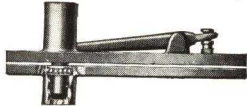
The mechanism is immersed and operates in a non-freezing, lubricating and checking liquid.

The hinge case is constructed of impermeable iron, preventing seepage of checking liquid.

The weight of the door is carried on hardened steel ball bearings.

The best materials obtainable are used. Parts subject to wear are made of drop-forged or stamped steel, case-hardened. The spring is made of oil-tempered steel.

Conform to U. S. Government Specification FF-H-121.



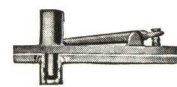
Type No. P1

Ball Bearing Top Pivot. Furnished with Double Action Hinges Nos. 86 and 87 and Single Action Hinges Nos. C88, C88½ and C89



Type No. P3

Ball Bearing Offset Pivot. Furnished with Single Action Hinges Nos. 88, 88½, 89, T88½ and T89



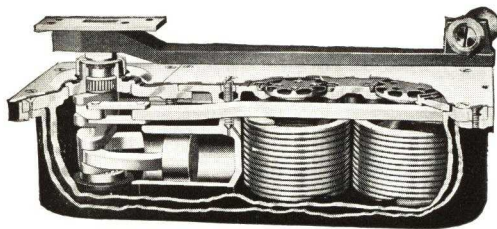
Type No. P2

Furnished with Double Action Nos. 71 and 72

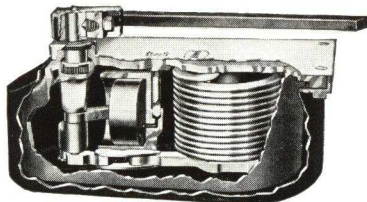


Type No. P4
Side Pivot

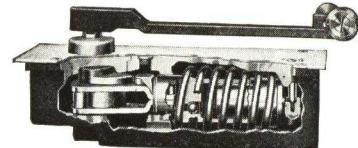
Used as an Intermediate or supplementary



Torsion Spring Type 86
Double Action



Torsion Spring Type 88
Single Action



Compression Spring Type 71
Double Action

Bommer Double Action Checking Hinges Nos. 86 and 87

These hinges have two springs and two checks. The spring can be adjusted to resist unequal wind pressure on either side and speed of door can be equalized by regulating the *needle valve*. The *arm* has a rectangular hole that fits securely onto the square tapered spindle and prevents door dragging.

Bommer Single Action Checking Hinges Nos. 88, 88½ and 89

These hinges have an adjustable arm that permits raising or lowering the door on the spindle and when setscrew is firmly tightened will positively prevent door slipping and dragging on the threshold.

DIRECTIONS FOR ORDERING CHECKING FLOOR HINGES—FOR WOOD, KALAMEIN OR METAL DOORS

Note: Specify Number and Finish

DOUBLE ACTION—HOLDOPEN AND NON-HOLDOPEN TYPES

The following holdopen hinges have automatic holder—When door or gate is opened to 90 degrees it will be held open until released by a slight push.

Light Interior Doors 2'8".....	No. H70 holds door open at 90°.....	No. 70 non-holdopen
Interior Doors 2'10"x7'0".....	No. H71 holds door open at 90°.....	No. 71 non-holdopen
Interior Doors 3'0"x7'6".....	No. H72 holds door open at 90°.....	No. 72 non-holdopen
Gate, light, narrow, wood.....	No. GH70 holds gate open at 90°.....	No. G70 non-holdopen
Gate, wood.....	No. GH71 holds gate open at 90°.....	No. G71 non-holdopen
Gate, metal.....	No. GH72 holds gate open at 90°.....	No. G72 non-holdopen
Heavy Interior and Entrance Doors 2'10"x7'6".....	No. 86 non-holdopen	No. 86 non-holdopen
Heavy Entrance Doors 3'6"x7'6".....	No. 87 non-holdopen	No. 87 non-holdopen

SINGLE ACTION—NON-HOLDOPEN TYPE

Light Interior Doors 3'0"x7'6".....	No. R88 right hand door.....	No. L88 left hand door
Heavy Interior and Medium Entrance Doors 2'8"x7'0".....	No. R88½ right hand door.....	No. L88½ left hand door
Heavy Entrance Doors 3'6"x7'0".....	No. R89 right hand door.....	No. L89 left hand door
Center Hung for light interior doors 3'0"x7'6".....	No. RC88 right hand door.....	No. LC88 left hand door
Center Hung for heavy interior and medium entrance doors 2'8"x7'0".....	No. RC88½ right hand door.....	No. LC88½ left hand door
Center Hung for heavy entrance doors 3'6"x7'0".....	No. RC89 right hand door.....	No. LC89 left hand door
Offset Arm Tapered Spindle for metal doors 2'8"x7'6".....	No. RT88½ right hand door.....	No. LT88½ left hand door
Offset Arm Tapered Spindle for metal doors 3'6"x7'6".....	No. RT89 right hand door.....	No. LT89 left hand door

All checking floor hinges are furnished with durable top pivots.

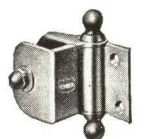
For Gothic or segment top doors use side jamb pivot type P4.

The prefix letters indicate C center hung, G gate, H holdopen, L left hand, R right hand, T tapered spindle.

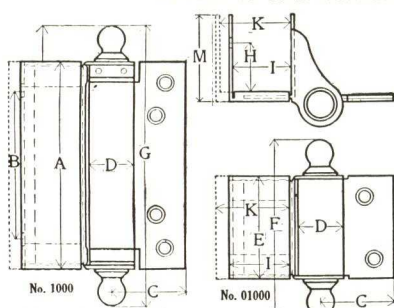
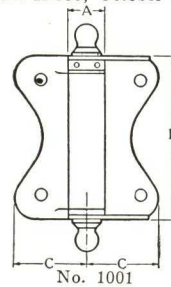
Complete catalog and Temple Drawings supplied upon request.

BOMMER CLAMP FLANGE SPRING HINGES**For Lavatory Doors on Marble, Glass, or Slate Partitions Having Hanging Stiles**All Lavatory Hardware is made in Brass, Bronze and White Bronze and in all finishes. Specify finish wanted
Conform to U. S. Government Specifications FF-H-136, October 29th, 1936

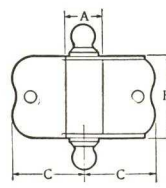
No. 1000



No. 01000

I-Minimum Thickness of Marble
K-Maximum Thickness of Marble**Details Single Action Spring Hinge
No. 1000 and Blank No. 01000**These hinges illustrated have clamp flanges adjustable $\frac{1}{8}$ in. under and over following partition thickness, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$ and 2 in.

No. 1001



No. 01001

**Details Double
Clamp
Hinge No. 1001
and Blank
No. 01001**

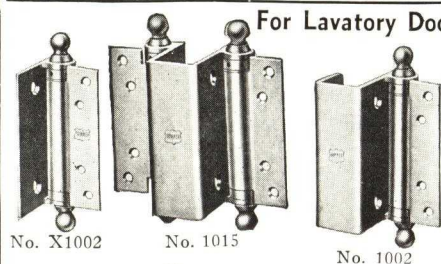
No. 1001



No. 01001

A	B	C	D	E	F	G	H	I	K	M
4	2 7/8	1 1/2	7/8	2	3 1/2	5 1/2	1	1 1/8	1 3/8	1 3/4

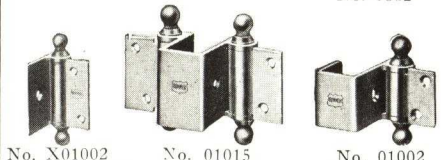
A	B	C	D	E	F	G	H
2 3/4	4	1 3/8	1 1/8	1 3/8	1 3/8	1 1/2	2

For Lavatory Doors on Marble or Slate Partitions Without Hanging Stiles

No. X1002

No. 1015

No. 1002



No. X01002

No. 01015

No. 01002

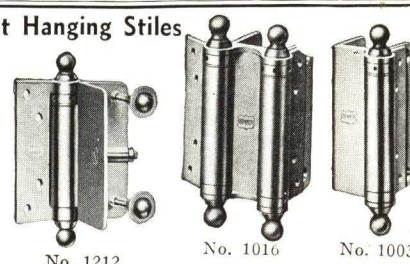
1015 and 1016 are for hanging two single-acting doors right and left to the same partition on one-clamp flange.

1002 and 1015 are for doors opening in and can be made to hold the doors open or closed as may be specified.

1016 and 1003 are for doors opening out; made only to hold the doors closed. Flanges of the spring hinges are 4 in. in length; of the blank hinges without springs are 2 in. in length.

The clamp-flange of these hinges is not adjustable; the exact thickness of marble and door must be specified.

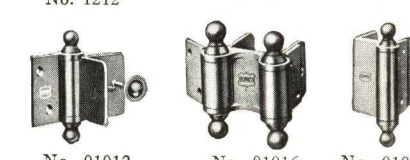
For very light or narrow single action doors, a spring hinge at the top and springless hinge at the bottom may be used.



No. 1212

No. 1016

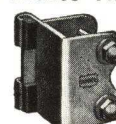
No. 1003



No. 01012

No. 01016

No. 01003

BOMMER STRIKES AND KEEPERS FOR LAVATORY DOORSAdjustable for Marble, Glass or Slate Partitions, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$ and 2 Inches Thick1051
For
mortise
bolt1053
For
throw
latch1055
For
rim
bolt1056
For
throw
latch1057
For
rim
bolt1062
For
Rim
bolt**BOMMER LAVATORY STALL STANDARDS AND FITTINGS**

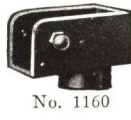
For Marble, Glass or Slate Partitions



No. 1112



No. 1152



No. 1160



No. 1150



No. 1161



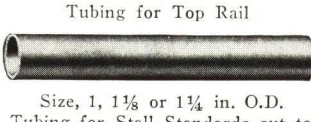
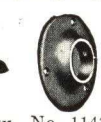
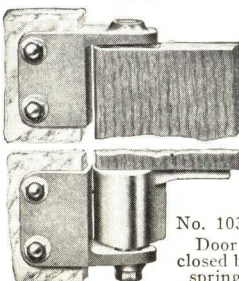
No. 1151



No. 1155

No. 1137
 $1\frac{3}{4} \times 1\frac{3}{4} \times 1\frac{1}{4}$ 

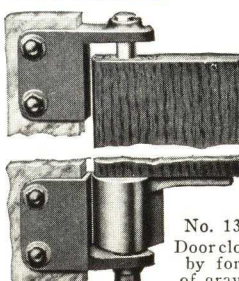
No. 1133B

Size, 1, $1\frac{1}{8}$ or $1\frac{1}{4}$ in. O.D.No. 1130
Left hand top
Right hand bottomNo. 1131
Partition sup-
ports centerNo. 1132
Right hand top
Left hand bottomTubing for Top Rail
length threaded both endsNo. 1143
Extra heavy
Floor flangeNo. 1142
Wall flange**BOMMER LAVATORY DOOR PIVOT-HINGES**No. 1030
Door
closed by
spring

Can be used either single or double action, right or left hand.

Clamps are adjustable for variation in thickness of partition.

Adjustable alignment to hold door open at any point desired.

No. 1330
Door closed by
force of
gravity**BOMMER GATE SPRING PIVOTS**

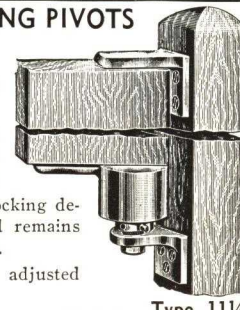
Single or double action.

Adopted to either wood or metal gate or dwarf doors.

The weight is carried on ball-bearings in a hardened steel race at top of hinge pintle.

The adjustable pintle with locking device permits aligning gate and remains at rest in any desired position.

The spring tension easily adjusted after hinge has been applied.



Type 11 1/2

CHICAGO SPRING HINGE COMPANY

INCORPORATED 1885

Spring Hinges and Pivots

GENERAL OFFICES AND WORKS
1500-1502 Carroll Avenue
CHICAGO, ILL.
TELEPHONE, Monroe 6868, 6869

EASTERN OFFICE AND WAREHOUSE
109 Lafayette Street
NEW YORK, N. Y.
TELEPHONE, Canal 6-2676

Products

Manufacturers of a COMPLETE LINE of SPRING HINGES; LAVATORY DOOR BOLTS; LATCHES and STOPS; DOOR SPRINGS; SCREEN, CABINET and REFRIGERATOR DOOR SPRING HINGES.

Quality and Prices

The quality has been recognized for many years and considered standard, as indicated by the many monumental public and commercial buildings equipped with these products. Prices are comparative with those for articles of similar type and quality.



Specifications

When specifying designate by name "Chicago", also type number, size and finish. Hinges are made of steel, brass or bronze metal, in standard sizes and finishes.

Any special finish to match other hardware can be furnished promptly.

Specially Constructed Products

We solicit details of conditions which require special construction of our products.

"Triplex" Spring Butt-hinges—Double Acting, Type 2001; Single Acting, Type 2002

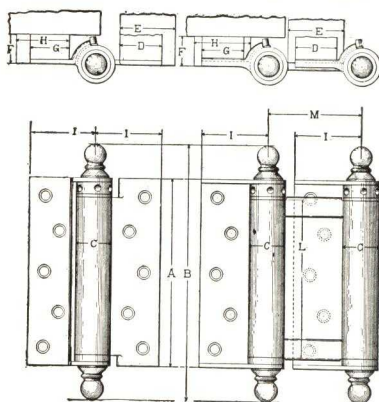
(Hanging Strip Required)

Chicago "Triplex" Spring Butt-hinge requires a hanging strip for applying it to door casing. One flange is mortised into the hanging strip and the other into the door, which gives it a uniform appearance and secure application. The body is made from one piece of metal formed with multiple thickness in the web and there is no joint where the barrel continues as the web. This gives maximum of strength and rigidity and avoids exposing springs to moisture which would cause rust and breakage.

The broad steel lug bearings, hardened lug bushing and disassemblment features are characteristic of this product. Springs are made of best tempered steel wire in ample proportions for the most excessive requirements.



Type 2001
"Triplex" Double Acting



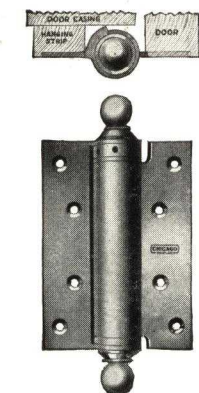
DIMENSIONS (IN INCHES)

Double Acting Type 2001

A	B	C	D	E	F	G	H	I	L	M
3	4 1/2	5 5/8	3 1/4	1 1/4	5/8	3/4	1 1/4	1 3/8	2 1/8	1 7/8
4	5 1/2	6 1/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8	2 1/8	2 1/8
5	6 1/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8	2 1/8	2 1/8
6	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8	2 1/8	2 1/8
7	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8	2 1/8	2 1/8
8	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8	2 1/8	2 1/8
10	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8	2 1/8	2 1/8
12	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8	2 1/8	2 1/8

Single Acting Type 2002

A	B	C	D	E	F	G	H	I
3	4 1/2	5 5/8	3 1/4	1 1/4	5/8	3/4	1 1/4	1 3/8
4	5 1/2	6 1/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8
5	6 1/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8
6	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8
7	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8
8	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8
10	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8
12	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8

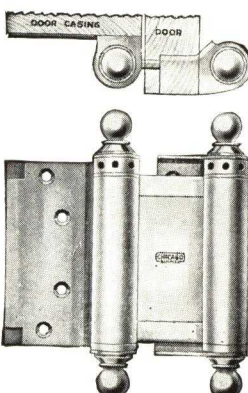


Type 2002
"Triplex" Single Acting

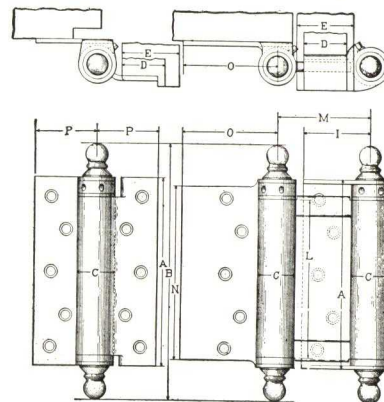
"Simplex" Spring Butt-hinges—Double Acting, Type 9001; Single Acting, Type 9002

(No Hanging Strip Required)

Chicago "Simplex" Spring Butt-hinge is applied to the surface of door casing without a hanging strip, the entire thickness of the hinge being mortised into the door. This method of application is simple and economical. A feature of great importance is that all the standards of the "Triplex" Spring Hinge, which have been recognized for many years, have been maintained in the "Simplex" Spring Hinge. The body is made from one piece of metal formed with multiple thickness in the web, and no joint where the barrel continues as the web. Distance of axial centers, location of screw holes, length of mortise cut, size of springs and barrels, straight web, etc., are all identical with the "Triplex."



Type 9001
"Simplex" Double Acting



DIMENSIONS (IN INCHES)

Double Acting Type 9001

A	B	C	D	E	F	G	H	I	L	M	N	O
3	4 1/2	5 5/8	3 1/4	1 1/4	5/8	3/4	1 1/4	1 3/8	2 1/8	1 7/8	2 3/8	1 3/8
4	5 1/2	6 1/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8	2 1/8	2 1/8	2 3/8	1 3/8
5	6 1/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8	2 1/8	2 1/8	2 3/8	1 3/8
6	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8	2 1/8	2 1/8	2 3/8	1 3/8
7	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8	2 1/8	2 1/8	2 3/8	1 3/8
8	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8	2 1/8	2 1/8	2 3/8	1 3/8
10	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8	2 1/8	2 1/8	2 3/8	1 3/8
12	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8	2 1/8	2 1/8	2 3/8	1 3/8

*Single Acting Type 9002

A	B	C	D	E	F	G	H	I
3	4 1/2	5 5/8	3 1/4	1 1/4	5/8	3/4	1 1/4	1 3/8
4	5 1/2	6 1/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8
5	6 1/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8
6	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8
7	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8
8	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8
10	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8
12	6 3/4	6 3/4	3 3/4	1 1/2	5/8	3/4	1 1/2	1 3/8



Type 9002
"Simplex" Single Acting

*Single Acting Type 9002 may be applied with one flange mortised into the casing and the other into the door.

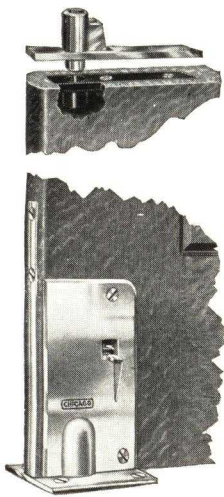
"Triplex" and "Simplex" Double and Single Acting Spring Butt-hinges

Application of proper size of hinge, according to conditions, is an essential to consider in specifying. It is advisable to avoid overloading the hinge by the selection of too small a size, thereby causing the annoyance of doors improperly operating and possible breakages. Details shown will assist in specifying "Triplex" and "Simplex" hinges. Single acting "Triplex" and "Simplex" hinges, when so specified, can be furnished with reverse action springs to hold the door open. Supplied in steel, brass or bronze metal in standard finishes or to match other hardware.

Chicago "Relax" Spring Pivot-hinges—Double Acting, Type 6001

The Chicago "Relax" Spring Pivot-hinge is suitable for the highest class requirements. It is applied to surface of floor, thereby avoiding cutting and possible interference with girders or iron beams. The tension is adjustable. The spring action is readily disengaged by a lever, allowing door to be placed open in any desired position. This is a great convenience and eliminates tendency of springs to lose their power as a result of remaining fixed at high tension when doors are held open by doorholders. Weight of door is carried on ball bearings located in top of hinge, thereby protected from dirt and moisture. Plunger top pivot, furnished with this hinge, permits the door to be fitted closely to the top casing and to be taken down readily without removing any screws. No hanging strip required. Jamb edge of door must be slightly rounded. For tile or concrete floors specify jamb attaching plate.

Furnished in three sizes, for doors $1\frac{1}{4}$ to $1\frac{1}{2}$ ins., $1\frac{1}{2}$ to 2 ins., and $1\frac{3}{4}$ to $2\frac{3}{4}$ ins.

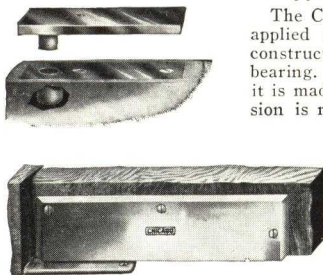


Type 6001

Chicago "Premier" Spring Pivot-hinges—Double Acting, Type 4001

The Chicago "Premier" Spring Pivot-hinge is applied to the surface of floor. Mechanical construction eliminates tendency of wear in bearing. Action of spring is compression and it is made of best tempered steel flat wire. Tension is readily adjusted. A device is provided for aligning door. With this hinge, door will remain open if opened 90° . No hanging strip is required. Jamb edge of door must be slightly rounded. For tile or concrete floors specify jamb attaching plates.

Furnished in two sizes, for doors $1\frac{1}{4}$ to $1\frac{3}{4}$ ins., and $1\frac{3}{4}$ to 2 ins.



Type 4001

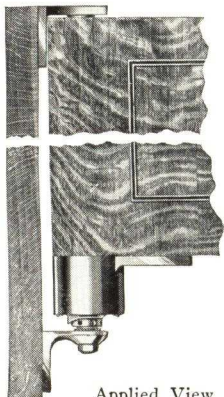
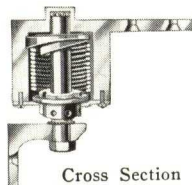
Chicago "Sagless" Gate Spring Pivot-hinges—Double Acting, Type 4007

The Chicago "Sagless" Gate Spring Pivot-hinge is of the pivot type, and if the gate is wide or heavy, it cannot sag. The weight of the gate is carried on ball bearings and is not supported by the spring, therefore a very light tension may be applied. Exterior tension adjustment permits use after hinge is applied. Convex lock washer forms a ball and socket adjustment which automatically aligns hinge pintle.

An adjustable pintle, with locking device, permits setting the gate or door to remain at rest in any desired position. The spring is of large dimension and made of best tempered steel flat wire. A ball bearing top socket is supplied with this hinge. The application is extremely simple and, if desired, all attachments may be applied to the surface of the post and gate without mortising.

This is very desirable for metal gates. These hinges are supplied in iron, brass or bronze metal and are suitable for gates $1\frac{1}{4}$ to $2\frac{1}{2}$ ins. thick, with a hand rail as wide as $2\frac{1}{2}$ ins.

The attaching plates of the brackets are $2\frac{1}{4}$ ins. high by $1\frac{1}{2}$ ins. wide. Pintle center to surface of post is $1\frac{5}{8}$ ins.

Applied View
Type 4007

Cross Section

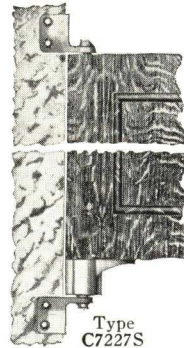
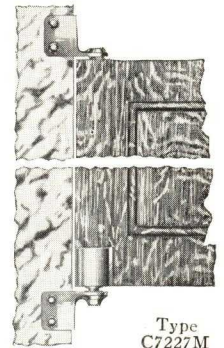
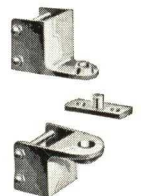
Chicago Lavatory Door Gravity Pivot-hinges, Type C47227S (Double Acting) Type C47228S (Single Acting)

In our opinion a gravity type hinge is not as adaptable to varying conditions and requirements as a spring hinge, but we manufacture gravity type hinges which in design, appearance and application are similar to Type C7227S spring hinges illustrated on this page. We believe these hinges to be equal to or better than any other gravity hinges on the market and are prepared to supply them with various types of attachments, as illustrated in the next column.

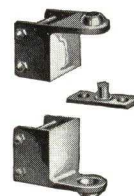
Chicago "Sagless" Lavatory Door Spring Pivot-hinges, Type C7227S and C7227M

The "Sagless" lavatory door spring pivot-hinge is made with attachments for application to marble partitions or pipe standards. The clamp Type "C" attachments are adjustable $\frac{1}{8}$ in. under or over the following sizes by which they are specified:

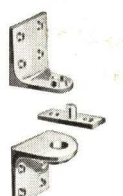
1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$ and 2 in. This hinge can be used either double or single acting. An adjustable pintle with locking device permits setting the door to remain at rest in any desired position. A larger hinge of similar type, C4227S or C4227M, with greater spring power and with exterior tension adjustment can also be furnished. This hinge is particularly adapted to double acting dwarf vestibule doors. See Type 4007 for description of features.

Type
C7227SType
C7227M

Attachment C

Attachment
CI

Attachment P



Attachment F

Chicago "Triplex" Lavatory Door Spring Hinges

The Chicago "Triplex" Lavatory Door Spring Hinges, illustrated, are supplied for partition thickness as specified, in brass metal, nickel-plated. White bronze and other finishes are made to special order. The spring hinge flanges are 4 ins. long.

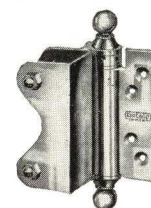
Type 2242, 2244 and 2246 hinges have adjustable clamp flanges and open head nuts on bolts, permitting adjustment of $\frac{1}{8}$ in. under and over the following sizes by which they are specified: 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, and 2 ins.

The advantage of the adjustable clamp flange is that it can be properly and securely applied to partitions having slight variations in thickness.

Where doors are very narrow or light a single-acting spring hinge may be used, together with a springless hinge, Type 2244. If doors swing "out" a checking springless hinge, Type 2246, may be used to hold the door ajar when not bolted shut. When doors swing "in," hinges can be furnished with reverse action springs to hold door open.

Types 2842 and 2642 are for doors opening "in" and Types 2742 and 2542 are for doors opening "out." These hinges are for application to partitions without hanging stiles.

Lavatory Door Stops, with keepers, similar to Type 1247F and various types of door bolts and latches can be supplied to meet conditions.



No. 2242



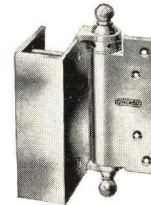
No. 2241



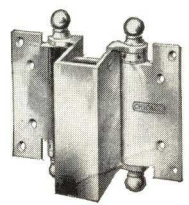
No. 2244



No. 2246



No. 2842



No. 2642



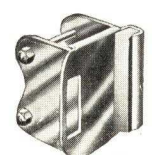
No. 2542



No. 2742



No. 2442



No. 1247F

TELEPHONE
Greenfield 2400-1-2**MILWAUKEE STAMPING COMPANY**
MILWAUKEE, WIS.

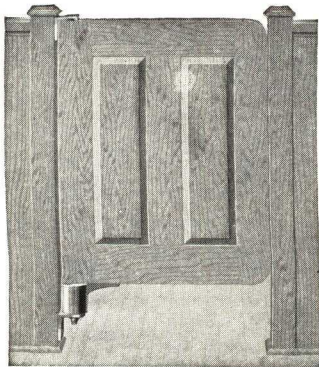
BOSTON OFFICE AND WAREHOUSE, C. E. Harris Company, 99 Bedford Street
CHICAGO OFFICE AND WAREHOUSE, 150 No. Wacker Drive
LOS ANGELES OFFICE AND WAREHOUSE, F. W. Jonas, 912 E. 3rd Street
NEW YORK OFFICE AND WAREHOUSE, 416 Broadway
SEATTLE OFFICE AND WAREHOUSE, R. F. Bevers, 521 Thirtieth Avenue, So.
COLUMBUS (OHIO) OFFICE, Paul E. Lehman, 431 Crestview Road
DALLAS OFFICE, John H. North, 1957 Colorado Blvd.
DENVER OFFICE, Schmidt Sales Co., 3101 Walnut Street
EASTERN PENNSYLVANIA, C. H. Speers, Mechanicsburg, Pa.
JACKSONVILLE (FLA.) OFFICE, Harry Hoffner, P. O. Box 4346

MONTREAL, QUE., C. J. Walker, Ltd., 6 Burton Avenue, Westmount
NEW ORLEANS OFFICE, Fred J. Allen, 1009 Broadway, P. O. Box 169
NEW YORK STATE, Arthur Larose, Auburn, N. Y.
PITTSBURGH OFFICE, E. D. Randolph, 2229 Perryville Avenue, N. S.
SAN FRANCISCO OFFICE, George L. Hall, 1457 Chestnut Street
SOUTH BEND (IND.) OFFICE, R. W. Latta, 232½ Michigan Street
TORONTO, ONT., J. H. Slater & Co., 64 Wellington Street, W.
WASHINGTON, (D. C.) OFFICE, John L. Lindstrom, 2929 Connecticut Ave., N. W.
WESTERN VIRGINIA and WEST VIRGINIA, Fred Betz, Box 6551, Pittsburgh, Pa.

For Toilet Partitions, Showers and Doors, see File Index

MILWAUKEE-LAWSON HINGES*Complete Line of Spring Butts, Lavatory, Screen, and Floor Hinges and Accessories***"Universal" Pivot Gate Hinge**

Is sagless and requires no hanging strip. The only gate hinge with a positive alignment feature. Can be used on stiles 2 in. or over. Thickness of gate, 1 to 2 in.; diameter of cup, 2 in.; brackets, 2x1½ in. wide.



Gate Hinge

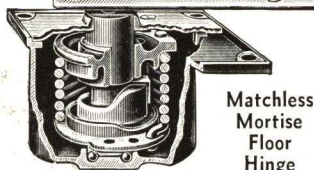
Surface Floor Hinges

Series No. 600—Heavy construction; working parts enclosed in grease chamber—keeps out dirt, prevents wear. For 1½ to 1¾-in. doors.

No. 600 Surface Hinge
Roller and Ball Bearing—Adjustable Alignment and Spring Tension

Matchless Mortise Floor Hinge—The oldest and best type of double acting floor hinge. No hold back. Specially adapted for heavy doors.

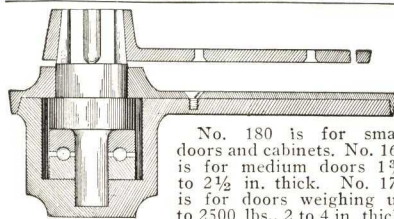
Do not use stronger than No. 1300 for residences. Width of door main point to consider.

Matchless
Mortise
Floor
Hinge**MATCHLESS MORTISE FLOOR HINGE**

Series No.	1200	1300	1400	1500	1600
Thickness of doors	1½" to 1½"	1½" to 2"	2" to 2½"	2½" to 3½"	3" to 4"
Size of cover	4¼"x4¼"	4¾"x4¾"	5"x5"	5½"x5½"	6½"x6½"
Center of pintle to door casing	17/8"	21/16"	23/8"	2½"	211/16"
Depth of hinge	3½"	3¼"	3½"	4"	4"

Matchless Pivot Hinges Without Springs

The ball bearings distribute the weight and provide easy and noiseless action. For double and single acting doors.

**MATCHLESS PIVOT HINGE WITHOUT SPRING**

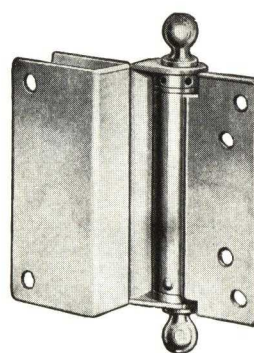
Dimensions	No. 165	No. 175	No. 180
Top plate	2½"x4½"	4¾"x5½"	1"x4"
Depth of cup	13/8"	31/8"	11/8"
Center of pintle to jamb	1"	17/8"	11/8"
Bottom socket to floor	3/8"	5/8"	3/8"
Top pivot face plate	13/8"x57/8"	2"x8"	1"x43/8"
Invisible socket	13/16"x77/8"	2"x93/4"	5/8"x33/4"

Lavatory Hardware

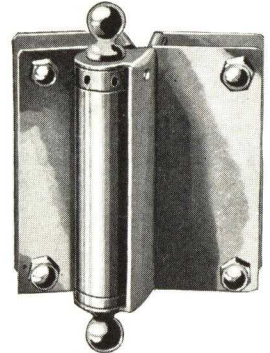
Lawson "Universal" Pivot Spring Hinge—Can be set to hold door open at any position desired. Pivot bearings prevent sagging of door. The pintle is tapered at bottom and fits in tapered socket. When nut is tightened, pintle is drawn down into socket and taper fit holds pintle firmly in place. Double-acting but can be used single-acting by application of door stop or strike.

Lawson Gravity Pivot Hinge—Resembles Lawson "Universal" pivot spring hinge in size, shape, and attachments. For use on double acting doors, but can be used on single acting by the application of a door stop or strike.

This hinge has a ball bearing roller which guarantees smooth action. All working parts are completely inclosed in the hinge housing. Furnished with brackets for attaching to marble, slate, wood or metal partitions.



No. 1900 Lavatory Hinge



No. 1902 Lavatory Hinge

No. 1900 Single Acting Lavatory Hinge—Same as above only one box for application to marble.

No. 1902 Single Acting Lavatory Hinge—With double box, one for marble and one for door. Used on government work.

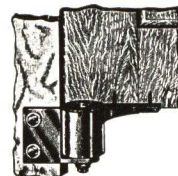
Hardware Specifications for Toilet Stalls

Marble, Slate, or Glass—All hinges for toilet stall doors shall be of the pivot type, similar to Lawson's No. 2234 or 2834, made by MILWAUKEE STAMPING COMPANY, and so arranged that they may be set to hold the door open at any desired position, either in or out, as the owner may elect, after the hinges are applied. They shall be of solid brass, nickel plated.

Metal Partitions—All doors shall be equipped with pivot hinges similar to Lawson's "Universal" hinge or Lawson's Gravity hinge for metal doors, made by MILWAUKEE STAMPING COMPANY, and so arranged that they may be set to hold the door open in or out at any desired position, as the owner may elect, after the hinges are applied.

Where Coin Locks Are to Be Used—(Add the following to above specifications.) All doors shall be set, before the strike is attached, to hold the door open at any desired position. Open door

out and attach strike, thus giving the spring additional power necessary to insure locking of the door, no matter how gently the door is closed.

No. 2834
Spring HingeDetails of the Lawson
"Universal" Hinge



Nu-Jamb Double Acting Hinge

HINGE TEMPLATE DETAILS (INCHES)

MILWAUKEE NU-JAMB DOUBLE ACTING HINGEMILWAUKEE NULIAMB SINGLE ACTING HINGE

MILWAUKEE GIANT JAMB DOUBLE ACTING HINGE**

MILWAUKEE GIANT JAMB SINGLE ACTING HINGE**

Length in inches	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	11 in.	12 in.	13 in.	14 in.	15 in.	16 in.	17 in.	18 in.	19 in.	20 in.	21 in.	22 in.	23 in.	24 in.	25 in.	26 in.	27 in.	28 in.	29 in.	30 in.	31 in.	32 in.	33 in.	34 in.	35 in.	36 in.	37 in.	38 in.	39 in.	40 in.	41 in.	42 in.	43 in.	44 in.	45 in.	46 in.	47 in.	48 in.	49 in.	50 in.	51 in.	52 in.	53 in.	54 in.	55 in.	56 in.	57 in.	58 in.	59 in.	60 in.	61 in.	62 in.	63 in.	64 in.	65 in.	66 in.	67 in.	68 in.	69 in.	70 in.	71 in.	72 in.	73 in.	74 in.	75 in.	76 in.	77 in.	78 in.	79 in.	80 in.	81 in.	82 in.	83 in.	84 in.	85 in.	86 in.	87 in.	88 in.	89 in.	90 in.	91 in.	92 in.	93 in.	94 in.	95 in.	96 in.	97 in.	98 in.	99 in.	100 in.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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in.	4.375	4.500	4.625	4.750	4.875	5.000	5.125	5.250	5.375	5.500	5.625	5.750	5.875	6.000	6.125	6.250	6.375	6.500	6.625	6.750	6.875	7.000	7.125	7.250	7.375	7.500	7.625	7.750	7.875	8.000	8.125	8.250	8.375	8.500	8.625	8.750	8.875	9.000	9.125	9.250	9.375	9.500	9.625	9.750	9.875	10.000	10.125	10.250	10.375	10.500	10.625	10.750	10.875	11.000	11.125	11.250	11.375	11.500	11.625	11.750	11.875	12.000	12.125	12.250	12.375	12.500	12.625	12.750	12.875	13.000	13.125	13.250	13.375	13.500	13.625	13.750	13.875	14.000	14.125	14.250	14.375	14.500	14.625	14.750	14.875	15.000	15.125	15.250	15.375	15.500	15.625	15.750	15.875	16.000	16.125	16.250	16.375	16.500	16.625	16.750	16.875	17.000	17.125	17.250	17.375	17.500	17.625	17.750	17.875	18.000	18.125	18.250	18.375	18.500	18.625	18.750	18.875	19.000	19.125	19.250	19.375	19.500	19.625	19.750	19.875	20.000	20.125	20.250	20.375	20.500	20.625	20.750	20.875	21.000	21.125	21.250	21.375	21.500	21.625	21.750	21.875	22.000	22.125	22.250	22.375	22.500	22.625	22.750	22.875	23.000	23.125	23.250	23.375	23.500	23.625	23.750	23.875	24.000	24.125	24.250	24.375	24.500	24.625	24.750	24.875	25.000	25.125	25.250	25.375	25.500	25.625	25.750	25.875	26.000	26.125	26.250	26.375	26.500	26.625	26.750	26.875	27.000	27.125	27.250	27.375	27.500	27.625	27.750	27.875	28.000	28.125	28.250	28.375	28.500	28.625	28.750	28.875	29.000	29.125	29.250	29.375	29.500	29.625	29.750	29.875	30.000	30.125	30.250	30.375	30.500	30.625	30.750	30.875	31.000	31.125	31.250	31.375	31.500	31.625	31.750	31.875	32.000	32.125	32.250	32.375	32.500	32.625	32.750	32.875	33.000	33.125	33.250	33.375	33.500	33.625	33.750	33.875	34.000	34.125	34.250	34.375	34.500	34.625	34.750	34.875	35.000	35.125	35.250	35.375	35.500	35.625	35.750	35.875	36.000	36.125	36.250	36.375	36.500	36.625	36.750	36.875	37.000	37.125	37.250	37.375	37.500	37.625	37.750	37.875	38.000	38.125	38.250	38.375	38.500	38.625	38.750	38.875	39.000	39.125	39.250	39.375	39.500	39.625	39.750	39.875	40.000	40.125	40.250	40.375	40.500	40.625	40.750	40.875	41.000	41.125	41.250	41.375	41.500	41.625	41.750	41.875	42.000	42.125	42.250	42.375	42.500	42.625	42.750	42.875	43.000	43.125	43.250	43.375	43.500	43.625	43.750	43.875	44.000	44.125	44.250	44.375	44.500	44.625	44.750	44.875	45.000	45.125	45.250	45.375	45.500	45.625	45.750	45.875	46.000	46.125	46.250	46.375	46.500	46.625	46.750	46.875	47.000	47.125	47.250	47.375	47.500	47.625	47.750	47.875	48.000	48.125	48.250	48.375	48.500	48.625	48.750	48.875	49.000	49.125	49.250	49.375	49.500	49.625	49.750	49.875	50.000	50.125	50.250	50.375	50.500	50.625	50.750	50.875	51.000	51.125	51.250	51.375	51.500	51.625	51.750	51.875	52.000	52.125	52.250	52.375	52.500	52.625	52.750	52.875	53.000	53.125	53.250	53.375	53.500	53.625	53.750	53.875	54.000	54.125	54.250	54.375	54.500	54.625	54.750	54.875	55.000	55.125	55.250	55.375	55.500	55.625	55.750	55.875	56.000	56.125	56.250	56.375	56.500	56.625	56.750	56.875	57.000	57.125	57.250	57.375	57.500	57.625	57.750	57.875	58.000	58.125	58.250	58.375	58.500	58.625	58.750	58.875	59.000	59.125	59.250	59.375	59.500	59.625	59.750	59.875	60.000	60.125	60.250	60.375	60.500	60.625	60.750	60.875	61.000	61.125	61.250	61.375	61.500	61.625	61.750	61.875	62.000	62.125	62.250	62.375	62.500	62.625	62.750	62.875	63.000	63.125	63.250	63.375	63.500	63.625	63.750	63.875	64.000	64.125	64.250	64.375	64.500	64.625	64.750	64.875	65.000	65.125	65.250	65.375	65.500	65.625	65.750	65.875	66.000	66.125	66.250	66.375	66.500	66.625	66.750	66.875	67.000	67.125	67.250	67.375	67.500	67.625	67.750	67.875	68.000	68.125	68.250	68.375	68.500	68.625	68.750	68.875	69.000	69.125	69.250	69.375	69.500	69.625	69.750	69.875	70.000	70.125	70.250	70.375	70.500	70.625	70.750	70.875	71.000	71.125	71.250	71.375	71.500	71.625	71.750	71.875	72.000	72.125	72.250	72.375	72.500	72.625	72.750	72.875	73.000	73.125	73.250	73.375	73.500	73.625	73.750	73.875	74.000	74.125	74.250	74.375	74.500	74.625	74.750	74.875	75.000	75.125	75.250	75.375	75.500	75.625	75.750	75.875	76.000	76.125	76.250	76.375	76.500	76.625	76.750	76.875	77.000	77.125	77.250	77.375	77.500	77.625	77.750	77.875	78.000	78.125	78.250	78.375	78.500	78.625	78.750	78.875	79.000	79.125	79.250	79.375	79.500	79.625	79.750	79.875	80.000	80.125	80.250	80.375	80.500	80.625	80.750	80.875	81.000	81.125	81.250	81.375	81.500	81.625	81.750	81.875	82.000	82.125	82.250	82.375	82.500	82.625	82.750	82.875	83.000	83.125	83.250	83.375	83.500	83.625	83.750	83.875	84.000	84.125	84.250	84.375	84.500	84.625	84.750	84.875	85.000	85.125	85.250	85.375	85.500	85.625	85.750	85.875	86.000	86.125	86.250	86.375	86.500	86.625	86.750	86.875	87.000	87.125	87.250	87.375	87.500	87.625	87.750	87.875	88.000	88.125	88.250	88.375	88.500	88.625	88.750	88.875	89.000	89.125	89.250	89.375	89.500	89.625	89.750	89.875	90.000	90.125	90.250	90.375	90.500	90.625	90.750	90.875	91.000	91.125	91.250	91.375	91.500	91.625	91.750	91.875	92.000	92.125	92.250	92.375	92.500	92.625	92.750	92.875	93.000	93.125	93.250	93.375	93.500	93.625	93.750	93.875	94.000	94.125	94.250	94.375	94.500	94.625	94.750	94.875	95.000	95.125	95.250	95.375	95.500	95.625	95.750	95.875	96.000	96.125	96.250	96.375	96.500	96.625	96.750	96.875	97.000	97.125	97.250	97.375	97.500	97.625	97.750	97.875	98.000	98.125	98.250	98.375	98.500	98.625	98.750	98.875	99.000	99.125	99.250	99.375	99.500	99.625	99.750	99.875	100.000

* Dimensions on 8 in. and 10 in. Single and 8 in. Double Acting Hinges are approximate. Write for template drawing on these sizes.

THE OSCAR C. RIXSON COMPANY

MANUFACTURERS OF

Floor Checks, Overhead Door Closers, Door Holders, Special Hinges,
Casement and Transom Hardware

4450 Carroll Avenue, CHICAGO, ILL.

REPRESENTATIVES

ATLANTA, GA., Luke Seawell, 152 Nassau Street
LOS ANGELES, CAL., George E. Tupper, 909 Santa Fe Avenue
NEW ORLEANS, LA., Fred J. Allen, 1009 Broadway
NEW YORK, N. Y., George Patriot, Inc., 2034 Webster Avenue and 101
Park Avenue (New York Distributor)

PHILADELPHIA, PA., G. Norris Williams, 211 Greenwood Avenue, Wyn-
cote, Pa.
SAN FRANCISCO, CAL., George E. Tupper, 116 New Montgomery
Street
CANADA, The Richards-Wilcox Canadian Co., Ltd., London, Ont.

The Company and Its Reputation

Since the turn of the century THE OSCAR C. RIXSON COMPANY has been engaged in the development and manufacture of improved mechanisms in builders' hardware. Manufacturers of one of the first reliable door checks and closers, we subsequently introduced the first double acting door check for use with spring hinges, a feat considered impossible at the time.

Then followed the development of the RIXSON line of Floor Checks, whose reliability and fitness have earned them a world-wide reputation and the unqualified specification of architects and builders for years. RIXSON floor checks have been *Imitated* but *Never Equaled*.

Many new and improved mechanisms have been introduced such as Casement Operators; Friction Stays; Tubular Friction Casement Holders; Improved



Cremorne Bolts; Door Holders and Stays; Concealed Transom Operators; Olive Knuckle Hinges; Nos. 02, 2, 03, and 3 Adjustable Ball Hinges; and Thresholds of special designs for use with floor checks.

Recent additions to the line include two new CONCEALED OVERHEAD DOOR CHECKS, one for installation in head jambs or transom bars, and the other for installation in the top rails of doors; our SERIES 350 CHECKING PIVOT HINGE for use on lavatory stall doors, rail gates, dwarf doors, etc., and UNI-CHECK, a moderately priced single acting floor check.

Our Engineering, Designing and Service Departments are also at your disposal and will gladly assist in the solution of special problems.

SPECIFICATIONS

We believe that the following specifications will be of material service to those desiring to secure the proper style and size FLOOR CHECKS and CONCEALED OVERHEAD CHECKS of "Rixson" quality, appearance, performance and not goods of questionable quality.

Single Acting, Offset Type, Exterior and Vestibule Doors, Heavy Duty Interior Doors—Shall be provided with RIXSON No. 20 single acting floor check for interior doors not over 3 ft. 6 ins. wide; for outswinging entrance and vestibule doors not over 2 ft. 10 ins. wide; for inswinging entrance and vestibule doors not over 2 ft. 6 ins. wide. RIXSON No. 25 single acting floor check for extra heavy interior doors not over 4 ft. wide; for entrance and vestibule doors over 2 ft. 10 ins. wide. Federal Specification FF H 121a Type 3520-A. Size II Rixson No. 20; Size III Rixson No. 25.

Doors over 7 ft. high shall be provided with RIXSON No. 19 intermediate pivot. Federal Specification FFH 121a Type 3525—Rixson No. 19, or No. 19 Modern.

Single Acting, Center Pivoted, Exterior and Vestibule Doors, Heavy Duty Interior Doors—Shall be provided with RIXSON No. 21 single acting floor check for interior doors not over 3 ft. 6 ins. wide; for outswinging entrance and vestibule doors not over 2 ft. 10 ins. wide; for inswinging entrance and vestibule doors not over 2 ft. 6 ins. wide. RIXSON No. 26 single acting floor check for extra heavy interior doors not over 4 ft. wide; for entrance and vestibule doors over 2 ft. 10 ins. wide. Federal Specification FFH 121a Type 3520. Size II Rixson No. 21. Size III Rixson No. 26.

Single Acting, Independently Hinged, Exterior and Vestibule Doors, Heavy Duty Interior Doors—Shall be provided with RIXSON No. 321 single acting floor check for interior doors not over 3 ft. 6 ins. wide; for outswinging entrance and vestibule doors not over 2 ft. 10 ins. wide; for inswinging entrance and vestibule doors not over 2 ft. 6 ins. wide. RIXSON No. 326 single acting floor check for extra heavy interior doors not over 4 ft. wide; for entrance and vestibule doors over 2 ft. 10 ins. wide.

Single Acting, Offset Type, Ordinary Interior Doors—Shall be provided with RIXSON No. 18 single acting floor check for ordinary interior doors not over 3 ft. wide. Federal Specification FFH 121a Type 3520-A. Size I Rixson No. 18.

Single Acting, Center Pivoted, Ordinary Interior Doors—Shall be provided with RIXSON No. 18½ single acting floor check for ordinary interior doors not over 3 ft. wide. Federal Specification FFH 121a Type 3520. Size I Rixson No. 18½.

Double Acting, Exterior and Vestibule Doors, Heavy Duty Interior Doors—Shall be provided with RIXSON No. 30 double acting floor check for heavy interior doors not over 3 ft. 6 ins. wide; for entrance and vestibule doors not over 2 ft. 10 ins. wide. RIXSON No. 40 double acting floor check for extra heavy interior doors; for entrance and vestibule doors over 2 ft. 10 ins. wide. Federal Specification FFH 121a Type 3510. Size I Rixson No. 30. Size II Rixson No. 40.

Double Acting, Ordinary Interior Doors—Shall be provided with RIXSON No. 10 double acting floor check with hold-open, (No. 12 without hold-open) for doors not over 2 ft. 10 ins. wide; RIXSON No. 15 double acting floor check with hold-open, (No. 16 without hold-open) for doors not over 3 ft. 10 ins. wide. Federal Specification FFH 121a Type 3500. Size II Rixson No. 10 and No. 12. Size III Rixson No. 15 and No. 16.

Single Acting, Independently Hinged, Exterior and Vestibule Doors, Heavy Duty Interior Doors—Shall be provided with RIXSON No. 220 single acting overhead concealed check, for interior doors not over 3 ft. 6 ins. wide; for outswinging entrance and vestibule doors not over 2 ft. 10 ins. wide; for inswinging entrance and vestibule doors not over 2 ft. 6 ins. wide. RIXSON No. 225 single acting overhead concealed check for extra heavy interior doors not over 4 ft. wide; for entrance and vestibule doors over 2 ft. 10 ins. wide.

Single Acting, Independently Hinged, Ordinary Interior Doors—Shall be provided with RIXSON No. 100 single acting overhead concealed check for ordinary interior doors not over 3 ft. wide.

SINGLE ACTING FLOOR CHECKS

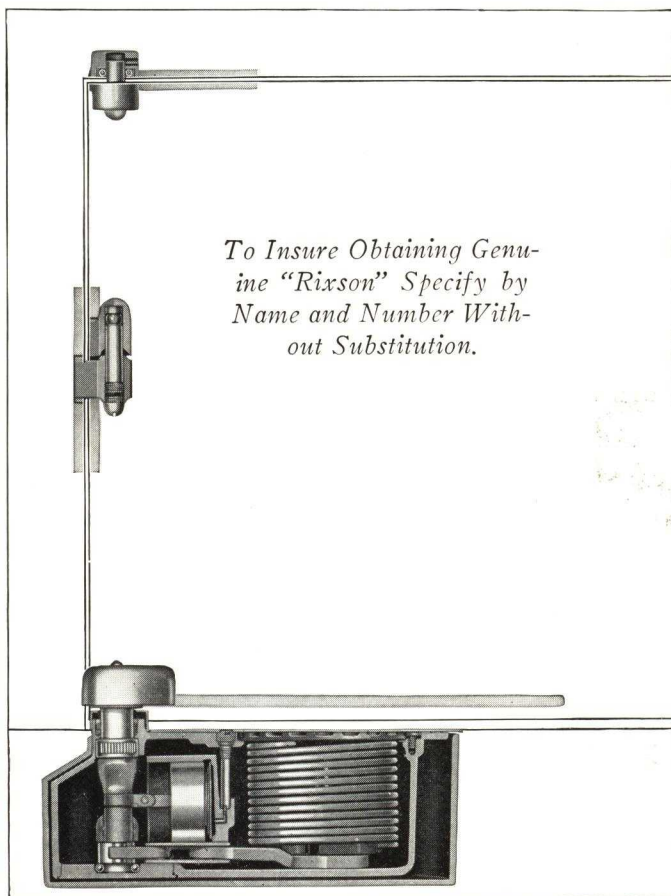
Rixson Single Acting Floor Checks are the foundation of this Company's good reputation. Having been used on most of the outstanding buildings in the country for over a quarter century, their durability is proven. They are constantly being improved. The latest models are equipped with new main spindles hardened and ground to close limits; the lower ball bearing is of an improved type. A roller bearing now supports the upper end of the spindle and a new packing gland has been added to reduce the possibility of leakage. The Nos. 20 and 25 Checks are equipped with ball bearing top pivots. The regular top pivot and No. 19 pivot are now made of high strength brass, bronze, and aluminum forgings.

No. 18, No. 20, No. 25 Checks—The offset type, a top pivot being furnished with each Check, so that no hinges are required for hanging the door. The several designs of top pivots and No. 19 side pivots are shown below.

No. 120, No. 125 Checks—The offset type, equipped with an arm for narrow doors which does not provide a vertical adjustment for the door. A top pivot is furnished with each Check.

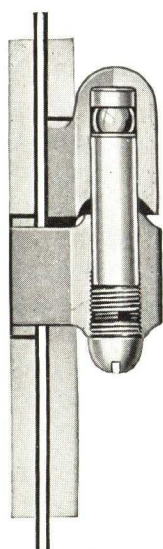
No. 18½, No. 21, No. 26 Checks—The center hung type, the pivot and arm being entirely concealed when the door is closed. These Checks are particularly adaptable to batteries of doors where no mullions are used.

No. 318½, No. 321, No. 326 Checks—Are supplied with a forged bronze arm and a sliding block and rail arrangement so that the door may be hung with any type of hinge desired. No pivots are furnished with this Check. No. 318½ has malleable iron arm.



PIVOTS FOR SINGLE ACTING FLOOR CHECKS NO. 18, NO. 20, NO. 25, NO. 120, AND NO. 125 Offset Type (Handed)

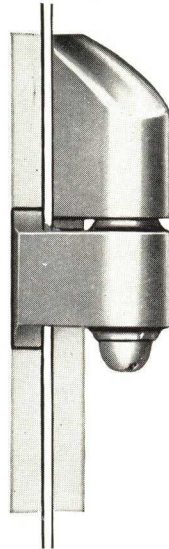
Rixson Top Pivots and No. 19 Side Ball Pivots are Furnished in Brass, Bronze, and Aluminum Forgings for Extra Strength



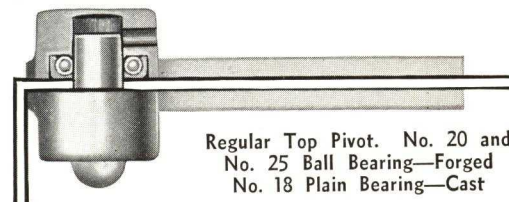
No. 19 Side Ball
Pivot, Plain De-
sign Forged



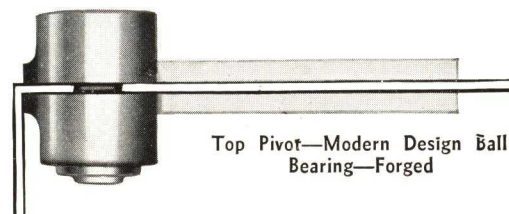
No. 19 Side Ball
Pivot, Modern
Design Cast



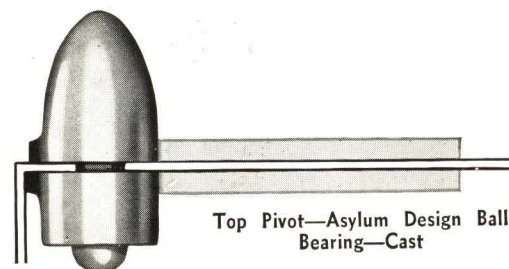
No. 19 Side Pivot
Asylum Design
Cast



Regular Top Pivot. No. 20 and
No. 25 Ball Bearing—Forged
No. 18 Plain Bearing—Cast



Top Pivot—Modern Design Ball
Bearing—Forged



Top Pivot—Asylum Design Ball
Bearing—Cast

We recommend the ball bearing top pivot for use wherever possible. No. 19 Pivot is intended as an intermediate pivot and, for use where the regular top pivot cannot be used.

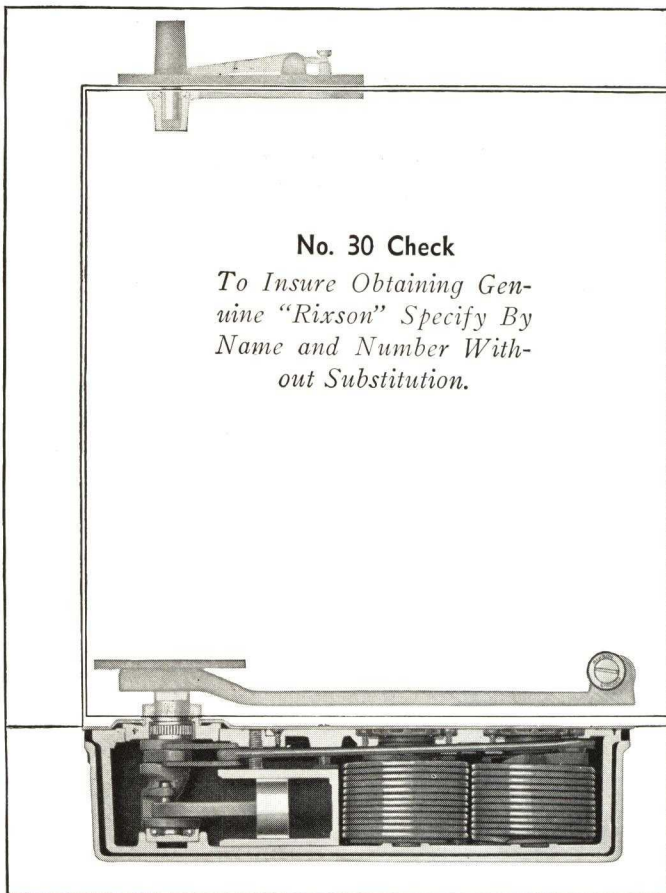
See page 1 for Suggested Specification for Floor Checks.

Blue Print Templates Furnished on Request

DOUBLE-ACTING FLOOR CHECKS

No. 30 Check

To Insure Obtaining Genuine "Rixson" Specify By Name and Number Without Substitution.

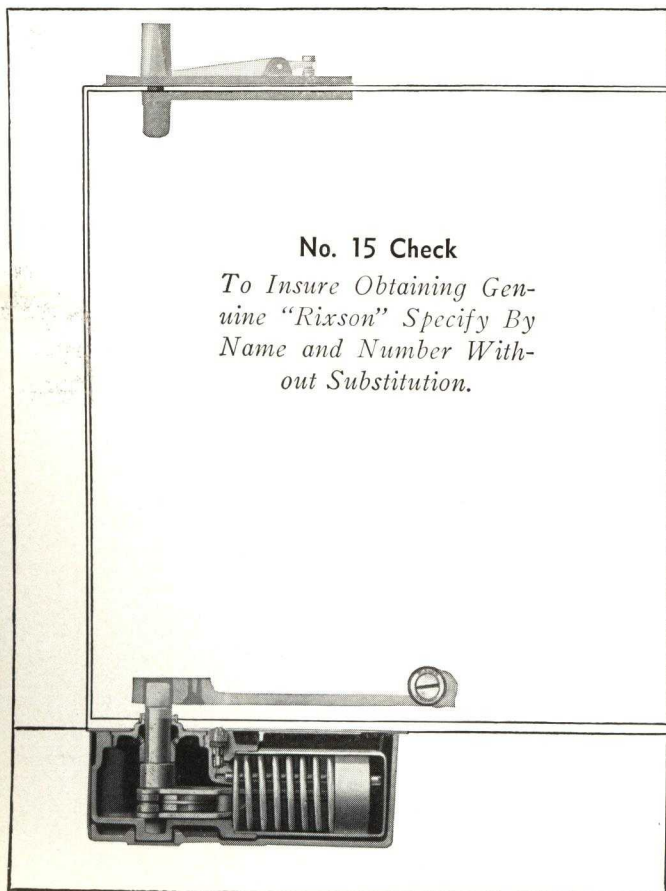
**No. 30, No. 40 Checks**

Like the single acting Floor Checks, these have been produced for years and their worth is proven. The latest models are equipped with hardened and ground spindles, new packing glands, new lower spindle ball bearings operating in hardened steel ball races, and new upper spindle roller bearings. The upper door pivot furnished is of the ball bearing type. The two Checks are particularly designed for heavy duty entrance and vestibule doors.

Both Checks are equipped with two separately adjustable springs and two separately adjustable checking mechanisms to meet the varying wind conditions on different entrance doors. Adjustments are provided for centering the door and for taking up play in the mechanism.

No. 15 Check

To Insure Obtaining Genuine "Rixson" Specify By Name and Number Without Substitution.

**No. 10, No. 12, No. 15, No. 16, New Improved Checks**

Designed to control medium duty interior doors, such as pantry, rail gate, or coupon booth doors. The parts are of heavy construction and steel parts, such as spindle, draw bar, cam, and rollers, are hardened to provide for long life. A patented pressure release valve is used to prevent breakage to the door or Check when closing action is forced.

Nos. 10 and 15 when opened to 90 degrees hold the door automatically in that position, so that no holder is needed.

Nos. 12 and 16 correspond in all respects to Nos. 10 and 15, but do not have automatic door holder.

Junior Check

Similar to the Nos. 10 and 15 Checks, but is lighter in construction. For light interior doors, such as pantry doors in the moderate cost house, this Check will give fine service. Rixson Junior can be supplied with or without 90-degree automatic hold-open.

See page 1 for Suggested Specification. Blue Print Templates Furnished on Request.

CONCEALED SINGLE-ACTING OVERHEAD DOOR CHECKS**No. 220, No. 225 Checks (Handed)**

For entrance, vestibule, and interior doors hung on butts.

This new type of Check is placed in the head jamb or transom bar. It will fit in a very narrow transom bar due to its small section, the Check measuring $2\frac{7}{8}$ ins. wide, $2\frac{7}{8}$ ins. high and 17 ins. long. All parts are concealed when the door is closed.

When required, a concealed door holder can be furnished that holds the door at 90 degrees. This operates with a small knob on the face of the door. The device serves as an automatic or manually operated holder as desired. A maximum hold-open of 100 degrees can be furnished on request.

The regular non-hold-open arm permits the door to open to a maximum of 160 degrees.

Roller bearings are used throughout these Checks, there being six supporting the three hardened and ground shafts. This is something new in door closing devices. The gears are forged steel with cut and hardened teeth of special shape to give great strength.

The Checks are equipped with a simple, accessible spring control and a two-valve, two-speed checking control.

No. 100 Check (Non-handed)

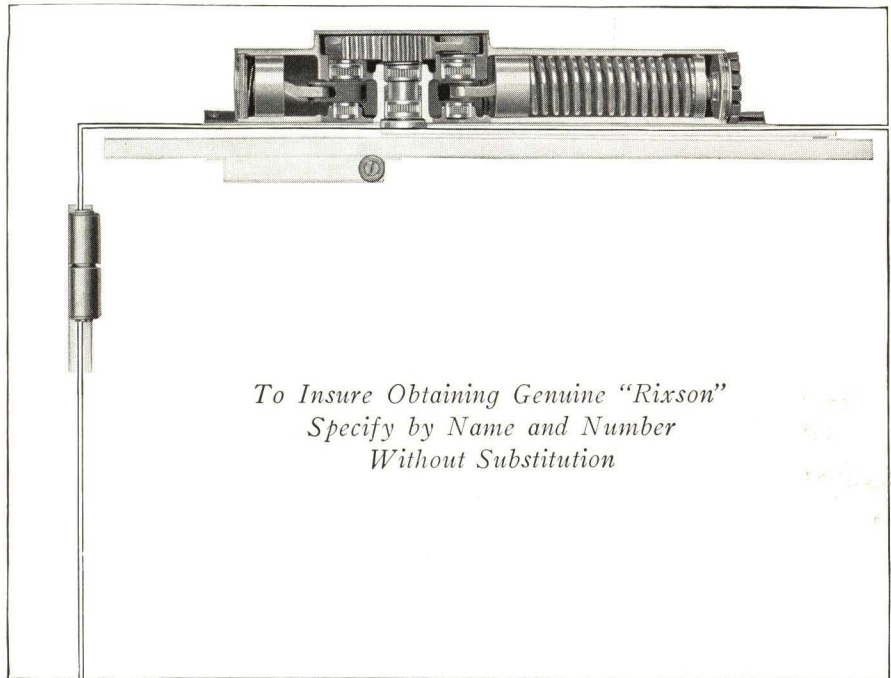
For interior doors only. An overhead concealed door Check designed particularly for hollow metal doors not less than $1\frac{1}{2}$ in. thick. The Check may be installed in wood doors by using side plates. Write for special details. Nothing is exposed on either side of the door.

The Check is constructed of the finest materials. The case and arm are of malleable iron. The spindle, gear teeth, plunger and rack teeth are all of machined steel, hardened. The gear teeth are of special shape to produce great strength.

The Check with regular non-handed arm will permit the door to open to a maximum of 150 degrees. Where 180-degree opening is required a special handed arm is furnished.

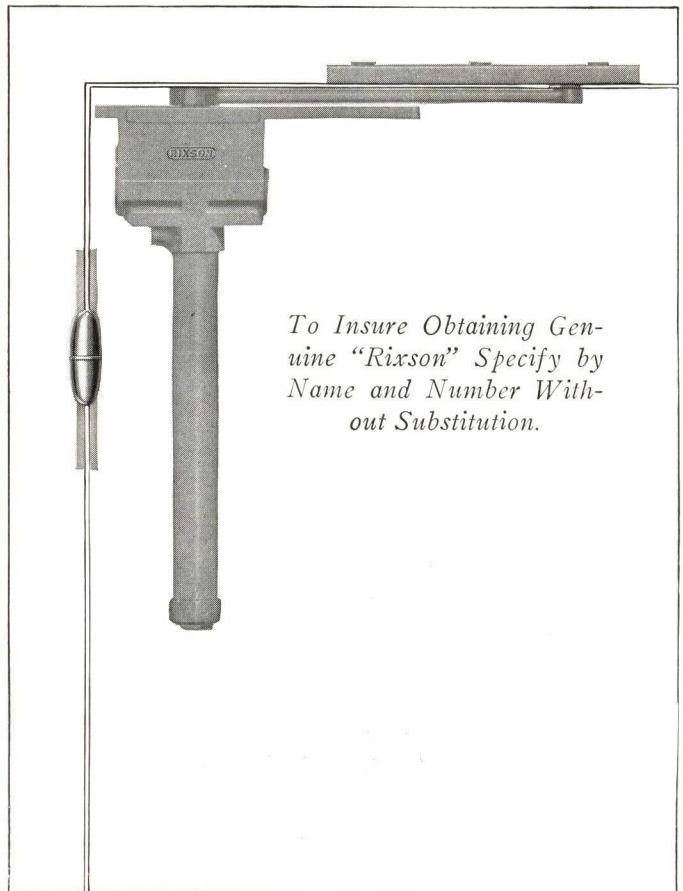
The spring power is adjustable. The checking speed is of the two-speed type, controlled by two valves.

See Page 1 for Suggested Specification.



*To Insure Obtaining Genuine "Rixson"
Specify by Name and Number
Without Substitution*

Cut Open View of No. 225 Showing Rugged Construction and Roller Bearings
(Illustration Shows Check with Holder Mechanism Below Rail. Butt Shown Is Rixson No. 02 Adjustable Ball Hinge, Modern Design)

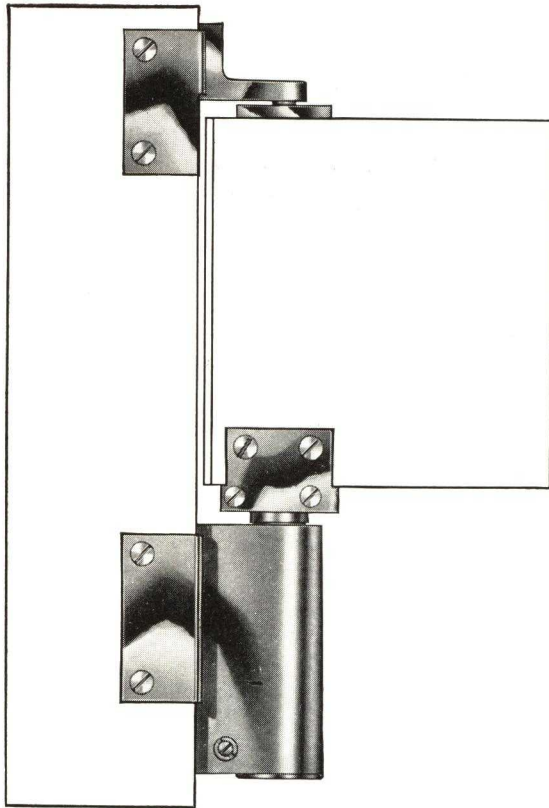


*To Insure Obtaining Genuine "Rixson"
Specify by Name and Number
Without Substitution.*

Phantom View of No. 100
(Butt Shown Is Rixson No. 81 Olive Knuckle Hinge)

Blue Print Templates Furnished on Request

SERIES 350 CHECKING PIVOT HINGES



Set No. 350 Shown

For use on single and double acting lavatory stall doors, dwarf doors, rail gates, coupon booth doors, etc. This new device can be used on right or left hand single acting doors or on double acting doors without any change in the mechanism.

The use of spring or gravity hinges or pivots on lavatory doors in glass or marble partitions frequently results in breakage of the partition due to doors slamming. The Series 350 Checking Pivot Hinges are gentle on both partitions and nerves.

The case is made of non-corrosive white metal alloy. The partition flanges are of wrought brass, and sizes to fit different thicknesses of partitions are easily interchanged. The weight of the door is carried by a ball bearing. The internal parts subject to wear are made of steel or malleable iron. The spring is of the torsion type.

Various check brackets, top pivots, and arms are provided to meet with different jamb and door conditions. These are arranged in ten sets numbered from 350 to 359 for convenience in ordering. See below.

To Insure Obtaining Genuine "Rixson," Specify by Name and Number Without Substitution



Flanged Check Bracket "A"



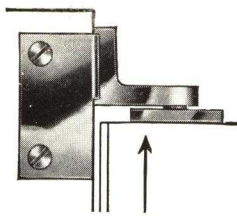
Flat Check Bracket "B"



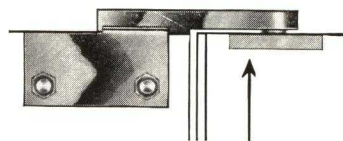
Straight Arm "S"



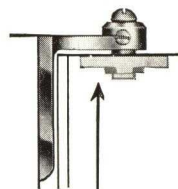
Sliding Arm "T"



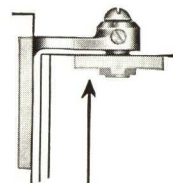
Flanged Angle Top Pivot "L"



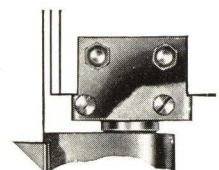
Flanged Flush Top Pivot "M"



Angle Surface Top Pivot "N"



Angle Mortise Top Pivot "O"



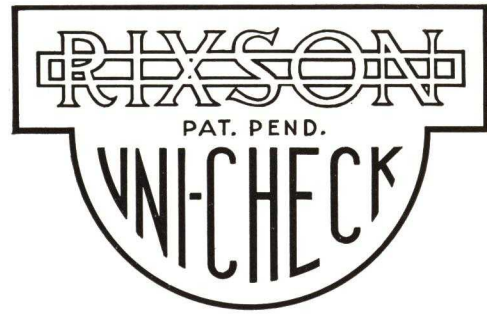
Flanged Arm "R"

Set No.....	350	351	352	353	354	355	356	357	358	359
Check Bracket.....	A	A	A	A	B	B	B	B	A	B
Top Pivot-Jamb Portion..	L	M	L	M	N	O	N	O	none	none
Top Pivot-Door Portion..	F	F	F	F	G	G	G	G	none	none
Arm	R	R	S	S	R	R	S	S	T	T

Furnished in polished chromium and other plated finishes, also primed for paint.

Blueprint Templates Furnished on Request

RIXSON UNI-CHECK



Represents at last our answer to the insistent demand of architects and owners for a reliable floor check fitting the requirements and usual details of interior doors *at a price that permits its use in place of the unsightly exposed closers* hitherto accepted as a necessary evil.

Suitable for any interior door, wood or metal, that has to be closed automatically and quietly.

Only six sturdy moving parts. No complicated adjustments. Self-evident, simple installation. Ordinary threshold details. Requires only $2\frac{9}{16}$ " of floor depth.

Complete information and details can be obtained from any Rixson representative. Ask your builders hardware-man to include UNI-CHECK for interior doors on your next schedule.

Partial List of Installations

UNI-CHECK is being used for interior doors in the following new buildings:

Memorial Cancer Hospital, New York, N. Y.

James Gamble Rogers, Architect, New York, N. Y.

Brooklyn Central Library, Brooklyn, N. Y.

Alfred Morton Githens, Architect, New York, N. Y.

Fox Department Store, Hartford, Conn.

Taussig & Flesch, Architects, New York, N. Y.

Addition to the Administration Building, Carnegie Institute, Washington, D. C.

Delano & Aldrich, Architects, New York, N. Y.

State Hospital, Trenton, N. J.

New Jersey State Architects, Trenton, N. J.

Littauer School of Administration, Harvard University
Coolidge, Shepley, Bulfinch & Abbott, Architects,
Boston, Mass.

Brockport, New York Normal School

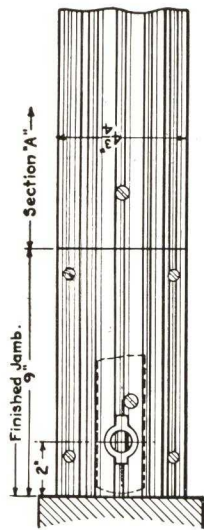
Wm. Haugaard, New York State Architect

Blueprint Templates Furnished on Request

THRESHOLDS OF RIXSON DESIGN

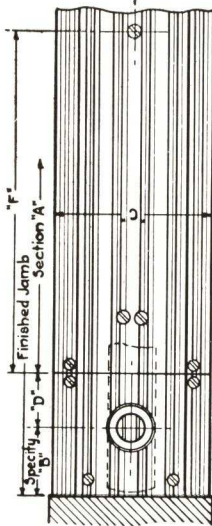
Architectural Bronze and Aluminum—Cast Abrasive Bronze, Aluminum, White Metal and Iron

A symmetrically pleasing design of Threshold adapted for use with Rixson Floor being the most successful manufacturer of Floor Checks, and with the longest Checks or where floor checks are not used. When considering Thresholds and Floor Checks it is essentially logical to specify Rixson Floor Checks and Rixson Thresholds by number and type, assuring the utmost in satisfaction and quality. This Company



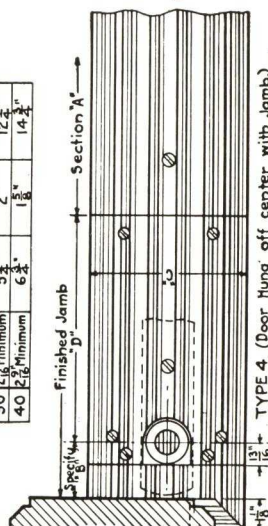
TYPE 2 (Door Hung at Center of Jamb.)

Junior	10	12	15	16
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TYPE 1A (Door Hung at Center of Jamb.)

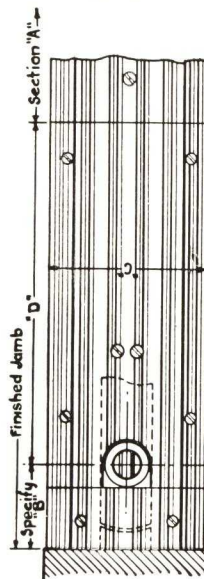
B	C	D	F
30 2 1/2 Minimum	5 3/4	2	12 1/4
40 2 1/2 Minimum	6 3/4	1 1/8	14 3/4



TYPE 4 (Door Hung off center with Jamb.)

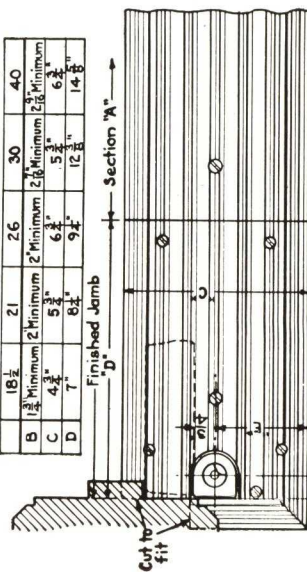
B	C	D	E	F
18 1/2	21	26	30	40
1 1/2 Minimum	2 1/2 Minimum	2 1/2 Minimum	2 1/2 Minimum	2 1/2 Minimum
4 3/4	5 3/4	6 3/4	5 3/4	6 3/4
7	8 1/4	9 1/4	12 3/8	14 5/8

SECTION A-A
When specified with Concrete Anchors—drilled on center line for #12 oval head machine screws.
When specified with Wood Screws—drilled near each edge for 1/2 x #12 oval head wood screws.



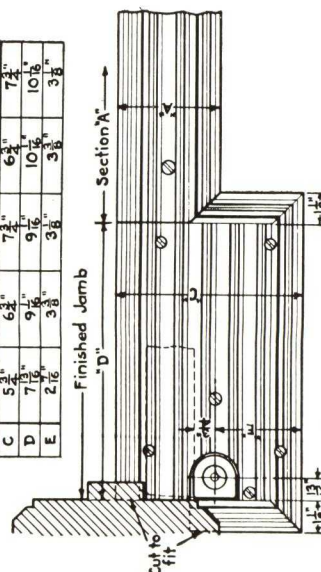
TYPE 1 (Door Hung at Center of Jamb.)

B	C	D	E	F
18 1/2	21	26	30	40
1 1/2 Minimum	2 1/2 Minimum	2 1/2 Minimum	2 1/2 Minimum	2 1/2 Minimum
4 3/4	5 3/4	6 3/4	5 3/4	6 3/4
7	8 1/4	9 1/4	12 3/8	14 5/8



TYPE 3 Check Number and Door Thickness.

B	C	D	E	F
18 1/2 or less	20 3/4 or less	25 1/8 or less	25 3/8 or less	30 3/8
5 1/2	6 3/4	7 1/2	6 3/4	7 1/2
7 1/8	9 1/8	10 1/8	10 1/8	10 1/8
2 1/8	3 3/8	3 3/8	3 3/8	3 3/8



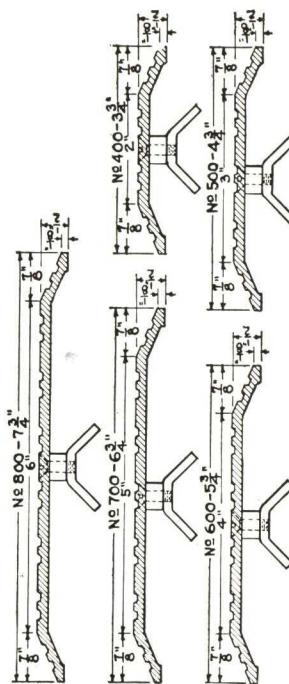
TYPE 5 Check Number and Door Thickness.

A	B	C	D	E	F
18 1/2 or less	20 3/4 or less	25 1/8 or less	25 3/8 or less	30 3/8	30 3/8
3 1/2	4 1/2	5 1/2	6 1/2	7 1/2	7 1/2
5 1/2	6 3/4	7 1/2	6 3/4	7 1/2	7 1/2
7 1/8	9 1/8	10 1/8	10 1/8	10 1/8	10 1/8
2 1/8	3 3/8	3 3/8	3 3/8	3 3/8	3 3/8

Important

The Exact Distance between Finished Jamb (not door stops) and between Check Spindles and Finished Jamb must be specified. We are Not Responsible if the length ordered does not fit the opening.

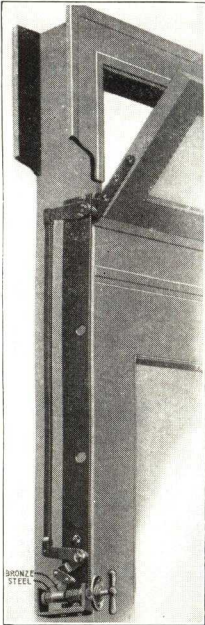
Blue Print Templates Furnished on Request.



In setting thresholds, the floor checks and cement cases should be at hand. The entire assembly should be blocked up in the door opening so that the check spindles are properly located and the sections of the threshold line up perfectly.

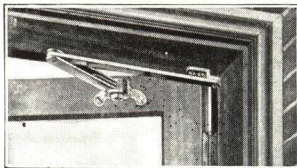
When Type No. 3 or No. 5 is specified the thickness of doors must be given so that the proper width of cover plate can be supplied.
On batteries of doors or where unusual conditions prevail submit drawings for prices.

THRESHOLD SECTIONS—OPERATORS—HOLDERS—STAYS—HINGES



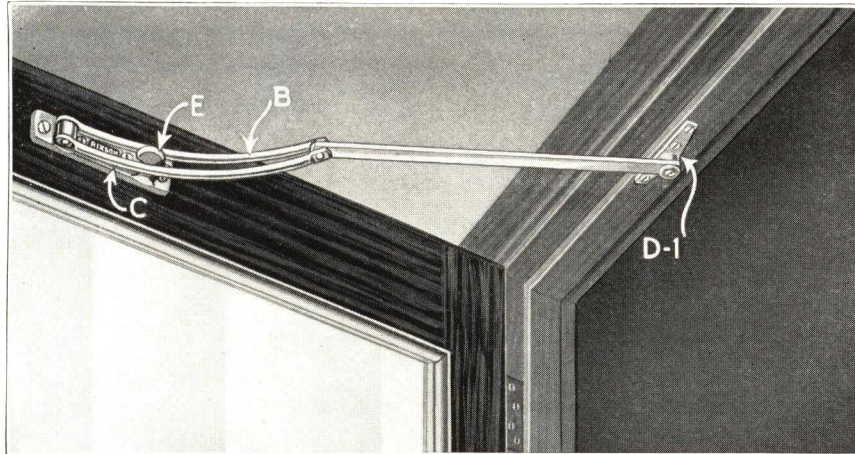
No. 48 Concealed Transom Operator

For wood or metal construction. Only the operating handle is exposed. Can be furnished to operate bottom, top or center pivoted transoms. Recommended for interior transoms. Obtain template information when detailing door jamb



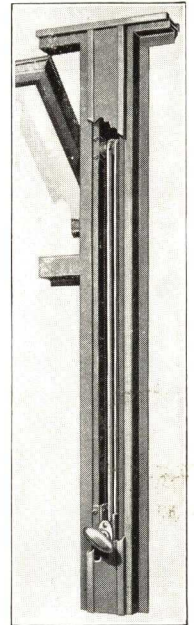
No. 33 Friction Stay

The original jointed friction disc type of holder for casement windows, transoms, etc. Friction adjustment is effected by turning the hexagon head screw



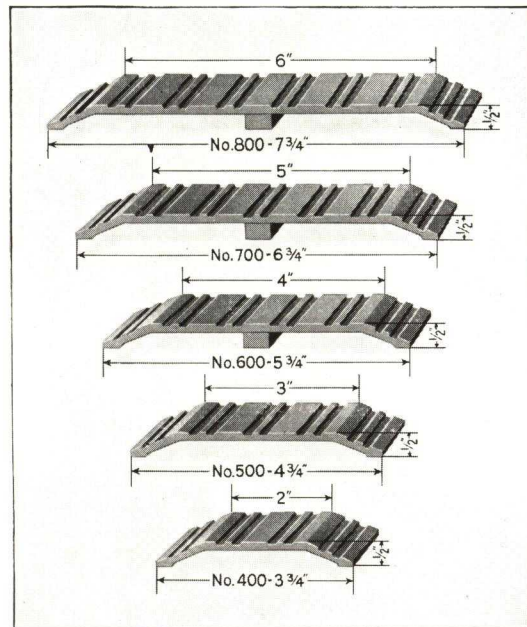
The Rixson Door Stay and Holder No. 38

A holder for heavy traffic single acting doors, particularly those equipped with Rixson floor checks. The hold-open is operated manually. The No. 39 holder is automatic



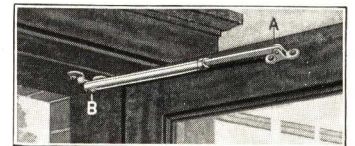
No. 50 Concealed Transom Operator

Especially designed for use in the new hollow metal type of partition where jamb sections are extremely small. It is recommended particularly for center pivoted transoms. Mounting brackets can be furnished to fit most makes of metal partition



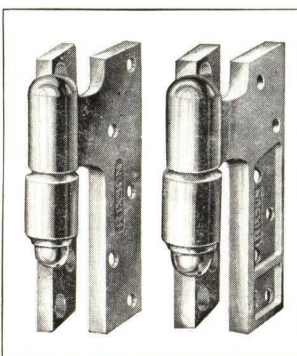
Thresholds

The above sections are used in fabricating Rixson Thresholds



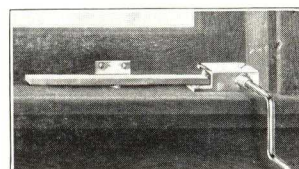
No. 35 Type Casement Holder

An adjustable friction holder of the tubular type. Furnished in brass, bronze or steel. Suitable for casement windows, transoms, etc.



Nos. 2-3 Adjustable Ball Hinges

Sturdy in construction and suitable for large or heavy duty doors. The special ball type of bearing insures long life

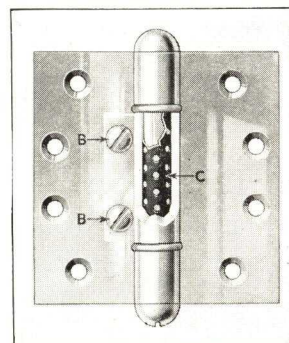


No. 94 Casement Operator

A crank type operator for out-swinging casement windows will move window and hold in any desired position without removing screen. The No. 194 is for steel or wood sash.

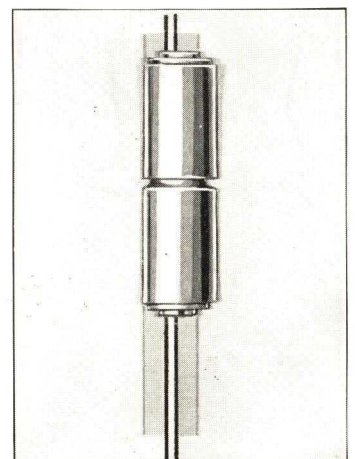
No. 95 Casement operator for highest grade of construction.

No. 93 Casement operator for the moderately priced house.



No. 85 Friction Hinge

Recommended for hospital, hotel and bedroom doors and In-Swinging Casement windows



Nos. 02-03 Adjustable Ball Hinges

Modern in appearance. Suitable for large or heavy duty doors. The ball type of bearing insures long life

THE SHELBY SPRING HINGE COMPANY

SHELBY, OHIO

NEW YORK REPRESENTATIVE—Harvey Bronner, 41 Warren St., New York, N. Y.

PACIFIC COAST REPRESENTATIVE—Pond Hardware Specialty Co., 2115 Arapahoe St., Los Angeles, Calif.

PHILADELPHIA REPRESENTATIVE—H. S. Hendrickson, 1015 Chestnut St., Philadelphia, Pa.

BOSTON REPRESENTATIVE—Kenneth H. Bullard, 751 Little Bldg., Boston, Mass.

SHELBY CHECKING FLOOR HINGES

Uses

We have a Shelby Checking Floor Hinge that will meet every requirement where a checking floor hinge can be used. We have furnished these to swing and control effectively single and double acting doors in small residential homes, apartments, hospitals, schools, vestibule doors in churches and large public buildings.

Construction

Shelby Hinges are built of substantially proportioned parts of wrought iron or steel and quality castings and forgings accurately machined. The working parts are enclosed in a leakproof case filled with checking liquid which is non-freezing and meets the requirements of the U. S. Government Specifications.

Spindles are of crank or cam action and all, except the smallest hinges, are mounted in ball bearings of suitable size. Springs made in torsion and compression style are manufactured from the most suitable steel obtainable and are carefully heat treated and tempered.

Finish

Floor plates, pivots and the other exposed parts can be furnished in wrought and forged white metal, brass and bronze finished in any of the standard hardware finishes.

Service

Templates—Blue print Templates will be furnished on request.

Catalogue—A complete 65-page catalogue will be mailed upon request.

Special—Our Engineering and Designing Departments are at your service to advise or work out special treatment to take care of specific conditions.

Hand of Doors

To determine the hand of single acting checking hinges: Stand on the outside of entrance doors, on the corridor side of room doors, on the room side of closet doors.

A door hinged on the right-hand side and opening from you as you enter requires a right-hand hinge.

A door hinged on the left-hand side and opening toward you as you enter requires a right-hand hinge but a left-hand reverse bevel lock.

To determine the hand of double acting checking hinges: Stand at the front edge of the door facing the hinge edge. Your right hand is the right-hand side of the door and of the hinge.

U. S. GOV. MASTER SPECIFICATION FFH-121A

A quick reference to the comparative numbers of Shelby Checking Floor Hinges with Federal Specification Type Numbers.

Gov. Type No.	Gov. Size No.	Shelby Type No.	Page No.
3500	Size II	10	2
		010	2
	Size III	11	2
		011	2
3510	Size I	22	2
	Size II	23	2
3520	Size I	C8	3
	Size II	C18	3
3520A	Size III	C19	3
	Size I	8	3
3525	Size II	18	3
	Size III	19	3
		7	3

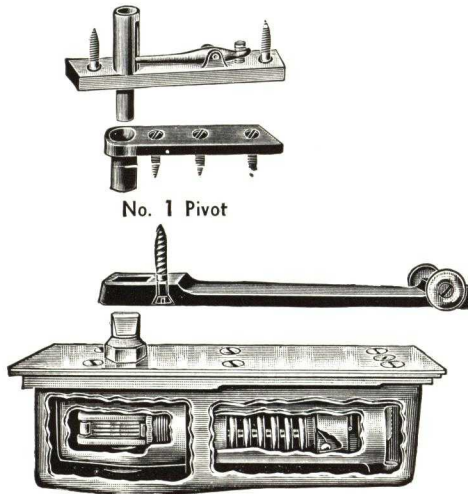
SELECTION DATA—SHELBY CHECKING FLOOR HINGES

Kind	Weight of Door	Size of Door	Action	Type of Spring	Hang	Spindle	Holdopen Non-holdopen	Hinge No.	Page No.
Interior	Light	Not over 2'8" and 1 1/8" to 1 3/8" Thick	Double	Compression	Center	Arm pin	Holdopen	J10	2
							Non-holdopen	J010	2
		Not over 2'8" x 7' x 1 3/4"	Double	Compression	Center	Tapered	Holdopen	10	2
							Non-holdopen	010	2
	Medium	Not over 3' x 7'6" x 1 3/4"	Double	Compression	Center	Tapered	Holdopen	11	2
							Non-holdopen	011	2
		Not over 4' x 7'6" x 1 3/4"	Double	Compression	Center	Tapered	Holdopen	Spec.	2
							Non-holdopen	66	2
	Heavy	Not over 3' x 7'6" x 1 3/4"	Single	Torsion	Offset	Key	Non-holdopen	8	3
			Single	Torsion	Center	Tapered	Non-holdopen	C8	3
			Double	2-Torsion	Center	Tapered	Non-holdopen	22	2
			Single	Torsion	Center	Tapered	Non-holdopen	C18	3
		Over 3'6"	Single	Torsion	Offset	Key	Non-holdopen	18	3
			Single	Torsion	Offset	Tapered	Non-holdopen	118	3
			Double	2-Torsion	Center	Tapered	Non-holdopen	23	2
Exterior	Medium	Not over 2'10"	Double	2-Torsion	Center	Tapered	Non-holdopen	22	2
		Not over 2'10" (Out Swinging)	Single	Torsion	Center	Tapered	Non-holdopen	C18	3
			Single	Torsion	Offset	Key	Non-holdopen	18	3
		Not over 2'6" (In Swinging)	Single	Torsion	Center	Tapered	Non-holdopen	C18	3
			Single	Torsion	Offset	Key	Non-holdopen	18	3
	Heavy	Not over 2'10"	Single	Torsion	Offset	Tapered	Non-holdopen	118	3
		Over 2'10"	Double	2-Torsion	Center	Tapered	Non-holdopen	23	2
			Single	Torsion	Offset	Key	Non-holdopen	19	3
			Single	Torsion	Center	Tapered	Non-holdopen	C19	3
			Single	Torsion	Offset	Tapered	Non-holdopen	119	3

SHELBY DOUBLE ACTING CHECKING FLOOR HINGES

Nos. J10, 10 and 11 for Interior Doors—Holdopen

Nos. J010, 010 and 011 for Interior Doors—Non-holdopen

Federal Specification FF-H 121A: Type 3500: Size II No. 10 and Size III No. 11**No. 1 Pivot**

These hinges have tapered spindle with cam action, cam being of laminated and hardened steel, compression spring, liquid checking, needle valve speed control and adjustable

MAXIMUM DOOR SIZES

Hinge No.	Width	Height	Thickness
J10 and J010	2'8"	7'0"	1 3/8"
10 and 010	2'8"	7'0"	1 3/4"
11 and 011	3'0"	7'6"	1 3/4"

HINGE DIMENSIONS

Hinge No.	Part	Length	Width	Depth
J10	Floor plate	9 3/8"	4 9/16"	.....
10 and 11	Floor plate	9 3/8"	5"	.....
J10, 10 and 11	Iron hinge case	8 5/8"	4 5/8"	2 11/16"
	Iron cement case	9 5/16"	4 5/8"	3"

alignment. Nos. 10 and 11 cement cases are provided with cork gasket to prevent scrub water getting into case. Cement case is furnished when desired at small additional cost.

Also made for office and partition gates using No. 3 Gate Pivot (not illustrated) and No. 6 Gate Shoe (not illustrated) instead of regular arm. Specify by prefixing G to regular number. Viz. G10.

J10 and J010

To provide for light weight interior doors a hinge of similar construction to our 10 is made up with a lighter spring and arm pin type spindle. This check will provide suitable operation for pantry doors in private residences and other light weight interior doors.

Nos. 22 and 23 for Exterior and Heavy or Wide Interior Doors
Center Hung—Tapered Spindle—Non-holdopen
*Federal Specification FF-H 121A: 3510: Sizes I and II***MAXIMUM DOOR SIZES**

Hinge No.	Width	Height	Thickness
Interior Doors			
22	For Heavy or Wide Doors		
Exterior and Vestibule Wood and Metal Covered Doors			
22	2'10"	7'6"	2"
23	3' 6"	7'6"	2½"

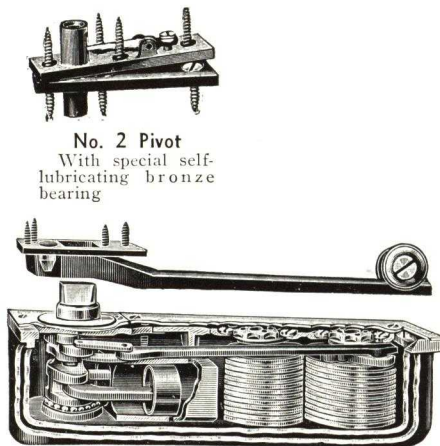
HINGE DIMENSIONS

Hinge No.	Part	Length	Width	Depth
22	Floor plate	14 3/4"	5 1/2"	.....
	Cast iron cement case	14 3/8"	5 3/8"	3 3/4"
23	Floor plate	17 1/8"	6 1/8"	.....
	Cast iron cement case	17"	6 1/8"	4 1/8"

which is seated on hardened steel ball bearings.

A new ball bearing device with hardened steel ball race at the top of the spindle takes care of the thrust of the springs. Special bronze bushing and packing about the spindle insures long service and freedom from leakage.

Adjustable spring tension. Closing speed controlled by two needle valves. Top pivot and hinge arm concealed in the edge of the door.


No. 2 Pivot
 With special self-lubricating bronze bearing

These hinges have two torsion springs and two checking chambers. Each side of the hinge operates independently from the same spindle or post.

The weight of the door is supported on a forged steel spindle

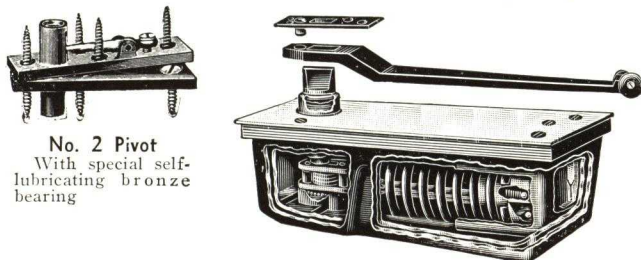
No. 66 for Interior Doors
Center Hung—Tapered Spindle—Compression Spring
MAXIMUM DOOR SIZES

Hinge No.	Width	Height	Thickness
66	3' to 4'	7'6"	1 3/4"

HINGE DIMENSIONS

Part	Length	Width	Depth
No. 66 { Floor plate	11 11/16"	5"	3 1/16"
{ Iron hinge case	10 13/16"	4 1/2"	3 1/16"
{ Cast iron cement case	11 1/4"	5"	3 1/4"

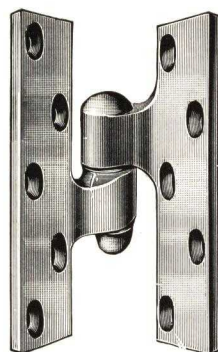
The top of the spindle is supported by a special anti-friction bronze bearing with graphite treated packing washer. A special valve in the piston acts as relief when the manual force pushing the door is greater than the power of the spring. Furnished non-holdopen unless holdopen is specified and priced with cement case.


No. 2 Pivot
 With special self-lubricating bronze bearing

No. 66 provides a Checking Floor Hinge which meets the need that exists for a hinge to control perfectly those doors whose sizes fall between those specified for our No. 11 Compression Spring Type Hinge and our No. 22 Torsion Spring Type Hinge.

SHELBY SINGLE ACTING CHECKING FLOOR HINGES
Nos. 8, 18 and 19 for Interior, Entrance and Vestibule Doors—Non-holdopen
Offset Arm—Torsion Spring Type

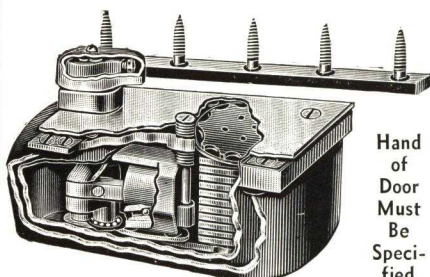
Federal Specification FF-H-121A: Type No. 3520A; Sizes I, II, III



No. 7 Pivot



No. 6 Pivot



Hand of Door Must Be Specified

These hinges have crank action. Spindle and hinge arm are steel forgings. The weight of the door is carried on ball bearings with hardened steel balls and raceways.

Will allow door to open to 180° and is self-closing. Spring tension and speed of closing is adjustable.

MAXIMUM DOOR SIZES	
Hinge No.	Width
Interior Doors	
8	3'
18	3' 6"
Exterior and Vestibule Doors	
18	2' 10"
19	over 2' 10"

HINGE DIMENSIONS, HINGES NOS. 8, 18, 19

Hinge No.	Part	Length	Width	Depth
8	Floor plate	7 3/4"	4 5/8"	3 1/2"
	Hinge case	8 1/4"	4 3/8"	3 1/2"
18	Cast iron cement case	8 1/4"	4 3/8"	3 1/2"
	Floor plate	8 1/4"	5 1/8"	3 1/2"
19	Cast iron cement case	10 3/4"	5 1/8"	3 5/8"
	Floor plate	9 7/8"	6 1/8"	4 1/8"
	Cast iron cement case	11 1/8"	5 7/8"	4 1/8"

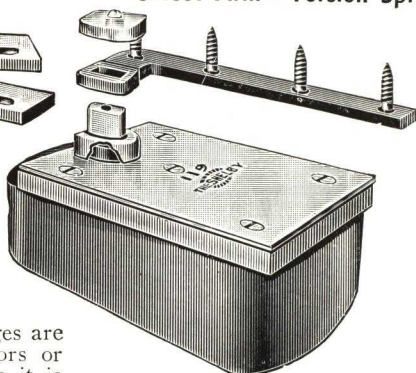
Top pivot No. 6 is a bronze forging with hardened steel pin that turns in a special bronze self-lubricating bushing.

Top pivot No. 7 for segment head doors, can be substituted for No. 6 Pivot at no extra cost; also may be used as an intermediate pivot at additional cost. Federal Specification FF-H-121A—Type No. 3525.

Nos. 118 and 119 for Medium and Heavy Interior and Exterior Doors
Offset Arm—Torsion Spring Type—Non-holdopen



No. 6 Pivot



Hand of Door Must Be Specified

Nos. 118 and 119 Hinges are designed for bronze doors or other heavy doors where it is not desirable to use the vertical adjustment provided in our Nos. 18 and 19 Hinges. The spindle is tapered and the hinge arm is made with a rectangular hole which fits snugly over the spindle and prevents any possibility of the door slipping down on the spindle and dragging on the threshold.

MAXIMUM DOOR SIZES	
Hinge No.	Width
Interior Doors	
118	3' 6"
Exterior and Vestibule Doors	
118	2' 10"
119	3' 6"

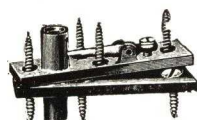
HINGE DIMENSIONS, HINGES NOS. 118 and 119

Hinge No.	Part	Length	Width	Depth
118	Floor plate	8 13/16"	5 1/16"	3 5/8"
	Cast iron cement case	10 3/32"	5"	3 5/8"
119	Floor plate	9 7/8"	6 1/8"	4 1/16"
	Cast iron cement case	11 1/8"	5 7/8"	4 1/16"

The method of connection between the hinge arm and spindle is the same as our Nos. C18 and C19 Single Acting and Nos. 22 and 23 Double Acting, except that Nos. 118 and 119 are Offset Type.

Nos. C8, C18 and C19 for Interior, Entrance and Vestibule Doors Hung Without Mullion
Center Hung—Non-holdopen—Torsion Spring

Federal Specification FF-H-121A: Type No. 3520; Size I, II and III



No. 1 Pivot (C8)
No. 2 Pivot (C18 and C19)



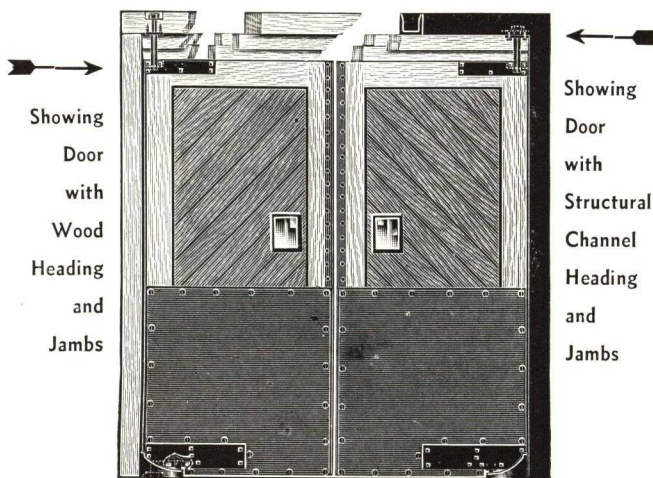
Hand of Door Must Be Specified

These Hinges are same construction as hinge Nos. 8, 18 and 19 above but are applied differently to the door being center pivoted. No hardware shows on the face of the door and the floor plate centers under the door. Recommended for doors hung in groups without mullions, such as entrances and vestibules of halls and theatres. Such doors hung in groups without mullions should be equipped with door stays to keep the swing of the doors within a 90° radius.

MAXIMUM DOOR SIZES	
Hinge No.	Width
Interior Doors	
C8	3'
C18	3' 6"
Exterior and Vestibule Doors	
C18	2' 10"
C19	over 2' 10"

HINGE DIMENSIONS

Hinge No.	Part	Length	Width	Depth
C8	Floor plate	8 21/32"	4 5/8"	3 1/2"
	Hinge case	8 1/4"	4 3/8"	3 1/2"
C18	Cast iron cement case	8 5/8"	4 3/8"	3 1/2"
	Floor plate	10 1/4"	5 1/8"	3 5/8"
C19	Cast iron cement case	10 3/4"	5 1/8"	3 5/8"
	Floor plate	11 1/4"	6 1/8"	4 1/8"
	Cast iron cement case	11 1/8"	5 7/8"	4 1/8"

SHELBY DOUBLE ACTING GRAVITY HINGES**Wood Heading Nos. G1, G2, G3—Channel Heading Nos. G1½, G2½, G3½**

Description—Made on an old and tried principle. Hinges of this type require very little attention.

Shelby Gravity Hinges are built for rough use and will stand the impact of trucks being pushed through, without first opening the doors.

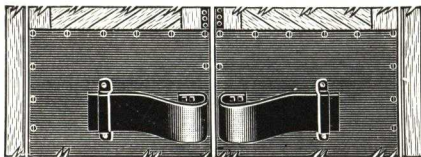
These hinges are accurately manufactured to template and special attention given to strength.

Application—For all kinds of heavy double acting doors in pairs through which it is desired to push trucks without first opening the doors. May be used with either wood or metal frames, as illustration shows, and no special jambs are needed as the weight of the doors rest entirely on the heavy iron floor castings supported by hardened tapered steel rollers.

The top pivot supports no weight. We do not furnish the large door plates or metal edge binding.

Specifications—Hinges are furnished holdopen at 90 deg. but may be easily made non-holdopen either before or after installation.

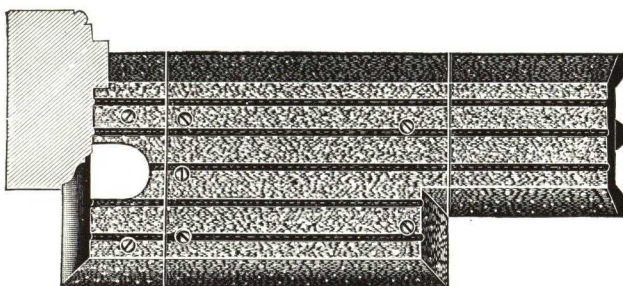
For doors 1¾ in. thick, wood heading No. G1; structural channel No. G1½.
 For doors 1⅞ in. thick, wood heading No. G2; structural channel No. G2½.
 For doors 2¼ in. thick, wood heading No. G3; structural channel No. G3½.
 Each set packed with all necessary screws, bolts and lag screws.

SHELBY SPRING STEEL BUFFERS**Dull Black Finish No. GB14**

Shelby Spring Steel Buffers are to be used on doors hung with Shelby Gravity Hinges, or on any door

where materials are to be moved by trucks through pairs of double acting doors. They serve to lessen the shock on the door from the impact of the loaded trucks.

This size buffer can be used on any width door and should be installed at the proper height on the door where the truck will first strike it. Each buffer packed with all necessary screws, and proper length bolts. In ordering specify thickness of doors so proper length of bolt can be furnished.

SHELBY THRESHOLDS

We supply thresholds with abrasive grit cast into the upper surface which renders them non-slip whether wet or dry and thresholds so made outwear the ordinary metal surfaces.

Shelby abrasive thresholds are called:

Bronzobrasive	Alumobrasive	Ferrobabrasive
(Bronze)	(Aluminum)	(Iron)

We also furnish cast bronze.

Shelby Thresholds are especially constructed to be used with checking floor hinges, with removable sections over the hinge, to match in material and design with the rest of the threshold. Thresholds not to be used with checking floor hinges are sold by the lineal foot in 4, 5, 6, 7 and 8 in. widths cut to length and drilled.

Before specifying thresholds we urge you to send for our Catalog especially made up for architects, wherein are 10 pages of details and designs with special and complete information on ordering.

MEMORANDA

LCN

Overhead - Floor - Surface
DOOR CLOSERS

**LCN THE COMPLETE LINE OF CONCEALED AND
SURFACE DOOR CLOSERS FOR EVERY PURPOSE**

A FEW DOOR CLOSER PRINCIPLES

*Which Explain Why LCN Door Closers
Work So Well and Last So Long*

What to Look for in a Door Closer

Judging the quality and performance of a door closer is very simple. There are four cardinal points to consider:

A. *Opening*—The closer should offer as little resistance as possible to the opening of the door, and should not perceptibly increase this resistance as the door reaches the end of its opening swing (see diagram at left).

B. *Closing*—The closer should close the door exactly as desired, complete control being maintained over the entire action. There should be no abrupt retardation as the door passes from the long closing arc (1) to the latching arc (3); instead, the speed should change gradually through a transition arc (2).

C. *Adjustment*—In order to take care of the variable conditions of service (such as winds and drafts) the closer should be responsive to fine adjustment; and once adjusted, it should stay adjusted.

D. *Durability*—The closer should be designed and built to provide ample power with the least friction and the least tendency to develop "play" and wear at vital points, thus insuring long life.

How and Why LCN Closers Give Superior Results

In the standard surface type closer, shown in sectional views at the right, is found the typical LCN mechanism, evolved through fifty years of development and made the basis of the entire LCN line.

The remarkable success of this closer rests on certain basic features built into the device. Among these are:

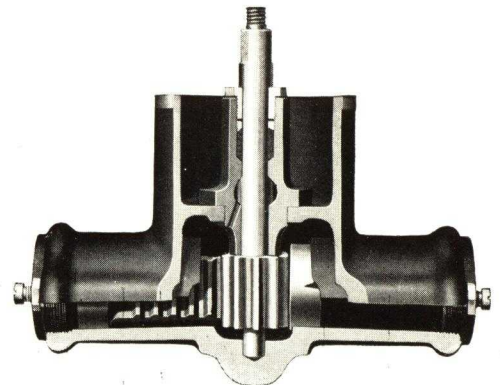
1. The "power plant," an extra large coil spring (not shown) made purposely oversize, of special analysis steel, which occupies the upper part of the shell surrounding the shaft. The reserve power of this coil spring insures smooth, flexible operation and long spring life.

2. Full rack and pinion checking mechanism, providing complete control of the door at all times. This is highly important for smooth operation and for protection of door, hinges and closer against the constant shocks which increase wear. Note how the double-headed piston is geared to the shaft, eliminating any "dead center" position and giving continuous control. The full rack and pinion mechanism also allows the closer to be mounted on the door at ample distance from the hinge, for maximum leverage (power.)

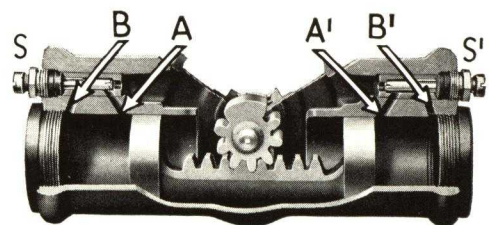
3. The leakproof shaft assembly, described in detail on opposite page. Rigidly cemented to the shell or cylinder diaphragm, the shaft housing prevents leakage of the checking liquid and development of play, which lead to destructive wear, and makes a practical unit of shaft, pinion, housing and shell.

4. A simple system of adjusting screws (S, S') and ports (A, A', B, B') and one in each piston head) by means of which the flow of liquid between the chambers of the checking cylinder, controlling the door operation, can easily be adjusted as desired. Swinging and latching speeds are adjusted separately, thus any kind of operation to meet a particular need can be quickly obtained. Transition from swinging to latching speed is accomplished by means of the "V" notch in the piston head, which allows the liquid to continue flowing at a *diminishing* rate until cut off by passage beyond port A or A', when the latching stage is entered.

5. Symmetrical design, with reversible spring, which means that the closer can be readily changed from right hand door operation to left, and vice versa, without affecting its efficiency.



Above: Sectional View of LCN Door Closer Showing Positions of Shaft Assembly and Piston



Above: Sectional View of LCN Door Closer Showing Relations of Piston, Shaft, Ports and Adjusting Screws

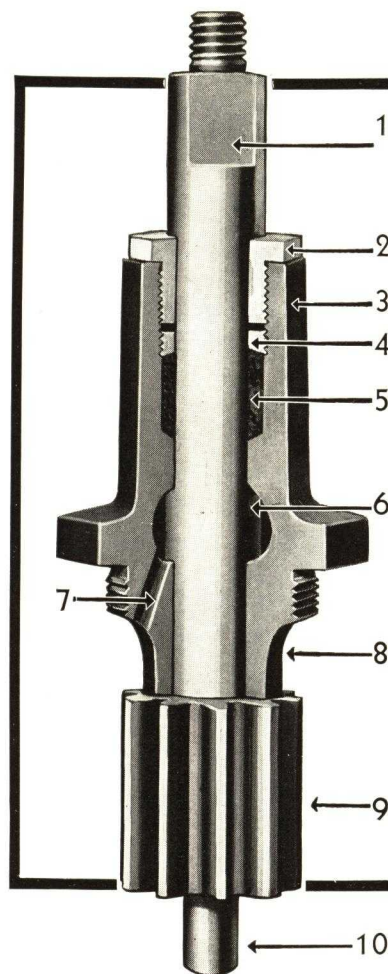
The LCN Rigid, Leakproof Shaft Assembly

There is no better evidence of the precision with which the LCN closer is built than the fact that leakage—the common fault of door closers—is entirely overcome in the LCN.

This common fault of door closers is due chiefly to the tendency of the packing to become loose as a result of the lateral thrust of the vertical shaft. This weakness has been transformed into a point of strength in the LCN closer. Note that the shaft (1) turns in four bearings with the packing located between two of these bearings. The packing (5) is held tightly against the shaft by the gland nut (4) which is entirely independent of the tobin bronze shaft bearing nut (2) which forms the upper bearing of the shaft. This makes the shaft of the LCN closer leakproof.

Note, also, that this entire assembly is screwed into the shell of the closer and is seated rigidly into the shell casting. As a result, lateral movement is impossible.

The entire thrust from the main arm is on this sturdy unit with its extra heavy shaft and four-bearing support. Contrast this with ordinary construction where the upper bearing is usually in the cover or ratchet-shell. With lateral thrust stopped, the packing in the LCN closer will remain tight for many years.



1. Shaft—Highly polished special steel, ground to one ten-thousandth of an inch.
2. Tobin Bronze Bearing—At point of greatest stress, secures amazing results in door closer efficiency.
3. Shaft Housing—When cemented to shell insures rigidity of shaft, consequently smooth operation of closer.
4. Gland Nut—Holds packing (5) firmly against shaft (1) and housing (3), and will last for life of closer.
5. Packing—Of graphited flax, located between two large bearings, to prevent side thrust and leakage.
6. Air Chamber—To destroy capillary attraction and thus normally to prevent liquid from reaching packing.
7. Oil Duct—To return to checking cylinder any liquid which might creep up shaft to air chamber.
8. Large Bearing—Sturdy; contributes greatly to closer's long life without perceptible wear.
9. Heavy Duty Gear—Accurately cut teeth; is riveted and keyed to shaft, making virtually one piece.
10. Bottom Bearing—Insures accurate meshing of gear and rack, therefore uniform motion in closing door.

THESE ARE THE DOOR CLOSER FACTORS WHICH MEAN IN PRACTICE

LONG LIFE
COMPLETE CONTROL
NO TROUBLE

The LCN Door Closer takes its name from the initials of Mr. L. C. Norton, who designed and brought it to its present high state of perfection, and who invented the first door check in 1877. From that first crude affair, made of a hand pump and a hinge (which none-the-less worked successfully for over a year in Trinity Church, Boston) to the extensive LCN line of modern door control devices is indeed "a long jump." But not accomplished by a jump! Out of vast accumulated experience and constant testing and experiment, to-day's products have come.

Made by an Organization of Door Closer Specialists

The LCN organization believes in concentrating its energies—in "doing one thing well." Therefore the entire time of the company's factory and home office personnel, and the facilities of a modern, well-equipped manufacturing plant, are devoted to the production of LCN door control devices.

Along with its policy of specialization the company insists upon standards of quality, in both materials and manufacture, as high as it is possible to make them. A door closer as a machine must

work under peculiar difficulties, subject to great strains and often to considerable abuse. Real economy, therefore, demands that only the best materials and the most exact methods be used in their production. This is the LCN creed.

GUARANTEE

When the proper size closers are installed as listed in our schedule of sizes, we positively guarantee the LCN Door Closers to operate efficiently for a period of two years.

NORTON LASIER COMPANY

General Offices and Factory
466 West Superior Street • Phone SUPERior 7108
CHICAGO, ILLINOIS
CABLE ADDRESS: "NORLASCO"

SURFACE DOOR CLOSERS FOR EVERY PURPOSE

THE LCN STANDARD SURFACE TYPE DOOR CLOSER

Product Nos. 110-115-116

Six Sizes—A to F—Furnished With or Without Hold-open Arm

Wherever mechanical performance is the chief, or only, requirement in a door closer; where low cost and genuine economy must rule; where the desire to improve a building's appearance by concealing the door closers must give way to the foregoing considerations, the LCN Standard Surface Type Door Closer is the thing to specify.

Every requirement of the job of door control has been fully met in this closer. Every difficulty encountered in former years has been overcome. The resulting product is as nearly perfect in operation, and as nearly fool-proof and trouble-proof as a door closer can be made. Hundreds of thousands in daily service throughout the country, with seldom a need for attention, are the best proof of this.

The mechanical features of construction and operation of this closer are explained and illustrated on pages two and three.



Above—LCN Closer with Regular Arm
Below—LCN Closer with Hold-open Arm

LCN HOLD-OPEN ARMS

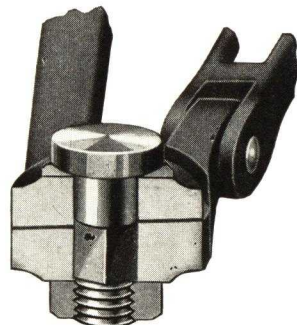
Every closer-equipped door which is intended to be left standing open occasionally should have the closer with hold-open arm. Other devices such as hooks, wedges, chairs, etc., used for this purpose are likely to bend or warp the door. The hold-open arm, on the contrary, simply stops the closer and offsets its closing power at the source.

100-DEGREE HOLD-OPEN ARM

Product No. 123

Designed to hold door open at 100 to 140 degrees

This arm (illustrated at left) may be set to hold door open at any selected point between 100 and 140 degrees. It is a remarkably simple, strong, compact and effective device, having only five parts, including the arms of malleable iron. It works on the cam principle, with no springs or lugs to break or wear out. The holding head (shown in section at right) is located at the joint of the closer arms for highest efficiency. The arms are symmetrical; may be used either side up, either "hand," without change.



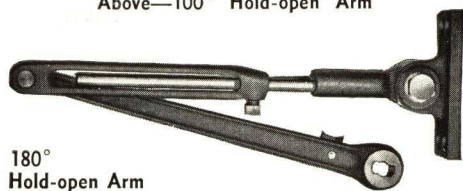
Hold-open Head in Cross Section



Above—100° Hold-open Arm

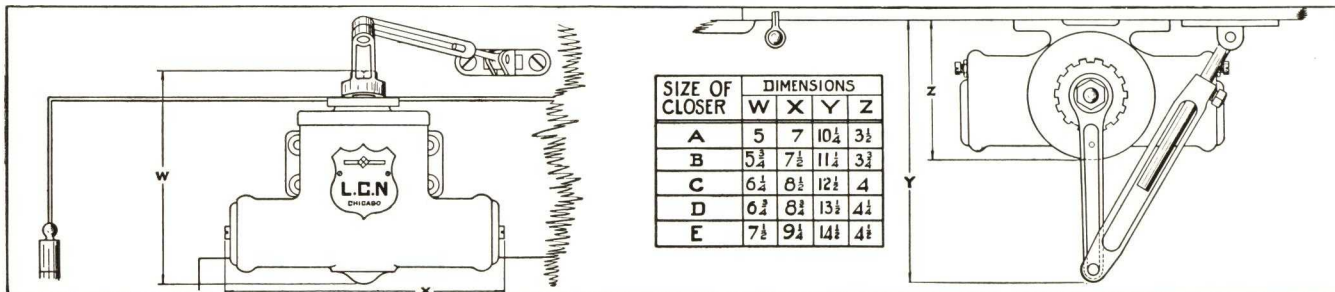
180-DEGREE HOLD-OPEN ARM Product No. 124

This hold-open arm (illustrated at left) is used where it is desired to hold open the door at some point between 140 and 180 degrees. Here a regular main arm is used, and the holding head is at the shoe. Closer must be mounted on a corner bracket. When ordering, specify size of butts.



180°
Hold-open Arm

DIMENSIONS OF LCN SURFACE CLOSER

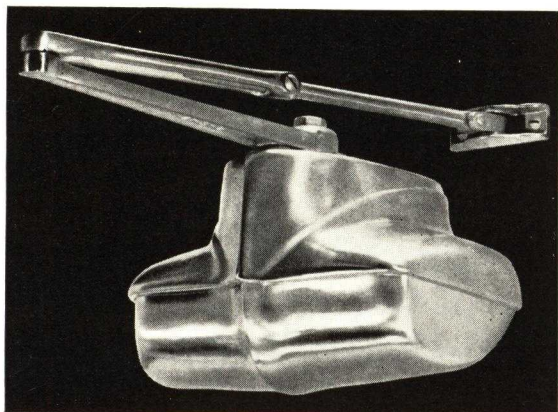


The LCN "Miracle"

TRADE MARK

NEW STREAMLINED DOOR CLOSER

16
26

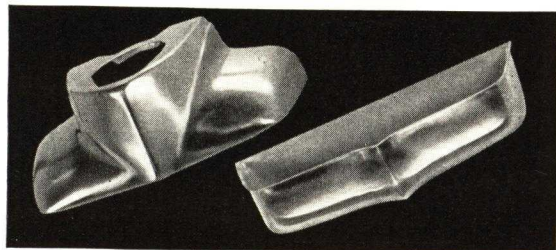


Product No. (See Note*)

An outward transformation of the standard LCN door closer into a form of genuine beauty. It may be used as part of the decorative trim, in polished metals, or blended into the background with a finish to match. The door closer is mechanically unchanged; so that the "Miracle" provides handsome design with the most reliable performance. (*In ordering closer complete with housing, combine product numbers, with size, as "C-110-128." For housing only, specify size, as "C-128.")

**. . . AND STANDARD LCN CLOSERS CAN BE QUICKLY
CONVERTED TO "Miracle" FORM**

Housing, Product No. 128

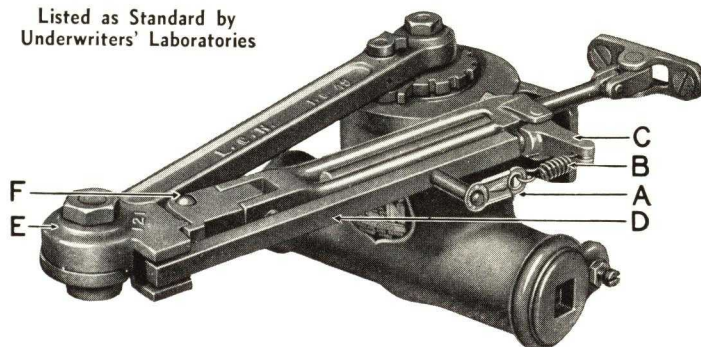


Any standard LCN surface type closer can be quickly converted to the new "Miracle" form, without taking it down from the door, by enclosing it in a "Miracle" housing of correct size, illustrated at left. (Size "C" first available; for other sizes consult dealer or factory). Thus modern beauty in the door closers may be had at small cost.

LCN HOLD-OPEN ARM CLOSER WITH FUSIBLE LINK

Product No. 114

Listed as Standard by
Underwriters' Laboratories



Here is the answer to the question: how to guard against the fire hazard of class A and other important openings and still keep to a minimum the special equipment needed. This thoroughly tested and approved closer has a simple, rapid action which cannot fail. When temperature at link (note proximity to door jamb, where hot air concentrates) reaches 160° link A fuses, breaks tension in spring B, throws back locking pawl C and releases control lever D. This frees closer by shifting action to secondary, free pivot F, and does NOT depend on unlocking the main holding head E. All this takes place instantaneously. Door is quickly and firmly closed. Closer then functions normally, allowing use of door by firemen or others; but door cannot be set open until another link is installed.

Hold-Open Arm with Fusible Link

Product No. 121

Listed as Standard by Underwriters' Laboratories

LCN standard closers, sizes C, D and E may easily be equipped with the Hold-open Arm with Fusible Link. Holds door open at 100 to 140 degrees. Universal, right or left hand, and cannot be applied wrong.

SIZES of LCN Door Closers

SIZE A—For screen, storm, and light interior doors.

SIZE B—For interior doors 2'8" x 7'0".

SIZE C—For interior doors 3'0" x 7'0" or light exterior doors 2'6" x 7'0".

SIZE D—For extra heavy interior doors and average 3'0" x 7'0" exterior doors.

SIZE E—For wide and heavy exterior doors.

SIZE F—For extremely heavy exterior factory or refrigerator doors.

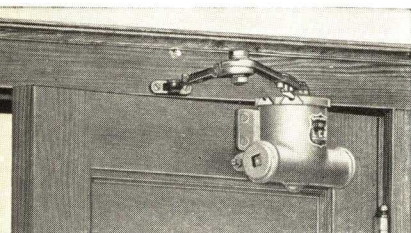
FINISHES of LCN Door Closers

PAINTED FINISHES—LCN Standard, Gold Bronze, Silver Bronze, Dead Black, Special Paint Finishes.

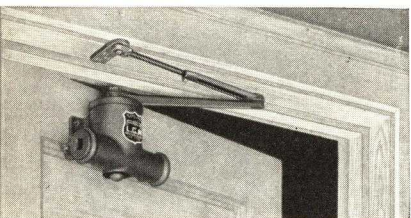
PLATED FINISHES—Bronze Plate, Unpolished; Bronze Plate, Polished; Nickel Plate, Unpolished; Nickel Plate, Polished; Statuary Bronze, Unpolished; Statuary Bronze, Polished; Genuine Bower Barff.

SPECIAL FINISHES—To match your sample submitted.

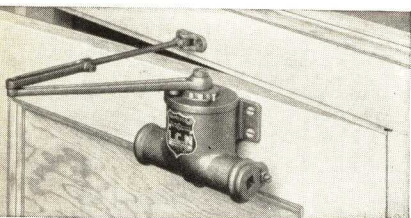
LCN *Special Purpose* DOOR CLOSERS



Hospital Type Closer



Parallel Arm Closer



Telephone Booth Closer

LCN is the only line of its kind supplying a hydraulic door closer for every type of swing door and every situation. The special purpose closers here described will take care of most demands. For unusual conditions consult the LCN main office. Our engineers will promptly work out the solution to your problem.

HOSPITAL TYPE CLOSER

Product No. 113

This is the LCN closer most widely used in hospitals. It is designed to hold the door open at any one of three points: approximately 6" from the jamb, at 45 degrees or at 100 degrees, depending on the way the holding head has been set.

When the closer is released from the set position, it will always close and latch the door. It is noiseless and positive in action, having all the mechanical advantages of the standard LCN surface type closer. *Made in size D-113 only. When ordering be sure to specify hand of door.*

PARALLEL ARM CLOSER

Product No. 119

The LCN Parallel Arm Closer (shown at left) is used where there is not sufficient space between doors for closer to operate with a regular arm. Minimum space required: size C—5"; D—5½"; E—5½".

LCN Parallel Arm Closer, Product No. 137—This closer (not shown) is mounted on a bracket. (Bracket not included in price.)

TELEPHONE BOOTH CLOSER

Product No. 111

The LCN Telephone Booth Closer is also adaptable to use with any door to a closet or small room where continuous ventilation is desired when the space is not occupied. Door closes to within 4" of the latch, and is pulled shut when occupant enters. *Made in size B-111 only. When ordering specify hand of door.*

COUPON BOOTH CLOSER

Product No. 112

May be set by attendant with door ajar, to indicate booth is unoccupied. When released, closes the door, latching it, and operates as a regular door closer until reset by attendant. *Made in size B-112 only. In ordering be sure to specify hand of door.*

LCN EXTRA LONG ARMS

Required where closer is set out on the door farther than usual in order to clear obstructions.

Product No.	A	B	C	D	E	F
125	..	..	13"	13"	..	..
126	..	..	16"	16"	16"	16"
Note—Length, reg. arm	8"	9"	9¾"	107/8"	115/8"	115/8"

STANDARD SPECIFICATIONS

U. S. GOVERNMENT MASTER SPECIFICATIONS BUILDERS HARDWARE FF-H-121a COMPARATIVE LCN NUMBERS

Surface Closers			Concealed Floor Closers		
FF-H-121a	Size	LCN No.	FF-H-121	Size	LCN No.
Type 3000..... Solid Bronze	I	A	Type 3500.....	II III	11 11X
Case	II	B	Type 3510.....	I II	44 66
Malleable Arms and Brackets	III IV V VI	C D E F	Type 3520.....	I II III	02 04 06
Type 3001 Cast iron—Prime Coat Sizes same as above			Type 3520A.....	I II III	12 14 16
Type 3002 Cast Iron— Sprayed finish, Sizes same as above			Type 3525. (Intermediate Pivot)		1

SUGGESTED ARCHITECT'S SPECIFICATIONS

The builder's hardware contractor shall furnish LCN Door Closers as manufactured by the Norton Lasier Company, Chicago, Illinois, of proper size as described in its schedule of sizes.

All Overhead Door Closers (concealed and/or surface types) to have LCN hold-open arms.

STANDARD HARDWARE FINISHES U. S. GOVERNMENT SYMBOLS

U. S. No.
 USP—Primed for painting
 US2C—Cadmium plated
 US3—Bright brass
 US4—Dull brass
 US5—Dull brass, oxidized and relieved
 US6—Sanded brass, oxidized and relieved
 US8—Antique copper
 US9—Bright bronze
 US10—Dull bronze
 US11—Dull bronze, oxidized and relieved
 US12—Sanded bronze, oxidized and relieved
 US14—Nickel plated
 US15—Nickel plated, dull
 US16—Nickel plated, sanded
 US19—Sanded, dull black
 US20—Statuary bronze
 US20A—Statuary bronze, dark
 US21—Statuary bronze, sanded
 US22—Verde antique
 US25—White bronze
 US26—Bright chromium, plated
 US26D—Dull chromium, plated.

GENERAL INFORMATION

All contract installations of LCN Closers are inspected and adjusted by our service department.

Closers can be furnished in any special finish to match samples submitted.

All Closers will be shipped right hand unless otherwise specified.

All Closers packed one in a carton with wrench and screws. Twelve Closers in wooden case.

ACCESSORIES

SOFFIT BRACKET—Product No. 10



Where opening requires closer applied on a bracket and conditions permit, we recommend the use of the soffit bracket as it places the closer out far enough from the hinge to allow the maximum leverage of arms to control the door.

SIZE OF BASE

A-10	.....1 3/8" x 3 5/8"	D-10	.....1 1/8" x 4 3/4"
B-10	.....1 3/8" x 3 5/8"	E-10	.....1 1/8" x 5 1/4"
C-10	.....1 3/8" x 4 1/8"	F-10	.....1 1/8" x 5 1/8"

CORNER BRACKET—Product No. 11



Used where closer is required to swing door 180° only, and where it is necessary to have head room clearance by placing closer in corner of the door frame.

SIZE OF BASE

A-11	.....1" x 4 1/2"	D-11	.....1 7/8" x 5 3/4"
B-11	.....1" x 4 1/2"	E-11	.....1 3/8" x 5 5/8"
C-11	.....1 1/4" x 4 1/8"	F-11	.....1 3/8" x 5 5/8"

CORNER BRACKET—Product No. 16



Used with holder Arm Product No. 123 giving 90° to 140° of hold open. Also with regular arm standard length to 140° of opening. Extra long arms required with this bracket for opening beyond 140°.

SIZE OF BASE

A-16	.....1" x 5 1/2"	D-16	.....1 1/4" x 6 1/2"
B-16	.....1" x 5 1/2"	E-16	.....1 1/4" x 6 1/2"
C-16	.....1 1/4" x 6 1/2"	F-16	.....1 1/4" x 6 1/2"

CORNER BRACKET—Product No. 17

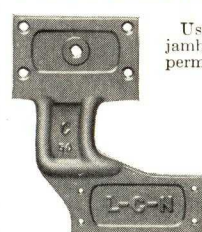


Used where separate Door Holding devices are required. This bracket lowers closer for clearance of closer arms with other Holder Device.

SIZE OF BASE

A-17	.....Not Made	D-17	.....1 1/4" x 6 1/2"
B-17	.....Not Made	E-17	.....1 1/4" x 6 1/2"
C-17	.....1 1/4" x 6 1/2"	F-17	.....1 1/4" x 6 1/2"

FLUSH BRACKET—Product No. 12

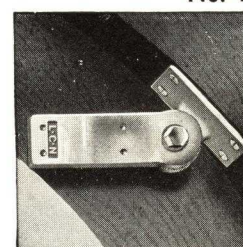


Used where head stop and jamb are not wide enough to permit use of the soffit bracket.

SIZE OF BASE

A-12	.....2 3/8" x 3 1/2"
B-12	.....2 3/8" x 3 1/2"
C-12	.....2 1/2" x 4 1/4"
D-12	.....2 3/4" x 4 3/4"
E-12	.....2 3/4" x 4 3/4"
F-12	.....3" x 5"

ADJUSTABLE BRACKET—Product No. 13



Used on outswinging circular top or arch top doors. The base of bracket is adjustable to fit any radius of door frame.

SIZE OF BASE

A-13	.....1 3/8" x 4"
B-13	.....1 3/8" x 4"
C-13	.....2 5/8" x 5"
D-13	.....2 5/8" x 5"
E-13	.....2 5/8" x 5"
F-13	.....2 5/8" x 5"

OFFSET BRACKET—Product No. 14

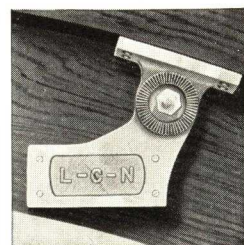


Used on inswinging circular top doors, arch top doors, and recessed doors having a projecting head casing. The base of bracket is adjustable to fit any radius of door stile.

SIZE OF BASE

A-14	.....3 3/4" Diameter
B-14	.....3 3/4" "
C-14	.....3 3/4" "
D-14	.....3 3/4" "
E-14	.....3 3/4" "
F-14	.....3 3/4" "

UNIVERSAL SOFFIT BRACKET—Product No. 15



Used on outswinging arch top doors and is adjustable to fit any spring of arch.

SIZE OF BASE

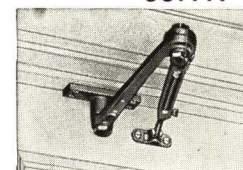
A-15	.....1 3/8" x 4"
B-15	.....1 3/8" x 4"
C-15	.....1 3/8" x 4"
D-15	.....1 3/8" x 4"
E-15	.....1 3/8" x 4"
F-15	.....1 3/8" x 4"

SPECIAL BRACKETS

We are always in a position to make any special brackets required for door closers. Send us details and we will design brackets to overcome any conditions.

All LCN Brackets are made of Malleable Iron.

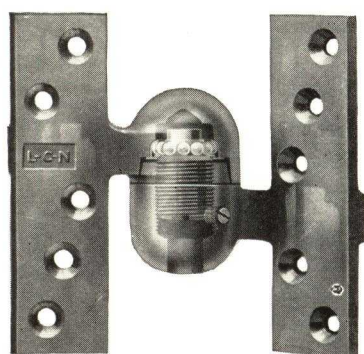
100° HOLD-OPEN ARM WITH SOFFIT POST



Product No. 120

Used in connection with Hold-Open Arm Closer on standing leaf of pair of doors.

LCN BALL-BEARING PIVOTS



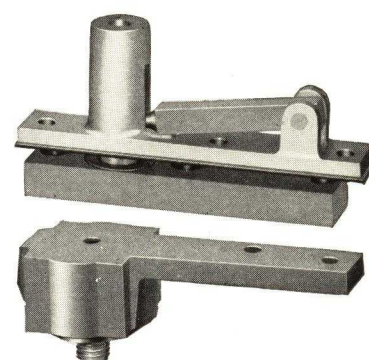
LCN Intermediate Ball-bearing Bronze Pivots Product No. 133

An intermediate or supplementary pivot hinge for use with offset top and bottom pivots. Practically frictionless, and easily adjusted for raising or lowering the door. The entire weight of the door is carried on a hardened combination radial and thrust ball bearing. Pivots are made from a special high grade bronze. In ordering, specify right or left hand.



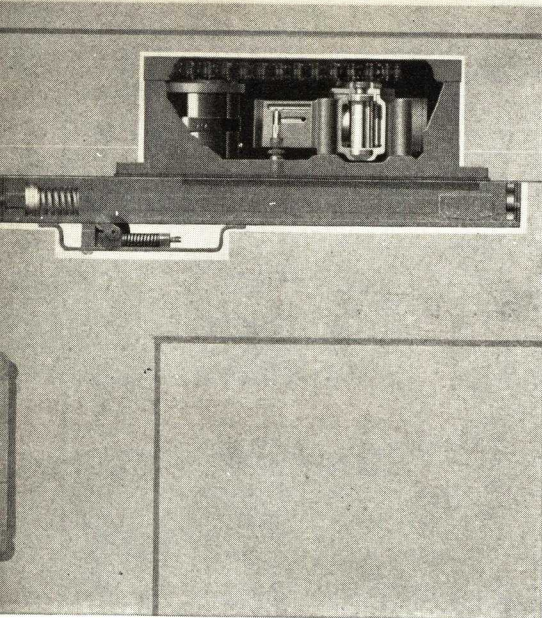
LCN Offset Type Ball-bearing Bronze Pivots Product No. 148

These pivots furnished as regular equipment with LCN No. 12, 14 and 16 floor type closers. High grade bronze with combination radial and thrust ball bearings. Pivots only, with base plate, available for inactive leaf of doors, or for use wherever pivot mounting is desired with 180-degree opening of door. In ordering, specify right or left hand.



LCN Center Hung Ball-bearing Bronze Pivots Product No. 149

These center hung pivots furnished as regular equipment with LCN No. 02, 04 and 06 floor type closers. High grade bronze with combination radial and thrust ball bearings. Pivots only, with base plate, available for inactive leaf of doors, or for use wherever pivot mounting (invisible) is desired with door opening not to exceed 105 degrees. In ordering, specify right or left hand.



SPECIFICATIONS

No. 202—For light interior doors not over 3'0" wide.

No. 204—For interior doors not over 3'6" wide, for out-swinging entrance and vestibule doors not over 2'10" wide, and for inswinging entrance doors not over 2'6" wide.

No. 206—For extra heavy interior doors not over 4'0" wide, and outside entrance

and vestibule doors over 2'10" wide.

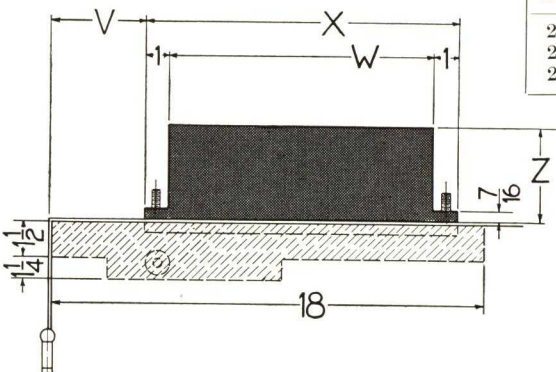
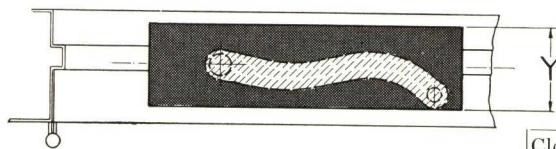
Butt hinges not furnished with closer. Surface plate and arm, prime finish for painting. When ordering, specify hand of door, width, height, and thickness, wood or metal. Packed one in carton. Shipping weight No. 202, 32 lbs.; No. 204, 32 lbs.; No. 206, 35 lbs.

LCN OVERHEAD CONCEALED DOOR CLOSER

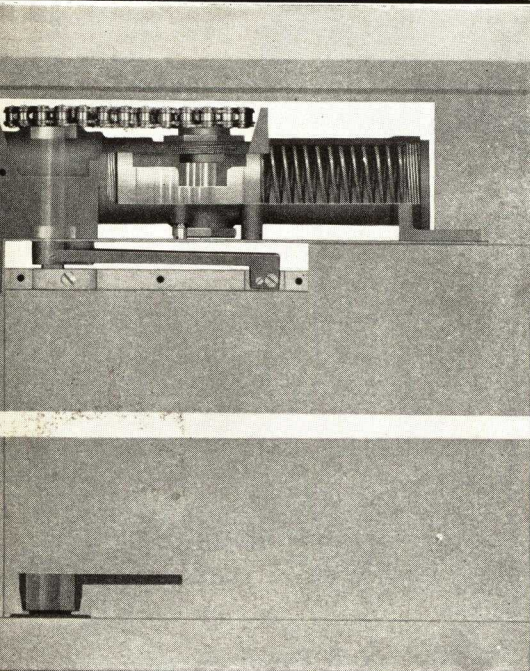
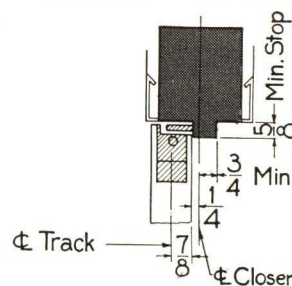
No. 202—No. 204—No. 206—Single Acting—Ball Bearing—Door Hung on Butts or Pivots

Completely concealed in the head jamb and door, this arrangement of the dependable LCN door closer provides constant control, yet leaves the doorway details unmarred. Full rack-and-pinion checking

mechanism with two-speed closing action easily adjustable. No extra door holders or stops required, as the closer may be had with hold-open feature if desired. Moderate in cost; easy to move, with frame.



Closer Size	X	Y	Z	V	W
202	13	3 1/2	4	4	11
204	13	3 1/2	4	4	11
206	13 1/2	3 7/8	4 1/4	3 7/8	11 1/2



SPECIFICATIONS

No. 444 — For interior doors not over 3'6", or light vestibule doors not over 2'10" wide.

No. 466—For extra heavy interior doors and outside entrance and vestibule doors.

Furnished with drop

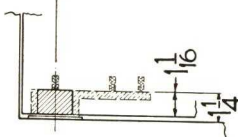
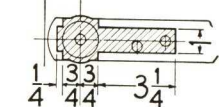
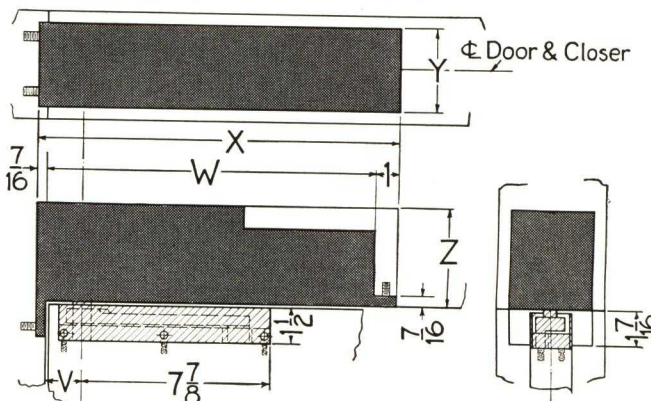
forged bronze ball bearing pivots. Surface plates prime finish for painting. When ordering specify width, height and thickness of door; wood or metal. Packed one in carton. Shipping weight, No. 444, 24 lbs.; No. 466, 26 lbs.

LCN OVERHEAD CONCEALED DOOR CLOSER

No. 444—No. 466—Double Acting—Ball Bearing—Door Hung on Center Pivots

For the troublesome problem of getting smooth, positive, full control of double-acting doors in hospitals and other buildings the LCN "444" supplies the practical answer. It (1) allows the door to open easily either way for

passage of carts, nurses or waitresses with hands full; (2) keeps door under full (rack and pinion) control, preventing sudden slaps; (3) is entirely concealed in the head jamb; (4) over the door, away from scrub water and dirt.



Closer Size	X	Y	Z	V	W
444	15 1/8	3 1/2	4 1/8	1 1/2	13 5/8
466	16 1/8	3 1/2	4 1/8	2 1/2	14 5/8

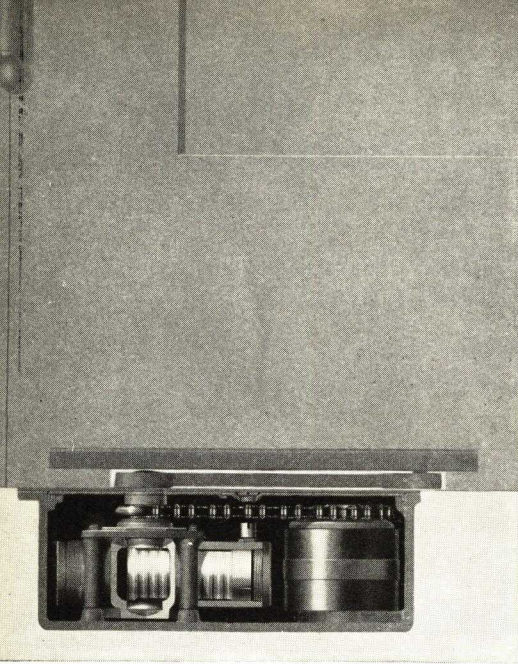
SURFACE DOOR CLOSERS FOR EVERY PURPOSE

LCN CLOSER CONCEALED IN FLOOR

No. 2—No. 4—No. 6—Single Acting—Ball Bearing—Door Hung on Butts

This type of closer is entirely concealed in the floor. The power is efficiently applied by a lever arm which operates in connection with a track concealed in the door. Entire weight of door is borne independently of closer,

by regular butt, hinge plate or strap hinges. Location of closer shaft and power application well out from hinge side yield effectiveness far higher than in older types of floor closers. Position does not require offset threshold.



SPECIFICATIONS

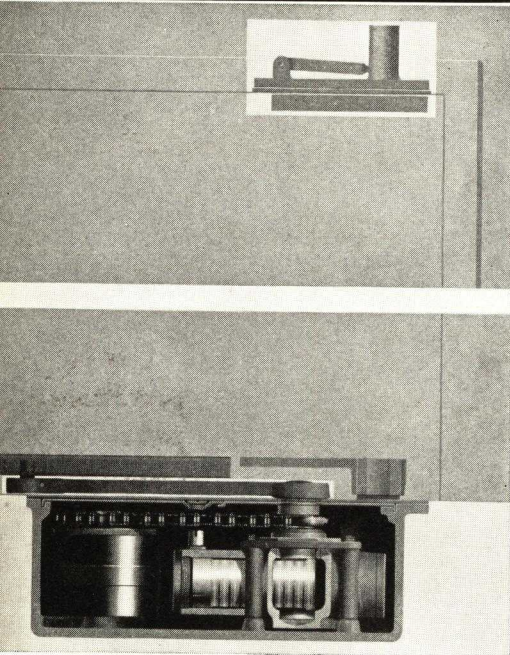
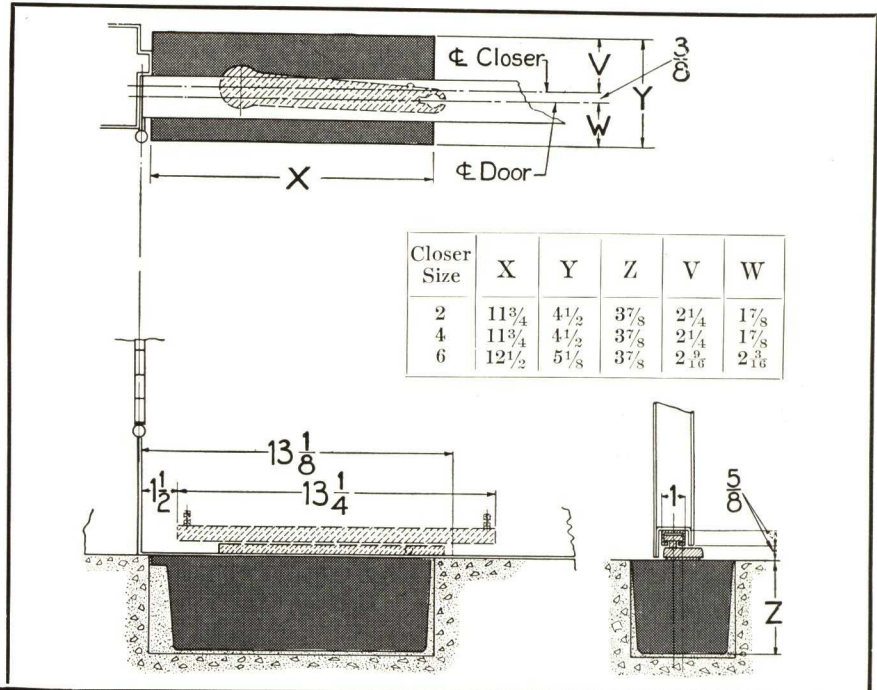
No. 2—For light interior doors not over 3'0" wide.

No. 4—For interior doors not over 3'6" wide, for out-swinging entrance and vestibule doors not over 2'10" wide, and inswinging entrance doors not over 2'6" wide.

No. 6—For extra heavy interior doors not over 4'0" wide, and outside entrance

and vestibule doors over 2'10" wide.

Butt hinges not furnished with closer. Exposed parts furnished brass or bronze, dull or polished. When ordering, specify hand of door, width, height and thickness, wood or metal. Packed one in carton. Shipping weight No. 2, 27 lbs.; No. 4, 30 lbs.; No. 6, 37 lbs.



SPECIFICATIONS

No. 02—For light interior doors not over 3'0" wide.

No. 04—For interior doors not over 3'6" wide, for out-swinging entrance and vestibule doors not over 2'10" wide, and inswinging entrance doors not over 2'6" wide.

No. 06—For extra heavy interior doors not over 4'0" wide, and outside entrance and vestibule doors over 2'10" wide.

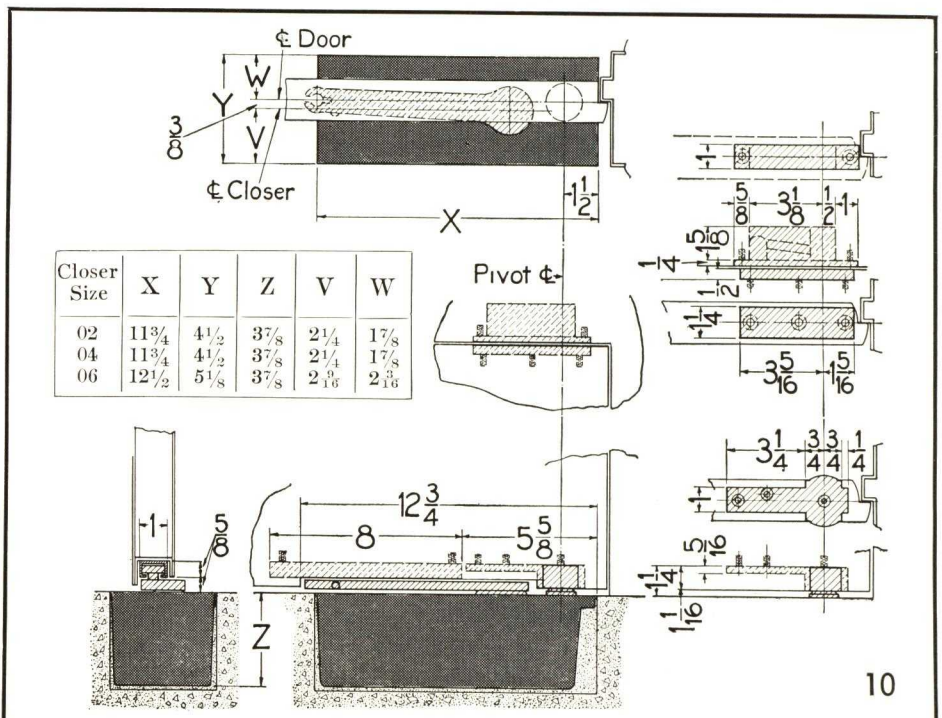
Furnished with drop forged bronze ball bearing pivots top and bottom. Exposed parts furnished brass or bronze, dull or polished. When ordering specify hand of door, width, height and thickness, wood or metal. Packed one in carton. Shipping weight No. 02, 27 lbs.; No. 04, 30 lbs.; No. 06, 37 lbs.

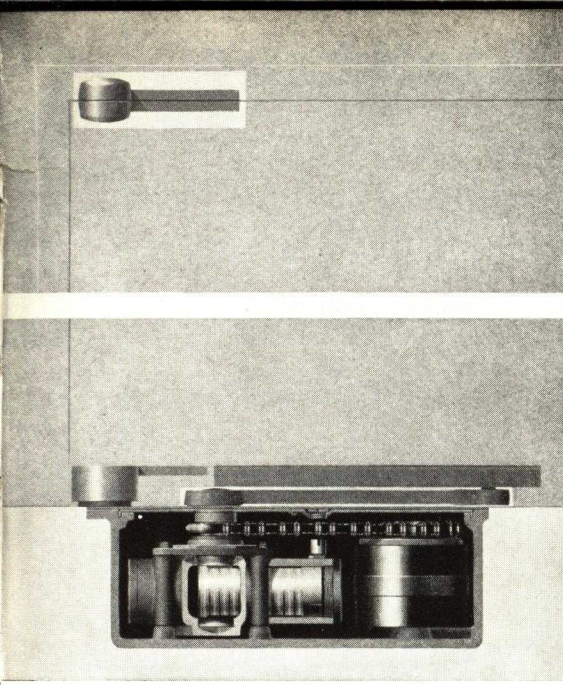
LCN CLOSER CONCEALED IN FLOOR

No. 02—No. 04—No. 06—Single Acting—Ball Bearing

Where floor type closers are desired and doors cannot be hung from the jamb, this LCN closer will be found highly effective. For doors without mullions; for work where maximum space for traffic is essential. Door hung on bronze ball bearing

center pivots, furnished with closer. Weight of door not carried on closer mechanism, but on rigid case. Location of closer and application of power by lever yield efficiency. No offset threshold required, due to position of closer near door center line.





SPECIFICATIONS

No. 12—For light interior doors not over 3'0" wide.

No. 14—For interior doors not over 3'6" wide, for out-swinging entrance and vestibule doors not over 2'10" wide, and for inswinging entrance doors not over 2'6" wide.

No. 16—For extra heavy interior doors not over 4'0" wide, and outside entrance

and vestibule doors over 2'10" wide.

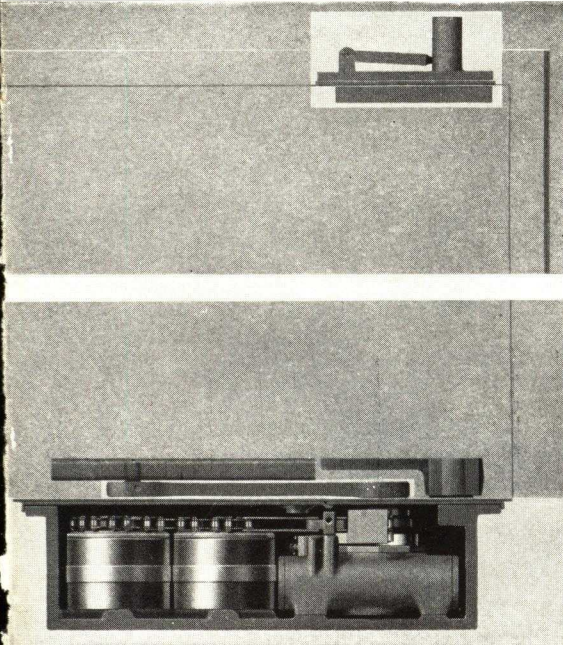
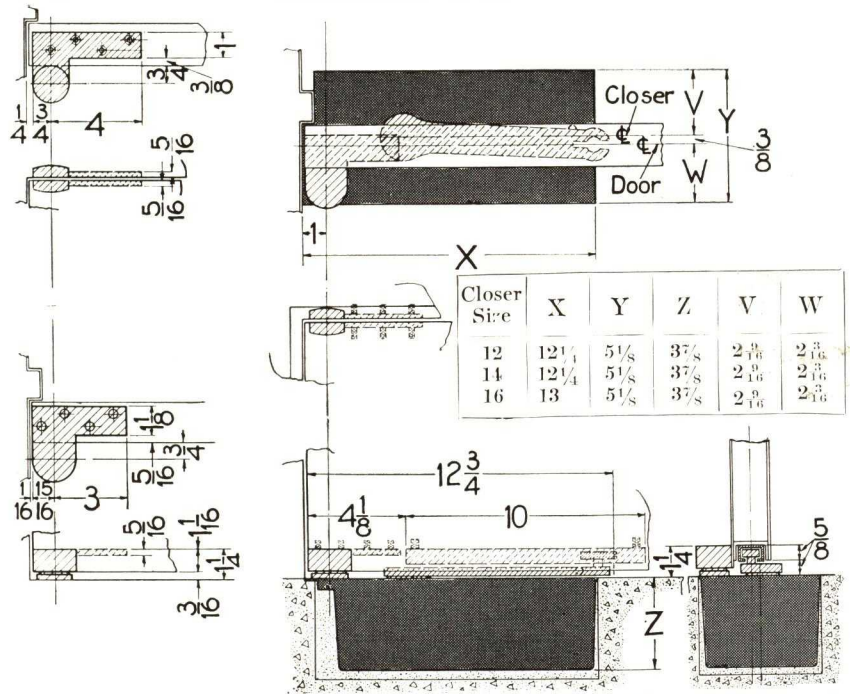
Furnished with drop forged bronze ball bearing pivots. Exposed parts furnished brass or bronze, dull or polished. When ordering specify hand of door, width, height and thickness, wood or metal. Packed one in carton. Shipping weight No. 12, 27 lbs.; No. 14, 30 lbs.; No. 16, 37 lbs.

LCN CLOSER CONCEALED IN FLOOR

No. 12—No. 14—No. 16—Single Acting—Ball Bearing

Where floor type concealed closers are desired, and doors are to be hung on offset pivots, this LCN closer will be found highly satisfactory. Furnished complete with top and bottom bronze offset pivots

with ball bearings. Closer applies power with lever arm, and is located for effective work. Weight of door is borne not by mechanism, but by rigid case. No offset threshold required.



SPECIFICATIONS

No. 44—For heavy interior doors not over 3'6", or light vestibule doors not over 2'10" wide.

No. 66—For extra heavy interior doors and outside entrance and vestibule doors.

Furnished with drop forged

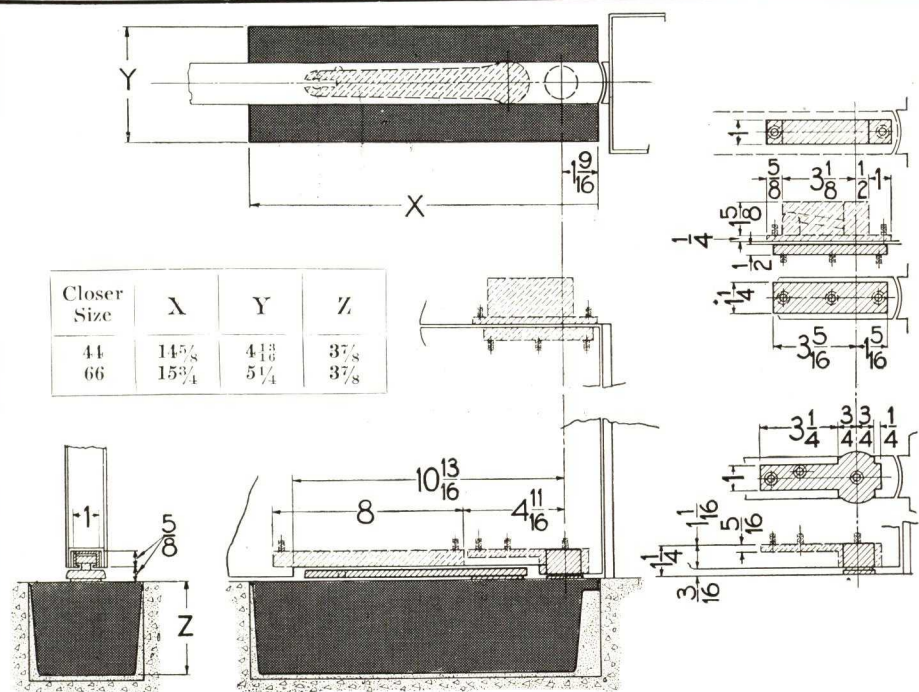
bronze ball bearing pivots. Exposed parts furnished brass or bronze, dull or polished. When ordering specify width, height and thickness of door, wood or metal. Packed one in carton. Shipping weight No. 44, 45 lbs.; No. 66, 50 lbs.

LCN CLOSER CONCEALED IN FLOOR

No. 44—No. 66—Double Acting—Door Hung on Center Pivots

In the LCN Floor type Concealed Closer for double acting doors, concealed center hung ball bearing pivots are furnished. This closer has two separate checking cylinders and two separate coils. Each can be adjusted independently of the other so

that the proper amount of checking control and power can be secured for each direction the door swings. The bottom pivot mounted on the closer box carries the weight of the door and not the spindle of the checking device.





*... from the start
designed and manufactured by
an organization of specialists*

This company, from the start, has devoted all its efforts and the facilities of a modern manufacturing plant to the job of producing door closers. The object has been to work out the practical answer to every door control problem with which the architect, the builder and the building superintendent have to deal, and to make LCNs the most efficient, reliable and economical door closers it is possible to build. We welcome inquiries of an kind in this field. Write, phone or wire the home office or our nearest representative.

LCN REPRESENTATIVES

BOSTON—C. E. Harris Co., 99 Bedford St.

NEW YORK—Door Hardware Equip. Co., 11 Warren St.

BUFFALO—Wm. R. Luxford, Pinehurst, Lake View, N. Y.

PITTSBURGH—E. D. Randolph, 817 Washington Drive (Mail: Box 6332, N. S. Sta.)

HARRISBURG—C. H. Speers, 208 W. Maplewood Ave., Mechanicsburg, Pa.

PHILADELPHIA—J. E. Leonard, 2402 Market St.

MARYLAND-VIRGINIA—J. J. McDonald, 19 Elm Ave., Takoma Park, Md. (Mail: Box 4301, Washington, D. C.)

CHARLOTTE, N. C.—L. E. Waldron, 404 Hermitage Court (Mail: Box 4010, Elizabeth Sta.)

TAMPA, FLA.—Gilbert A. Viola (Mail: Box 224)

CLEVELAND—The Gesing Co., 1037 Terminal Tower.

COLUMBUS—Paul E. Lehman, 431 Crestview Road (Mail: Box 32, Sta. B)

DETROIT—Brown-Darnell Co., 1046 Holden Ave.

LOUISVILLE—Paul Franks, 1818 Woodburne Ave.

N. W. ILLINOIS-IOWA—Fred J. Smalley, 1533 Tenth Ave., Rock Island, Ill.

ST. LOUIS—Joe T. North, 4171 Flad St.

KANSAS CITY—Fred B. Kennedy, 1200 Oak St.

OMAHA—S. M. Hawkins, 2820 N. 33rd St. (Mail: Box 300)

MINNEAPOLIS—A. N. Stark, 205 Lumber Exchange Bldg.

DALLAS—John H. North, 1957 Colorado Blvd.

DENVER—L. E. Cleavinger, 509 Charles Bldg.

SALT LAKE CITY—W. Lester Glade, 1421 Sherman Ave.

PORTLAND—J. C. Hertsche, 3707 N. E. 24th Ave.

SAN FRANCISCO—D. A. Reade, 420 Market St.

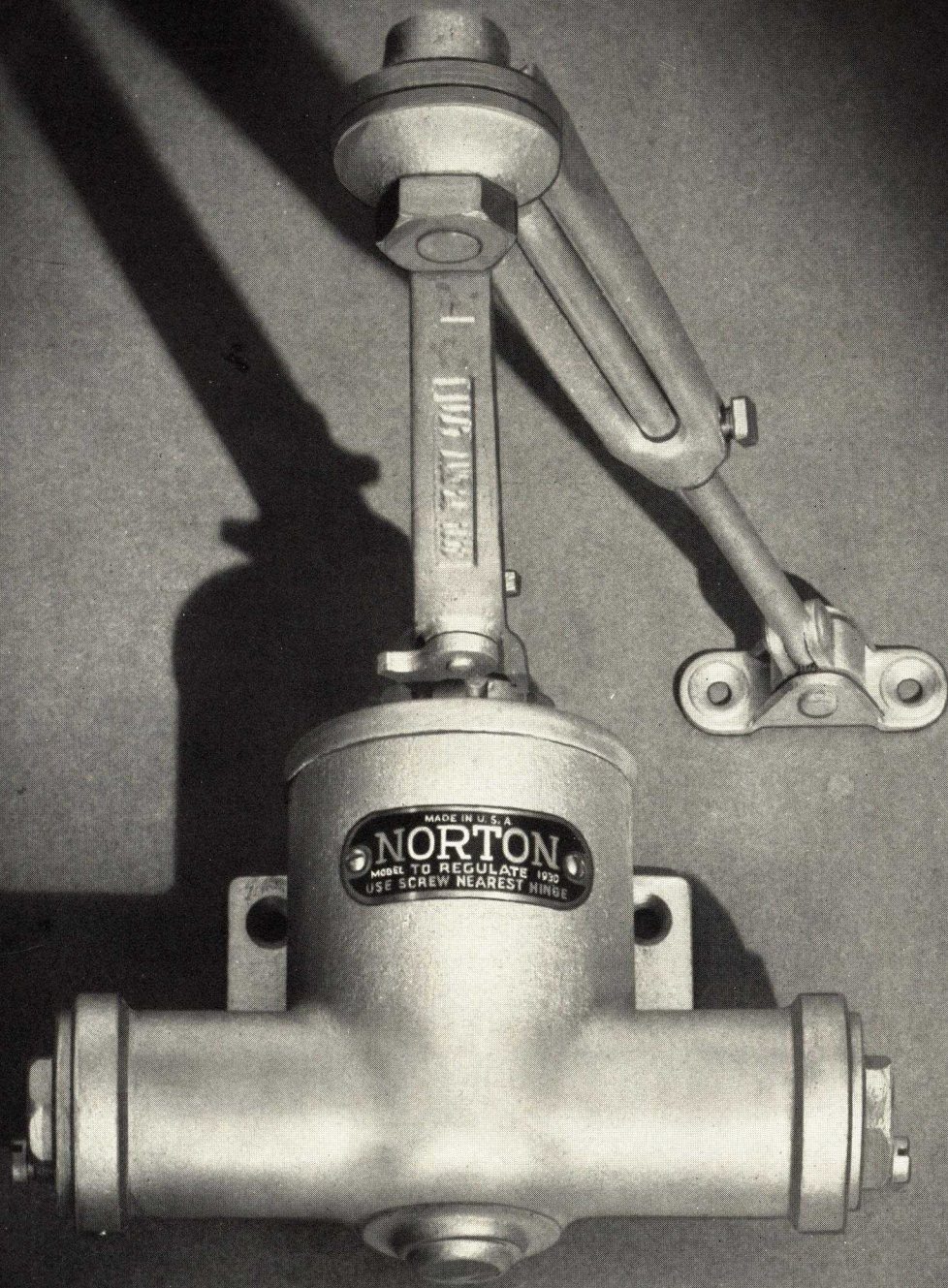
LOS ANGELES—H. T. Moon, Jr., 122 East 7th St.

NORTON LASIER COMPANY



466 WEST SUPERIOR STREET

CHICAGO, ILLINOIS



MANUFACTURING *Exclusively* DOOR CONTROLLING DEVICES

★ **DOOR CLOSER DEPENDABILITY.** The unanimous verdict of the most discriminating architects, builders, and building superintendents is that the Norton Door Closer is the most practical, mechanically-perfect door closer made. Repeated specifications and orders from the same sources bear out this testimony.

For over fifty (50) years Norton Door Closer Company engineers have been continuously engaged in the design of door closers. Back of them is the largest plant in the world devoted exclusively to the manufacture of door controlling devices — equipped with the most modern precision machinery obtainable.

Norton engineers are door closer specialists. Their advice and recommendations are available at any time for the satisfactory solution of unusual problems.

★ **NORTON RESPONSIBILITY ONLY BEGINS WITH THE SHIPMENT TO THE JOB.** Every Norton representative is a factory trained specialist in door closer application and operation. Invariably, as soon as installations are completed, each closer is inspected and tested by an experienced Norton representative to check and verify the closing operation and make sure that spring tension and regulation are correct for the particular door equipped.

This unique service policy is a part of every sale and is available to every customer. It is never left to chance or special demand. When the order is placed, this inspection and adjusting service is assured.

Norton Door Closer installations are covered by a two (2) year guarantee — see page 10.

★ **THERE ARE SIX DIFFERENT SIZES OF NORTON DOOR CLOSERS.** Norton Door Closers are made in six different sizes, each designed to properly control the size of door for which it is recommended. Under normal conditions, where no excessive draft exists, the following may be used as a guide to the correct size:

Size A — Ordinary screen doors or light interior doors — 2 ft. 6 in. x 6 ft. 6 in. x 1½ in. or smaller.

Size B — Heavy screen doors — 3 ft. x 7 ft. x 1¾ in.; and light interior doors — 2 ft. 8 in. x 7 ft. x 1¾ in.

Size C — Corridor or office doors — 3 ft. x 7 ft. x 1¾ in.; and light exterior doors — 2 ft. 6 in. x 7 ft. x 1¾ in.

Size D — Exterior doors — 3 ft. x 7 ft. x 2¼ in.; and heavy interior doors — 4 ft. x 7 ft. x 2¼ in.

Size E — Heavy exterior doors — 3 ft. 6 in. x 7 ft. 6 in. x 2¼ in.; and heavy interior doors subject to strong drafts.

Size F — Extra heavy entrance doors of unusual height or width, doors with heavy glass panels and doors subject to strong drafts require one size larger closer than recommended above.

NORTON PRODUCTS

In most of these six standard sizes the Norton Door Closer Company manufactures several types of closers and accessories for special purposes as follows:

	Page
Brackets.....	10
Coupon Booth Closers.....	7
Door Closers.....	2-5
Double Door Holder Arms.....	10
Fire Door (Fusible Link) Closers.....	8
Holder Arms.....	6
Hospital Closers.....	6
Parallel Arm Closer.....	9
Screen Door Closers.....	9
Sliding Gate Closers.....	9
Telephone Booth Closers.....	7

Specify DOOR CLOSERS AS A *Special* HARDWARE ITEM

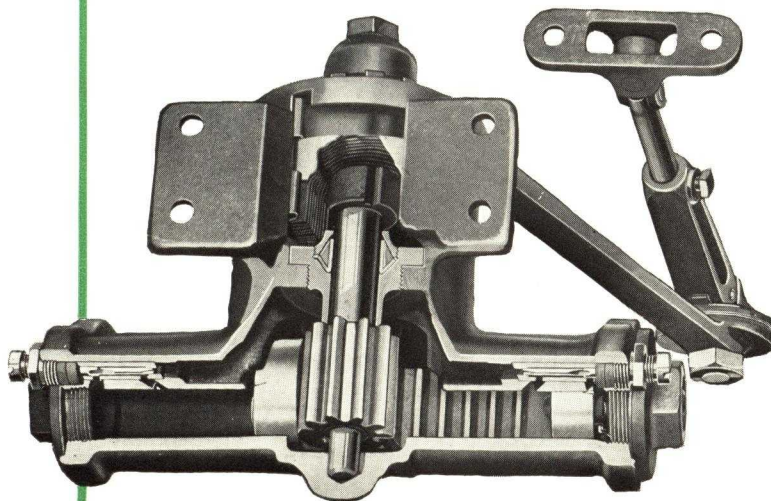
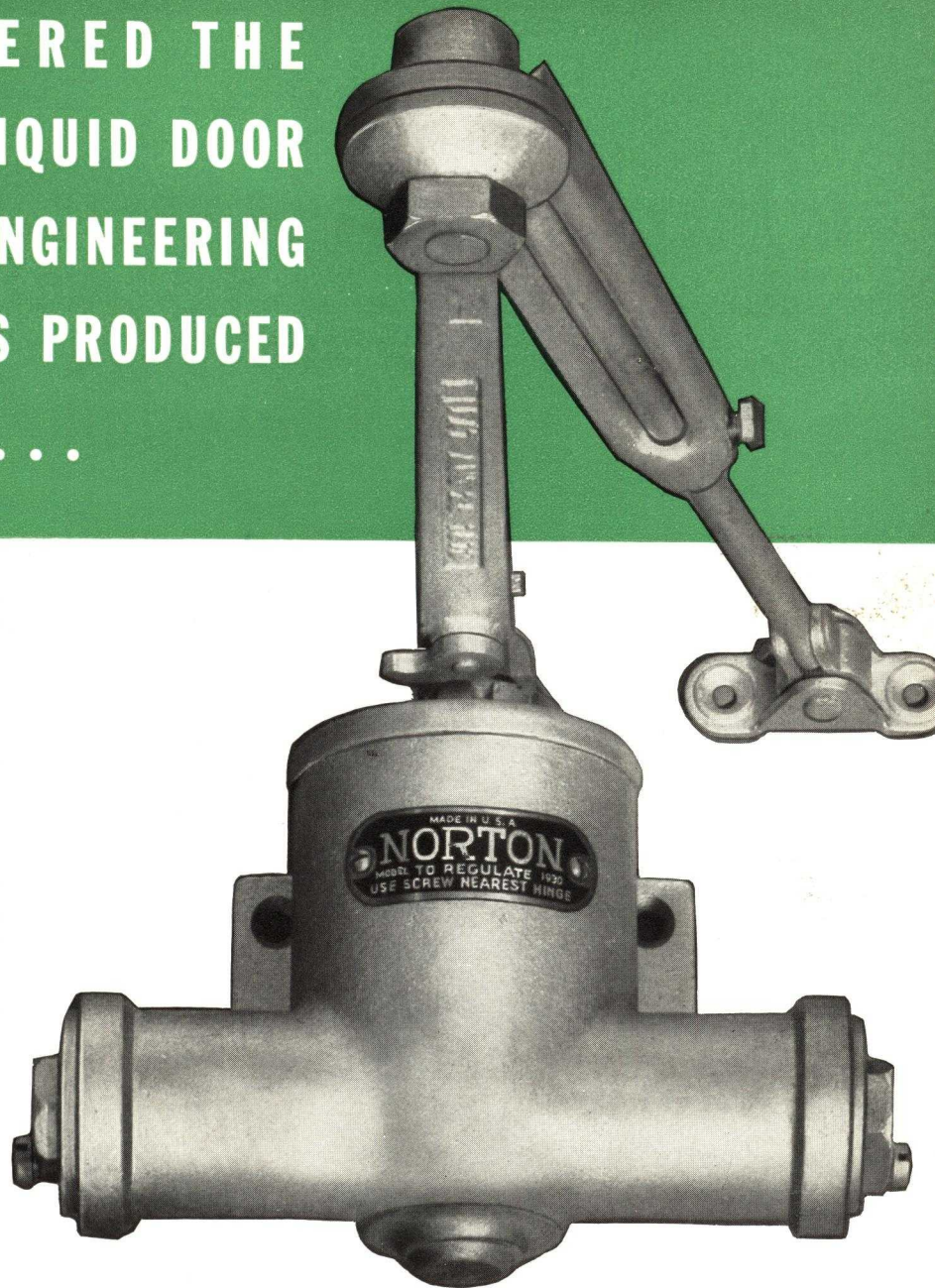
Door closers are a highly specialized mechanical device and have nothing in common with the ordinary trim hardware (butts, locks, latches, escutcheons, knobs, etc.). Their selection merits the same special attention and analysis given mechanical equipment used elsewhere in the building. Fair cost comparisons measured in terms of mechanical accomplishment (courted by Norton) are only possible where they are specified as a separate item (see page 10) divorced from the usual hardware trim list.

CONSIDERED THE FINEST LIQUID DOOR CLOSER ENGINEERING SKILL HAS PRODUCED TO DATE...

★ Mechanically the Norton Door Closer is as perfect as specialized engineering skill and fifty years of door closer experience can make it. All internal working parts and the end plugs are of steel, all machined to a high degree of accuracy and precision. Only two gray iron parts are used in the entire closer — the shell of special analysis gray iron and an iron ratchet.

There are a number of important individual features that only Norton offers, such as the use of mineral oil for checking and lubrication, a new packing nut that is absolutely guaranteed against leakage, and the Norton Rack and Pinion principle which positively holds the door under control every inch of the closing arc.

TESTED AND APPROVED BY THE
NATIONAL BOARD OF FIRE
UNDERWRITERS



THE RACK AND PINION PRINCIPLE PROVIDES ABSOLUTE CONTROL...

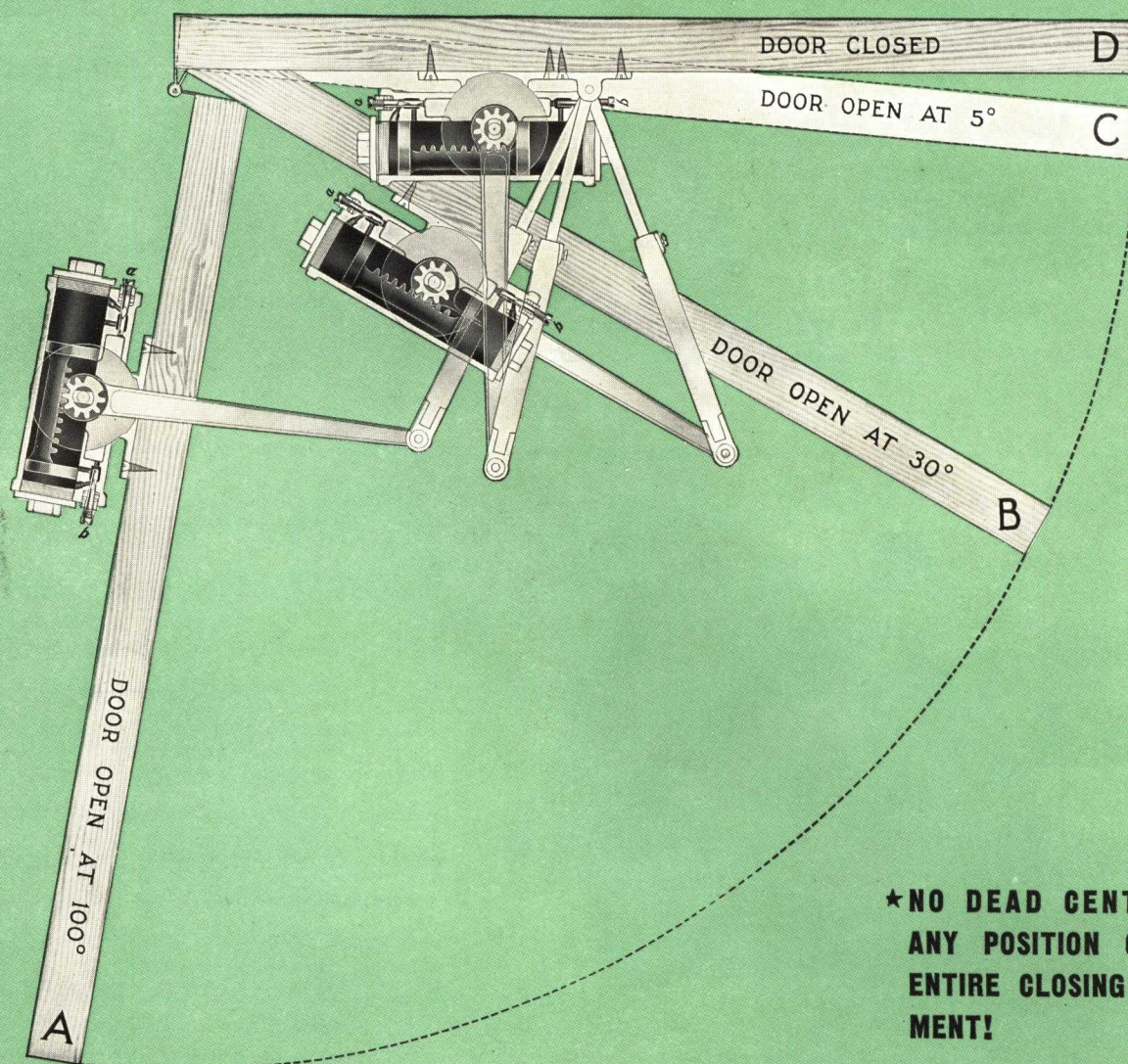
The Norton Rack and Pinion principle, with two-speed control, holds the door under absolute control from start to finish of the closing operation, and provides a separate "slow or fast" adjustment at the latch required for noiseless closing. No other principle of design can so well accomplish these objectives. This cut-away illustration shows the working principles and assembly of the Norton rack and pinion design.

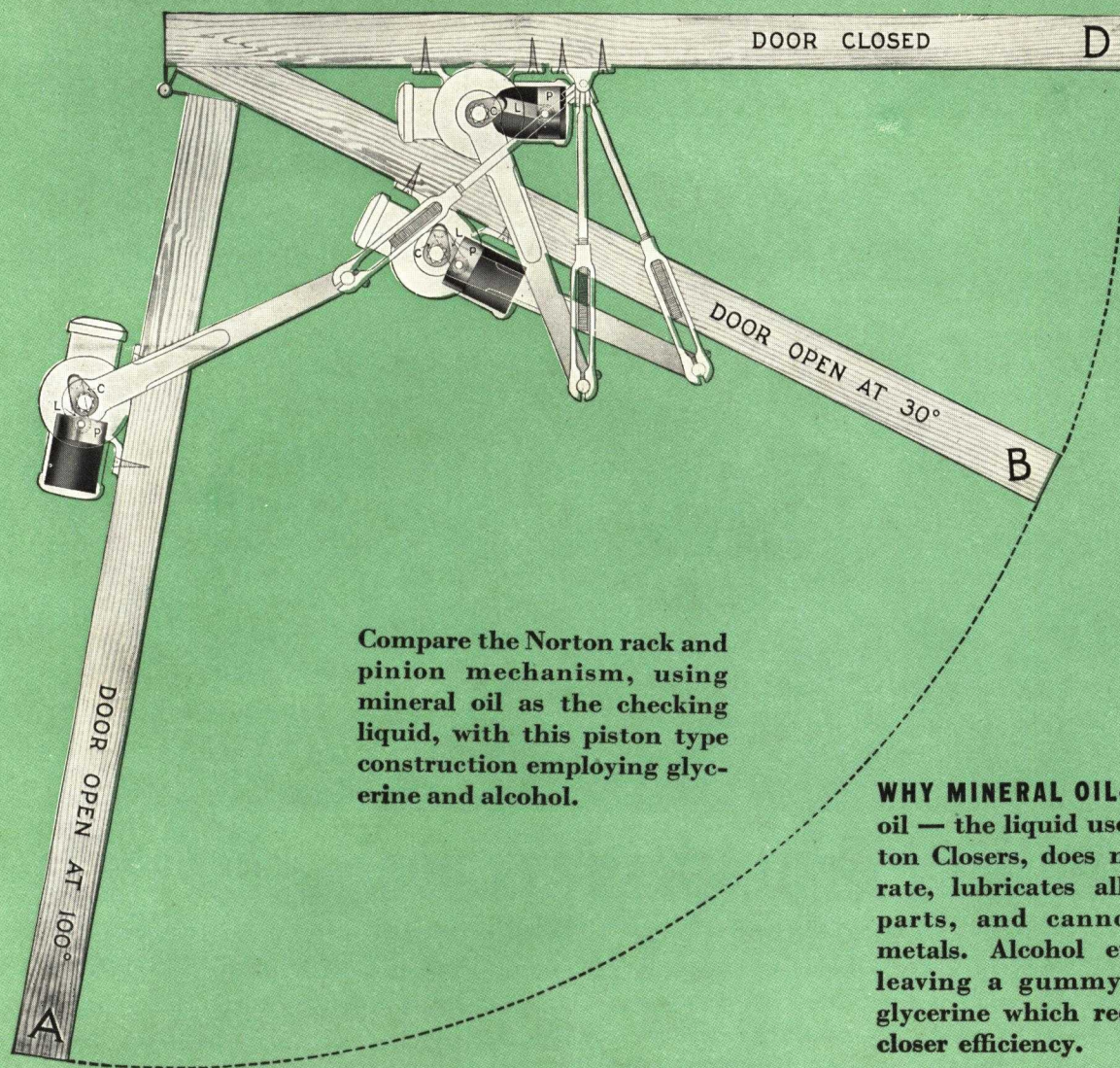
THE *Norton* RACK AND PINION PRINCIPLE GUARANTEES POSITIVE CONTROL AT EVERY POINT

The Norton Rack and Pinion principle, with two speed control, positively holds the door under absolute control through the entire closing movement. It provides a separate adjustment at the latch, slow or fast, for noiseless closing or overcoming the many latch and draft conditions encountered in service.

In this rack and pinion type the piston is moved back and forth by a pinion working in a rack. There are no dead centers—the piston moves at uniform speed from

“A” to “C”. The instant the door starts to close the checking begins controlling the movement of the door at any speed desired. At “C” the speed can be regulated to “fast or slow” by the adjusting screw nearest the hinges. This two speed action is secured by one regulating screw combined with the rack and pinion movement. The Norton Closer, with its special process tempered steel spring, causes **NO STRAIN ON HINGES AND DOORS.**



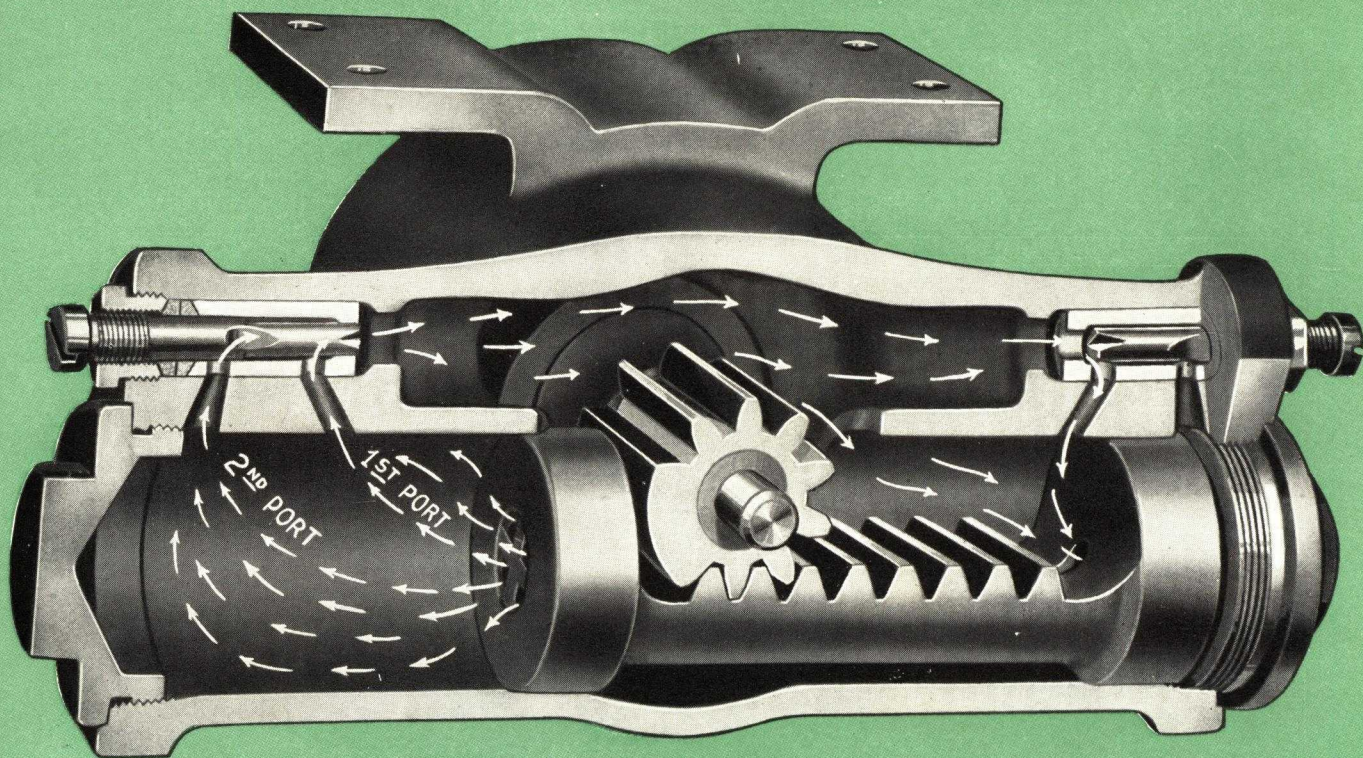


THE CRANK STYLE OF DOOR CLOSER GIVES ONLY **PARTIAL CONTROL**

The crank style door closer controls the door from points B to D only. Here the piston is moved back and forth in the cylinder by a crank and link. "P" is the piston, "L" the link, "C" the crank. The employment of the crank style principle results in but slight movement of the piston at two dead center points — when the door is opened about 30 degrees to

Quarter Check Efficiency

"B", the piston is drawn to full length of its stroke and when closed from "A" to "B" — there is no checking as the crank goes over the dead center point. Checking is actually confined to the distance between "B" and "D" and less effectively near "D". This brings great strain on hinges and doors.

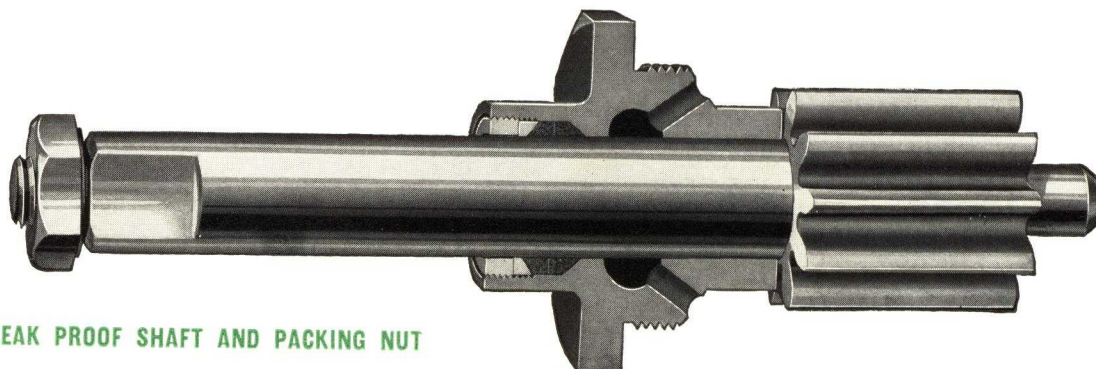


THE CROWNING ACHIEVEMENT IN DOOR CLOSER DESIGN

Here are illustrated the exclusive features of the Norton Door Closer construction. Shell of special analysis, annealed gray iron, strong and non-porous—all internal working parts and end plugs of steel—actuating spring of special process tempered spring steel, powerful, flexible, and non-breakable—arms of certified malleable iron—accurate machining to less than one thousandth of an inch. A special, high grade mineral oil is the checking liquid—it constantly lubricates vital working parts—its flow is illustrated above.

The Norton crowning achievement is the successful, non-leak feature. Oil, acknowledged to be the ideal checking

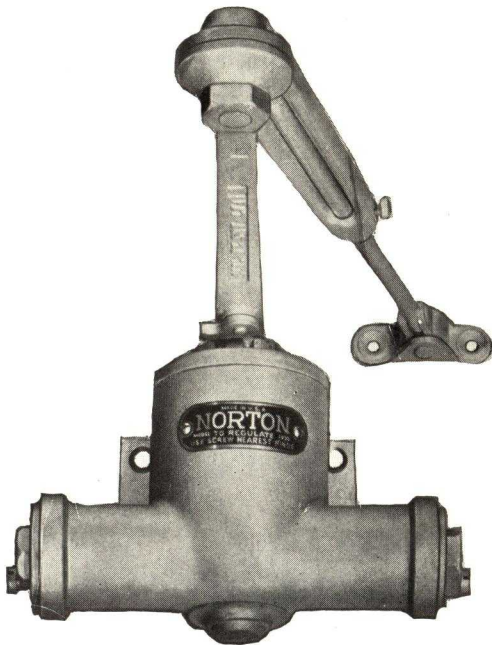
liquid, is difficult to retain under pressure. This is accomplished by the Norton time-tested shaft and packing gland construction shown below. Accurate machining holds the maximum clearance between shaft and bearing to .00125 of an inch—just sufficient to allow oil to pass for lubrication. This oil is collected in globules in the reservoir above the bearing and returned to the piston chamber through drip holes—it cannot climb above the reservoir because capillary attraction is broken at this point. The soft leather packing is used only to prevent leakage in case the closer is inverted in shipping and handling.



NORTON LEAK PROOF SHAFT AND PACKING NUT

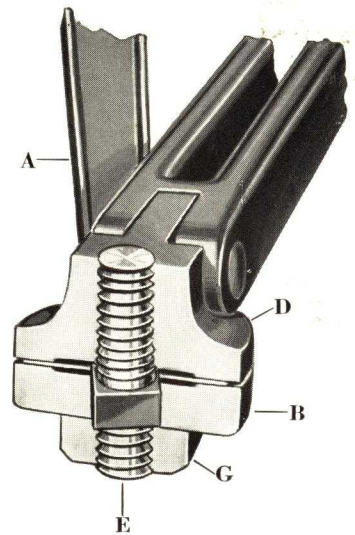
THE NORTON HOLDER ARM

May be set to hold the door open at any angle



For ordinary use, this closer controls the door in exactly the same manner as the regular arm closer; but because of a difference in the arm construction, it also holds the door open when desired. It may be easily released by giving it a slight pull. The arm can be regulated to hold at any point up to a 135° opening. For 135° to 180°, a slightly different arm is used which operates the same way.

When the door is opened, the main arm "A" prevents the jack-screw "E" from turning because of the square shank. At the same time the motion of the arms forces the holder head "D" to screw down on the jack-screw. That brings the surface of "B" and "D" together and the friction between them holds the door open. To prevent any possibility of "freezing" due to corrosion should the door be held open for long periods, a brass non-corroding disc is inserted between them. The point at which the door is held open is easily determined by adjusting the nut "C." This feature is valuable for entrance doors and doors to auditoriums, gymnasiums, and class rooms, and practically all public building doors.



And for Hospital Service:

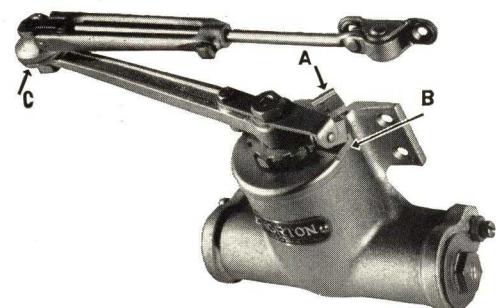
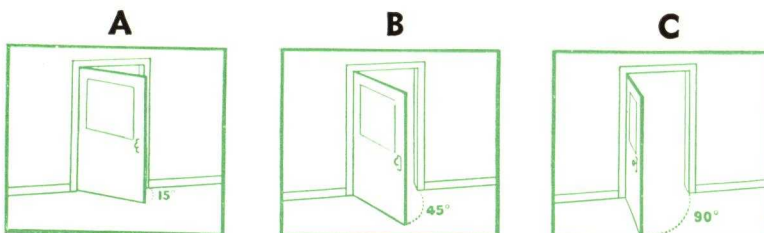
THERE IS THE NORTON 3 POINT HOLDER CLOSER

This closer is a variation of the famous Norton Holder Arm Closer and its control of doors held open at various degrees is illustrated in the three sketches below.

This special Norton Holder Closer operates as a regular closer, smoothly and quietly, but it also holds the door open at three points. The advantages for hospitals are apparent. When the door is pushed back, the unhampered passage of various hospital wheeled equipment is per-

mitted. When a partially closed door is desired to provide whatever degree of ventilation or privacy is needed, the Norton Three Point Holder Closer holds the door at either of the other two positions illustrated.

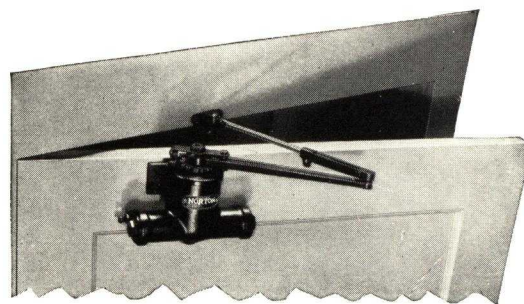
Such outstanding features of convenience have built leadership for the Norton Door Closer. Each individual closer has its special service to perform and should be carefully selected in order to get the most efficient operation.



NORTON TELEPHONE AND COUPON BOOTH DOOR CLOSERS

★ COUPON BOOTH DOOR CLOSER

The function of a coupon booth closer is to close the door securely while the booth is occupied to insure privacy and to keep it closed after the user has departed to protect anything that might have been left by mistake in the booth. After the guard has unlocked and inspected the booth, he opens the door a few inches and the closer holds it there to ventilate the booth and indicate a vacancy. This closer operates like the Three-Point Hospital Holder Closer except that it holds the door at one point only.



★ TELEPHONE BOOTH DOOR CLOSER

Every time the booth is used this closer returns the door to position about three or four inches from the jamb. This aids in ventilation and minimizes danger of damage from careless handling. The construction of this special feature is very simple. As the door nears the jamb, a pin in the cover catches a similar pin in the ratchet and checks the spring power. Then the inertia of the liquid in the closer stops the door and holds it there until the occupant pulls the door shut. The door cannot be slammed shut because the regulating screw controls the motion whether the operation is by the spring or by hand. We supply, without extra cost, a back check which controls the door so that it cannot be thrown back against a wall or door of another booth.

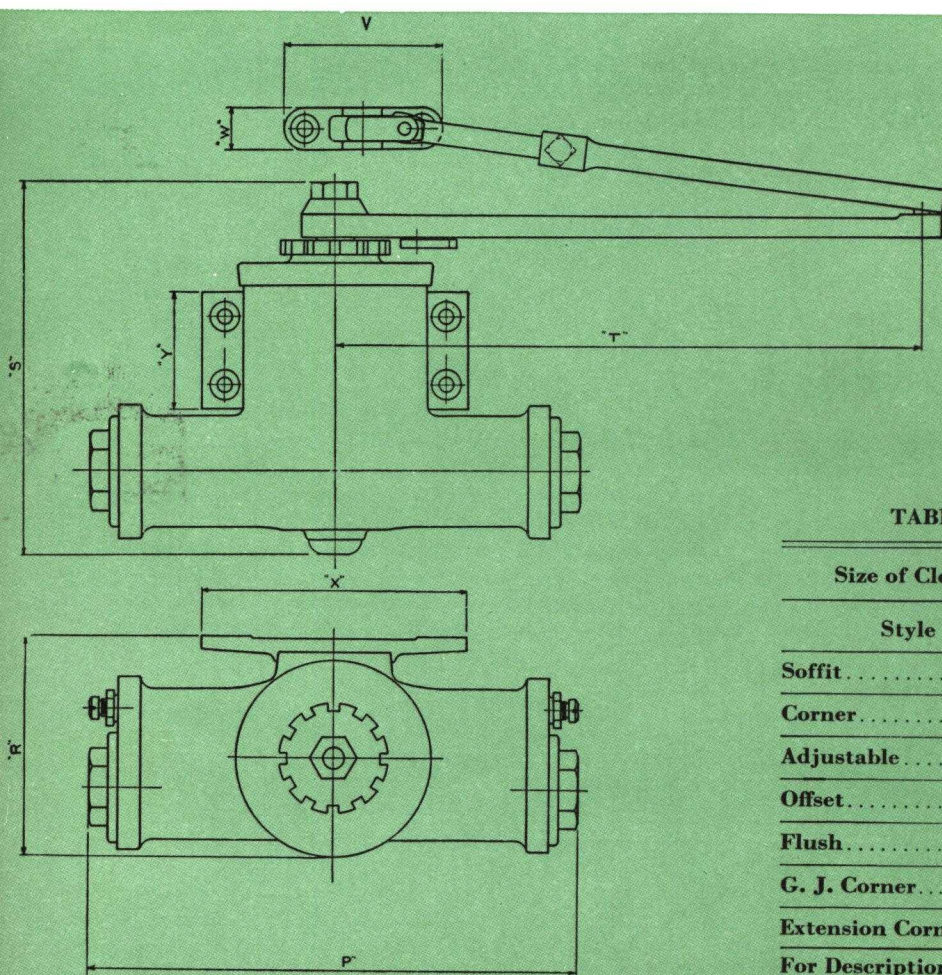
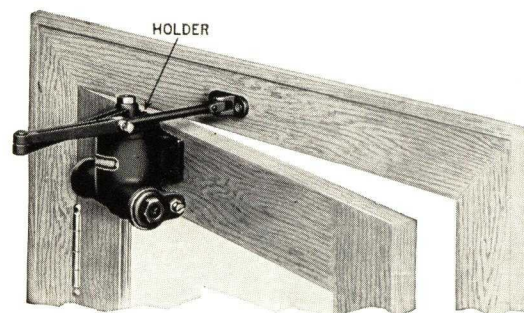


TABLE OF CLOSER DIMENSIONS

Size of Closer	Dimensions							
	P	R	S	T	V	W	X	Y
A	6½	3⅛	4⅞	8	2⅝	1⅛	3⅜	1½
B	6⅞	3¼	5½	9	2⅝	1⅛	3⅝	1¾
C	8⅛	3⅝	6¼	9¾	2⅞	1⅛	4⅞	1⅝
D	8½	3⅞	6⅞	11	2⅞	1⅛	4⅞	2¼
E	9⅛	4⅛	7⅞	12	2⅝	¾	5¼	2⅜
F	9¾	4⅝	8¼	13	2⅝	¾	5¾	2⅝

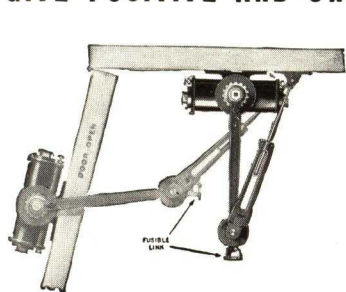
TABLE OF BRACKET DIMENSIONS

Size of Closer	Width of Base					
Style	A	B	C	D	E	F
Soffit.....	1⅛	1⅜	1⅝	1½	1¾	1¾
Corner.....	1	1	1⅛	1⅜	1⅞	1⅝
Adjustable.....	2	2	2½	2½	2½	2½
Offset.....	3⅜	3⅜	3⅝	3⅝	3⅝	3⅝
Flush.....	2⅜	2⅞	2⅞	2⅞	3	2⅞
G. J. Corner.....			1⅛	1⅜	1⅞	.....
Extension Corner.....			1⅛	1⅞	1½	.....

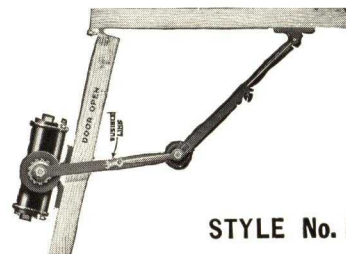
For Description of Brackets, see page 10.

NORTON FUSIBLE LINK ARMS *Simple and Unfailing*

GIVE POSITIVE AND UNFAILING PERFORMANCE IN ANY EMERGENCY



STYLE No. 5



STYLE No. 3



STYLE NO. 5

The Fusible Link Arm consists of two clamps and a fusible link which are assembled on a variation of a regular Norton Holder Arm. The clamps when closed put the adjusting nut in position to set the Door Closer arms at any desired angle. As the link fuses, the clamps fly apart so that the holder feature releases and the door closes under the pressure of the spring in the closer. In normal operation the arm looks like the regular Norton Holder Arm with the addition of a small, inconspicuous fusible link near the outer edge. When the holder is in use, the fusible link is in position directly in the door opening where an increase in the temperature (160°) will quickly fuse the link and release the holder arm, closing the door and preventing the further spread of the fire.

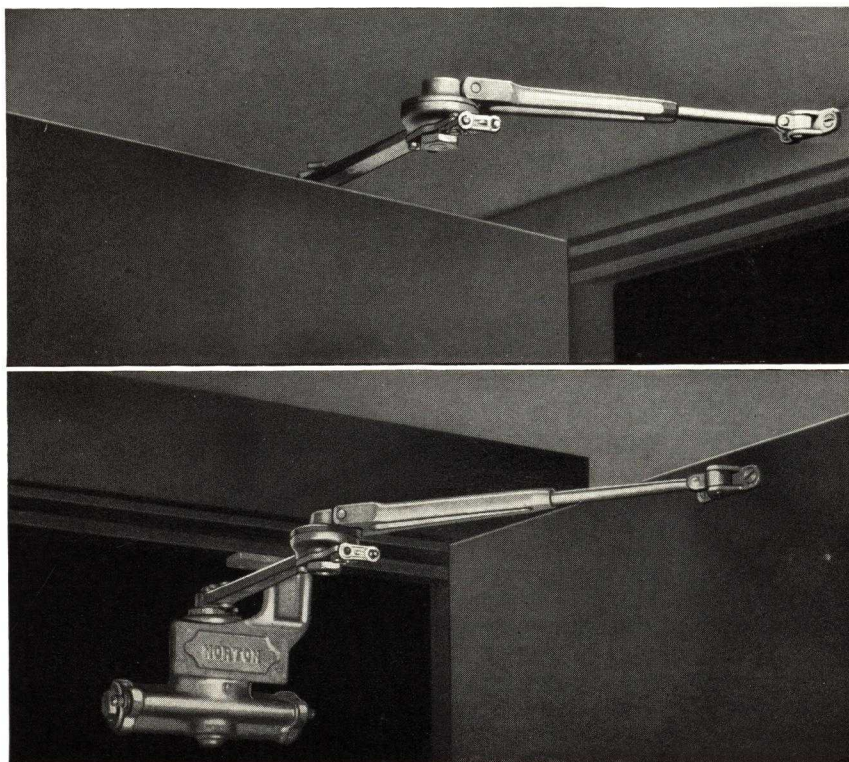
This style, tested and approved by the National Board of Fire Underwriters, can be set to hold the door in any predetermined position up to 135°. It requires only a slight push or pull to operate and is very simple. Made in four sizes—C, D, E, and F—in both regular and key types.

STYLE NO. 3

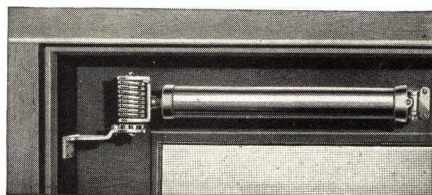
Style No. 3 is not approved by the National Board of Fire Underwriters. The arms are not reversible and it is necessary to specify the hand of the door and also whether or not the closer is to be used on a bracket. Standard arms permit opening to 135° and special arms to 180°.

BOTH STYLES OF FUSIBLE LINK ARMS CAN BE USED ON EITHER SIDE OF DOORS

We illustrate Norton Door Closers with Style No. 5 Fusible Link Arms installed on either side of the door. No. 3 can be used in a similar manner with all the advantages of the standard Norton Door Closer. The door is under complete control from the moment it is released until it is fully latched so that there is no uncontrolled rush with a sudden, jerking stop. By the use of only one regulating screw the closing motion can be changed to meet a great variety of conditions.

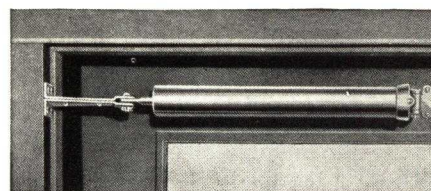


★ NORTON SCREEN DOOR CLOSERS



NO. 4 CLOSER

*Two No-Slam
Devices that will
stand hard usage*



NO. 04 CLOSER

THE NO. 4 Norton Screen Door Closer is strongly built to function over a long period of time. Made with seamless brass, the tube will not rust.

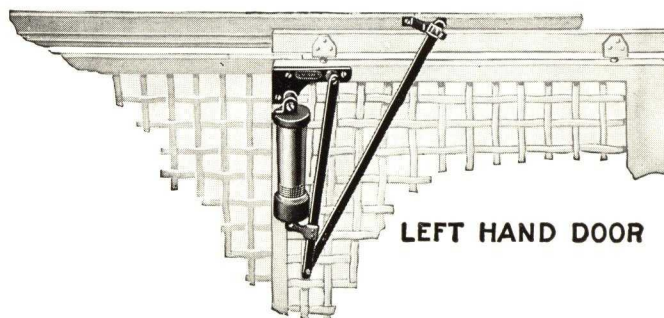
The bracket, spring holder, and hinge plate are of heavy steel stampings which will not break. The piston is constructed with a spring to hold the cup leather washer against the side walls. This assures checking at all times. It is packed in individual cartons with full instructions for applying. Requires only 2 inches between doors.

THE NO. 04 is a fine closer in the lower price class.

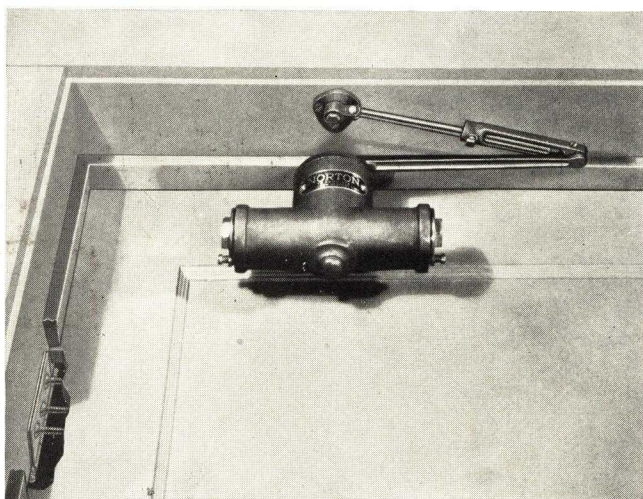
The same expert workmanship goes into the manufacture of the new Norton No. 04 Screen Closer as in the Norton No. 4. The same size cylinder is used and is made of seamless brass also. No. 04 conceals the spring in the cylinder. The leather washer inside the closer is one piece of carefully selected leather. It is offered at a surprisingly low price; packed in individual cartons with full instructions for applying. (To be installed on opposite the hinge side of door only.) Requires only 2 inches between doors.

★ SLIDING GATE CLOSER . . .

The Norton Sliding Gate Closer for a sliding gate or door was designed for bank cage doors and sliding doors in offices where the gates must lock when the teller or clerk leaves the cage. Regular finish is gold bronze. Size No. 1 is for light grille gates, two to three feet wide weighing less than 100 lb. No. 2 size is for doors and heavy bar gates two to three feet wide weighing more than 100 lb. In ordering, give size, style of track, and state hand of door.



PARALLEL ARM CLOSER AND AUTOMATIC DOOR AND WINDOW HOLDERS



This type of installation is used when there is not room between two doors for the closer with the arm in the usual position. It can also be used when there is not enough head room for the closer to be installed on a bracket.

When the door opens only 90° or 100° and when our instructions are followed in making the installation, a parallel arm closer will do a good job of controlling the door. Its power and performance are about equal to a closer installed on a corner bracket. This shows it is not the best installation but for 90° opening we no longer need to be hesitant about using it.

For 180° opening, this installation has much less power and control and should be used only when no other solution is practical. A size larger closer should be used than would normally be used on a door of that size and location.

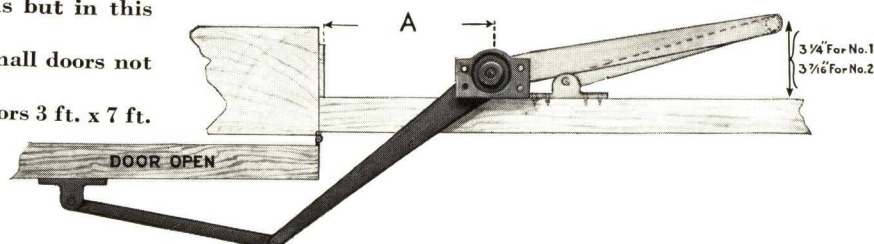
DOOR HOLDERS—Norton Door Holders operate on the same principle as the Norton Holder Arms but in this case no closers are used.

SIZE NO. 1—Suitable for windows and small doors not over 2 feet wide.

SIZE NO. 2—Suitable for windows and doors 3 ft. x 7 ft. Base plate 1½ in. wide.

To open 90°, dimension A for size No. 1—6 in.; for size No. 2—9 in.

To open 180°, dimension A for size No. 1—4½ in.; for size No. 2—6 in.



NORTON HOLDER ARMS FOR DOUBLE DOORS WITH SOFFIT POSTS AND HINGE SIDE BRACKET

The Holder Arm with Soffit Post Bracket is designed for use on the standing door of a pair of doors. The appearance is similar to that of the operating door which is equipped with a Norton Holder Arm Closer on a soffit bracket.

This type of equipment is especially useful on doors to auditoriums and gymnasiums. While a crowd is entering, the operating door only is open and is held open by the holder arm on the closer. While the crowd is leaving, both doors are open and are held in position by the holder arms.

When the closer and arm are to be put on the hinge side of the doors, an arm with a hinge side bracket is furnished.



★ NORTON BRACKETS

The Norton brackets have been built to accommodate all door conditions. Special brackets are made to order.

1. **SOFFIT BRACKETS**—For use where there is room on the overhead jamb. This places the door closer to best advantage.
2. **CORNER BRACKETS** — Used only when door opens to 180° or when the head room is too low.
3. **FLUSH BRACKETS** — Used when the soffit (or jamb) is not wide enough to receive a soffit bracket.
4. **EXTENSION CORNER BRACKETS** — Used with Holder Arm Closers when extra rigidity is desired.
5. **G.J. CORNER BRACKETS** —Used to avoid interference with separate door holders.
6. **ADJUSTABLE BRACKETS** —Used for circular top doors when the closer is placed on opposite the hinge side of the door.
7. **OFFSET BRACKETS** — Used for circular top doors when the door closer is placed on the hinge side of the door.



G-J Extension Corner Bracket for G-J 90 door holders not illustrated.

★ GUARANTEE

We guarantee perfect operation of Norton Door Closers for two years providing proper recommended sizes are used.

Defects in workmanship or material appearing during this period will be promptly rectified.

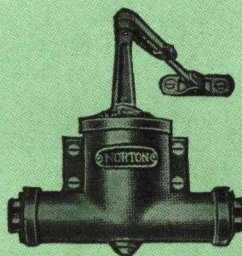
★ DOOR CLOSER SPECIFICATIONS

Door closers shall be rack and pinion type. Where required, they shall check the door in its opening swing. Rack and pinion shall be of cold rolled steel. Actuating spring shall be of flat motor clock type. Checking liquid shall be non-evaporating mineral oil of stabilized viscosity.

Holder Arm Closers, where used, shall be friction type with non-corrosive brass washer between discs. On completion of the installation, final adjustment of all closers shall be made by the manufacturer's factory representative. Closers shall be covered by a two-year factory guarantee.

NORTON

DOOR CLOSER



**MADE IN A PLANT THAT IS DEVOTED
EXCLUSIVELY TO DOOR CLOSER
PRODUCTION**



GUARANTEED FOR TWO YEARS



**COSTS NO MORE THAN ORDINARY CRANK STYLE
DOOR CLOSERS**



SERVICE IS UNEQUALLED

NORTON DOOR CLOSER COMPANY

Division of the Yale & Towne Manufacturing Company

GENERAL OFFICE AND PLANT

2900-2918 North Western Avenue, Chicago, Ill.

Cable Address: "NODOCO, Chicago, Ill."

Bentley Code

BRANCH OFFICES

Norton Pacific Sales Co., San Francisco, Calif.

Norton Door Closer Co., New York, N.Y.

Representatives in All Principal Cities

MACDONALD HARDWARE MANUFACTURING CO.

Manufacturers of Dalmo-Simplex Window Fixtures

"THE NATION'S SCHOOL HOUSE WINDOW"

963 Harrison Street, SAN FRANCISCO, CALIF.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

Dalmo-Simplex Automatic Multiple-Operating Window Fixtures, New Sawyer Design Combination Window Fixtures, Dalmo Heavy-Duty Casement Window Fixtures, Remote Control Operators.



"Engineered Hardware"

These durable, dependable units, designed and perfected by MacDonald window engineers are of MacDonald precision manufacture, made of highest quality copper-bearing steel, cadmium plated, and assembled with brass rivets. They will last the life of the building.

Simple, substantial and pleasing in appearance, the MacDonald Dalmo-Simplex window details have been carefully worked out to make possible the practical application of the latest and best principles of perfect ventilation and correct lighting.

Experience

Over 2500 school buildings equipped with Dalmo-Simplex window fixtures serve as a great experience-basis in this field. The benefits of this wide and diversified experience contribute greatly to the superior performance and greater life and character of MacDonald Dalmo-Simplex Window Products.

Manufacturing Facilities

A modern plant located in San Francisco and fully equipped with all new machinery gives facilities for efficient manufacture and prompt service for all territories. A competent engineering staff is at the service of MacDonald clients.

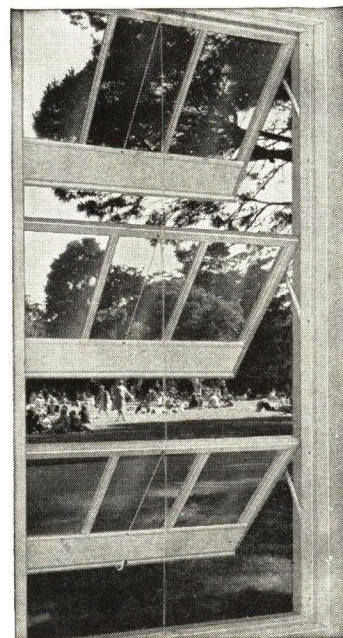
Dalmo-Simplex Automatic Window Fixtures

"The Nation's Schoolhouse Window"

Windows equipped with Dalmo-Simplex fixtures permit daylight illumination without glare, and natural ventilation without draft. May be furnished 1, 2, 3, or 4-sash high, all sash being automatically controlled by operation of the bottom sash opened to predetermined position. Bottom sash automatically disconnects for independent operation, leaving the upper sash in fixed open position. Reconnection of the lower sash is also automatic, requiring only that it be opened to the position occupied by the upper sash. Entire operation is accomplished with one hand. Window poles are eliminated. Top sash or transom can operate through transom bar.

The Company

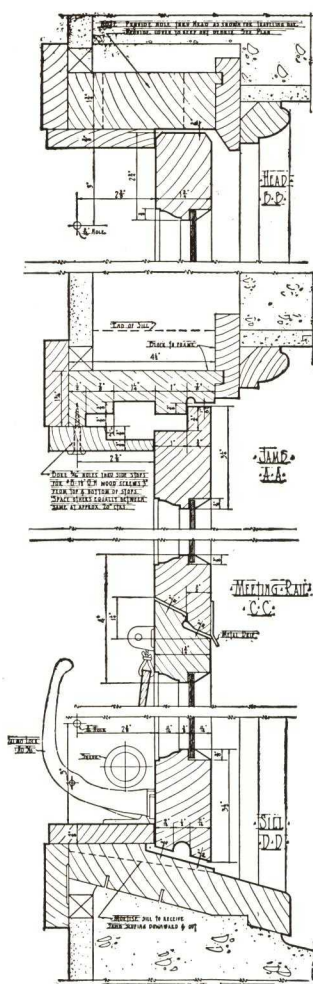
As originators and pioneer manufacturers of awning type windows since 1912, the Company has been closely identified with the growing popularity of awning type windows. During this twenty-six-year period, Dalmo-Simplex developments have accounted for many of the major improvements in awning and casement window operation and control.



DALMO-SIMPLEX
Multiple Operating
AUTOMATIC WINDOW

The New Dalmo-Simplex Automatic Multiple Operating Window





Detail for 1 3/4-in. Sash Dalmo-Simplex Automatic Operating Windows

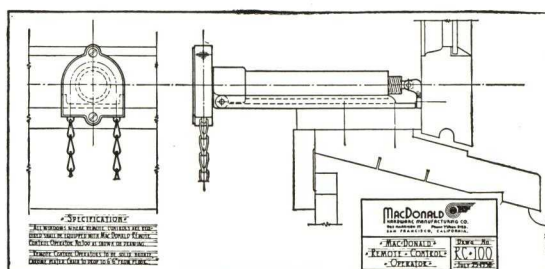
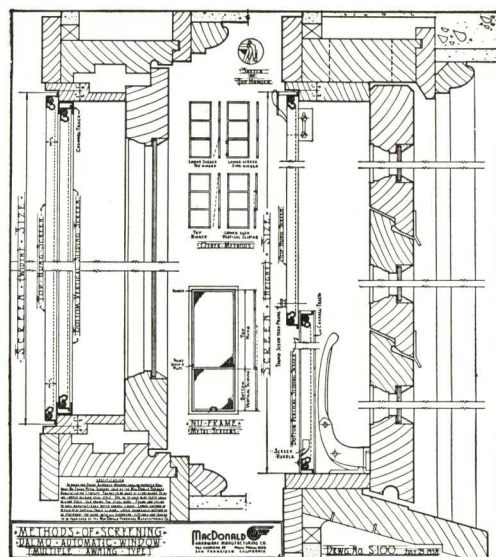
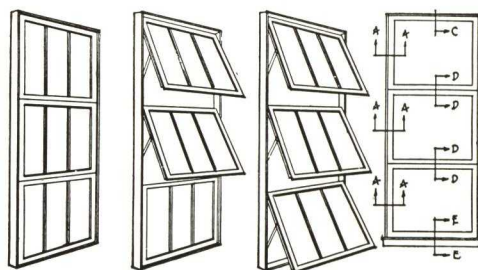
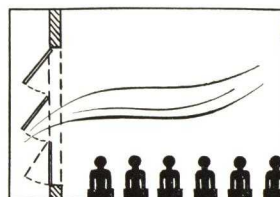
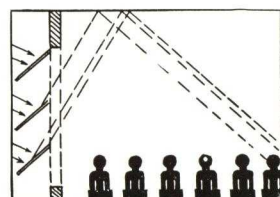


Diagram Illustrating Diversified Operation Obtainable with Dalmo-Simplex Windows



Sketch shows upward deflection of air. Lower sash closed. Plenty of healthful air — no direct drafts.



Sketch shows directed light distribution. Seats near windows shaded from sun. Light directed to dark side of room through diffusion from ceiling.

Left: Remote Controls for Auditoriums, Gymnasiums, etc.

The Nation's Schoolhouse Window

Scwyer Design Combination Window Fixtures

Windows equipped with Dalmo-Sawyer design combination window fixtures have the bottom sash opening down and in, the top

sash opening up and out in unison. The center sash can be manually adjusted to any desired position. This arrangement deflects air currents toward the ceiling and permits maximum ventilation.

DALMO-SIMPLEX—THE PIONEER AWNING TYPE WINDOW SINCE 1912

Mill Work—Sash and frames for all types of windows are made by your local mills. These fixtures can be applied on both 1 3/4-in. sash and 2 1/4-in. sash.

Standard Screen—Venetian blinds are more adaptable to this window than any other type. Standard for screening and weatherstripping. (See detail.)

The New Dalmo-Sawyer Design Combination Window



Easy Cleaning—Cleaning is made easy through the projected feature of the sashes . . . the sashes are nearly reversible for cleaning or glazing, the sashes slide down 12 in. allowing ample room for washing, eliminating all risk to window cleaners, and making re-glazing less expensive.

Affect Health and Happiness—Dalmo windows affect the health and happiness of your children. They provide in simplest, most effective form, the light and ventilation essential to every new, modern school building. The window glass deflects the direct rays of the sun in and up against the ceiling, from whence it is diffused throughout the room as soft, even light.

Perfect Lighting and Shading—The shades are attached directly to the sashes, so that through the proper use and adjustment of the shades, perfect lighting and shading can be obtained. Shades do not flap in the wind and are protected during inclement weather.

Control of Ventilation—The control is so flexible that 100 percent ventilation can be secured by operating all of the sash simultaneously.

Protection from Drafts—Where it is necessary to protect the occupants of the room from direct drafts, the upper two sashes of the Dalmo Automatic may be opened and the lower sash left closed or upper and lower sash of the Dalmo-Sawyer design may be opened and center sash left closed. This flexibility is gained through the use of the automatic clutch behind stops.

Smaller Mullions—Mullions are about one-half the size of mullions required for double hung windows. Dalmo windows lend themselves readily to weatherstripping and may, without affecting the operation of the sash in the slightest degree, be made tighter than the ordinary double hung window, weatherstripped. No sticking, binding or warping common in double hung windows.

Weathering—Proper weathering is secured through double contact at the head, sill, jambs and meeting rail.

Solves Window Problems—Dalmo equipped windows solve window problems by a simple, direct, positive and inexpensive means. An ideal window, supplying plenty of much-needed fresh air and good light so necessary for health and good sight.

Steel Window—The Detroit Steel Products Company manufactures the identical window, Dalmo-Simplex Automatic Window in design and features. It is known as the Fenestra "Dalmo-Fenmark." (See Detroit Steel Products Company Representative-Fenestra.)

Simplified Fixtures—Dalmo fixtures eliminate the use of box frames, chains, weights and pulleys, sources of perpetual expense.

Window Sizes—The average school window is 3 ft. 4 in. wide by 8 ft. 6 in. high using 3 sets of fixtures for three-sash high. Dalmo-Simplex Window Fixtures have been used on windows up to 6 ft. wide.

ARCHITECTS SPECIFICATIONS FOR NEW DALMO-SIMPLEX MULTIPLE OPERATING WINDOWS

All windows shown on drawings, or called for in specifications, unless otherwise specified, shall be equipped with new Dalmo-Simplex Automatic Multiple Operating Window Fixtures, as manufactured by MACDONALD HARDWARE MANUFACTURING COM-



100 Per Cent Ventilation

The entire area of the window may be thrown open when necessary. Plenty of healthful air for the most crowded rooms.

DALMO-SIMPLEX Multiple Operating AUTOMATIC WINDOW

PANY, 963 Harrison Street, San Francisco, California. No substitutions shall be permitted without the written approval of the Architect. Frames and sash to be made in strict accordance with the details approved by the window fixture manufacturers before starting construction of same.

All window fixtures made of the highest quality copper-bearing steel and assembled with brass rivets. These fixtures are to be constructed so as to be strong and durable. All exposed parts are to be cadmium plated.

All windows, unless otherwise specified, shall be equipped with solid bronze MacDonald Lock No. 36. (Two locks used on all sash over 3 ft. 6 in. wide.)

All high windows where remote controls are required shall be equipped with MacDonald remote control operator No. 100 as shown on drawings. Remote control operators to be solid bronze. Chain to drop 6 ft. 6 in. from floor.

Side stops shall be furnished by the mill and bored at the mill with 3/16-in. holes to receive brass screws and washers as shown on the window details of the manufacturer. Sash shall be installed unglazed. Side stops for patent windows shall be installed by the window fixture manufacturer or his representative. Metal drip to be furnished at the meeting rails. (See details.)

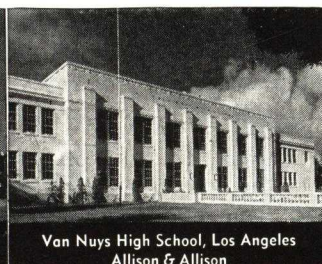
Specifications for the Dalmo-Sawyer Window

Dalmo-Sawyer specifications are the same as Dalmo-Simplex specifications listed above, except for the lock. All Dalmo-Sawyer Windows shall be equipped with Lock No. 38.

A Few of Two Thousand Five Hundred Dalmo-Simplex Installations



Marina Junior High, San Francisco
G. W. Kelhom & W. P. Day



Van Nuys High School, Los Angeles
Allison & Allison



High School, Santa Rosa, California
W. H. Weeks, Architect



Geo. Washington High, San Francisco
J. R. Miller & T. L. Pflueger

THE WILLIAMS PIVOT SASH CO.

Reversible, Pivoted and Casement Window Equipment
CLEVELAND, OHIO

BRANCH OFFICES

ALBANY, N. Y., Cassius J. Logan, 271 Washington Avenue
BINGHAMTON, N. Y., Babcock, Hinds & Underwood
BOSTON, MASS., C. N. Eaton, 37 Foxcroft Road, Winchester, Mass.
BUFFALO, N. Y., Paul M. Howlett, 243 Capen Boulevard
CHICAGO, ILL., M. R. Duffy, Tribune Tower
CINCINNATI, OHIO, Richard F. Strong, 130 Kinsey Avenue
DETROIT, MICH., The Rayl Co., 1233 Griswold Street and
STATE OF MICHIGAN, Mark C. Stebbins, 8546 Sorrento Avenue

KANSAS CITY, MO., Paul R. McCollem, 1016 Baltimore Avenue
MILWAUKEE, WIS., Philip Gross Hardware Co., 174 W. Wisconsin Avenue
NEW YORK, N. Y., Walter T. Voegel, 111 Murray Street
PHILADELPHIA, PA., J. H. Windell, 1505 Race Street
ROCHESTER, N. Y., Henry Lester Hardware Co., Inc.
ST. LOUIS, MO., P. C. Baerveldt, 1458 Graham Avenue
SYRACUSE, N. Y., Alexander Grant's Sons, 134 E. Genesee Street

CANADA, Aikenhead Hardware Limited, 17-21 Temperance Street, TORONTO

WILLIAMS REVERSIBLE WINDOW EQUIPMENT—DOUBLE HUNG AND PLANK FRAME TYPES

Williams Reversible Windows are windows which can be turned around so that the outside of the sash can be cleaned from the inside of the building. They can also be tilted for overhead ventilation and can be turned at right angles to the window frame to give 100% opening.

Adaptability

Williams Double Hung Reversible Window Equipment is adaptable for use in office buildings, hospitals, hotels, schools—in fact in any place where good double hung wood windows are used.

The plank frame equipment (not sliding) is especially adaptable for schools. It eliminates weights, cords and pulleys as well as provides more weathertight windows than the ordinary double hung window which is not weatherstripped. This type provides greater light area and is more economical in construction.

Advantages

Cleaning—Outside of both sash may be cleaned from inside the room with the window practically closed. With the double hung type, all cleaning is done from the floor level. Much less time is required and cheaper help can be obtained than on outside cleaning. This reduces the window cleaning cost enough to pay for the entire equipment in a few years and is an economic factor throughout the life of the building.

In Hospitals—Williams Reversible Window Equipment is particularly adapted for use in hospitals where draftless ventilation is of the utmost importance, and where patients must not be annoyed by cleaners climbing in and out of windows.

No Air Leakage

Tests for air leakage between sash and reversible strip prove conclusively that passage of air at this point is negligible. These tests were thorough and comprehensive—a copy will gladly be sent on request.

Weatherstrips

On all work where our double hung equipment is to be used we

get in touch with the successful weatherstrip contractor to arrange with him for the proper grooving of the back of our reversible strips to accommodate his particular type of weatherstripping. We cut this groove exactly to his detail at our factory.

Screens—For double hung windows we recommend full length top hinged or roll screens. The leading screen manufacturers accommodate their screens to our equipment so that the windows are cleaned without removing the screens.

Half length screens also can be used.

Eliminates Rattling—To eliminate the objectionable rattling of ordinary windows, the Williams equipment includes a roller spring feature which maintains constant contact with both sides of the window. This not only prevents the sash from rattling but also serves to make the sash slide up and down with greater ease.

Installation and Responsibility

A staff of expert mechanics is maintained to install Williams equipment. This service also includes the fitting and hanging of sash.

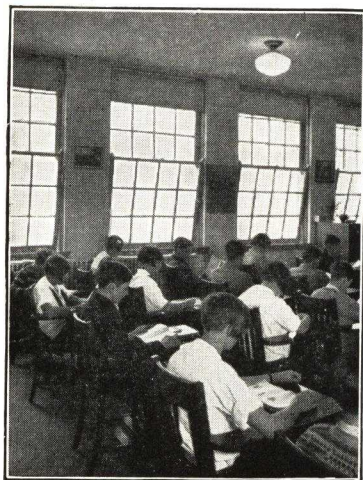
Because the home office controls the installation, we can and do assume responsibility for the proper operation of Williams equipment. This policy has been a strong factor in establishing this product for more than 30 years.

Acceptance

Many of the most prominent architects throughout the country have repeatedly used this equipment in several thousand buildings. Owners likewise have indorsed its satisfactory service and reduced maintenance cost by continued and extended use.



Hospital Window Being Cleaned from the Inside



Draftless Ventilation

Construction Details Williams Reversible Window Equipment

No special frame or sash construction is required for Williams Reversible Window Equipment, the sash merely being made $1\frac{3}{4}$ in. narrower than the inside width of the frame. In the plank frame type, a plank frame is substituted for a box frame.

The double hung equipment retains all the features of a sliding window with the added advantage of permitting either sash to be completely reversed or tilted to any position. The plank frame equipment does not have the sliding feature.

The Williams equipment consists of:
Williams Corrugated Side Strip—A strip made of well seasoned hard maple, $\frac{7}{8}$ in. thick, of width equal to the thickness of the sash, and corrugated on the sash side. The sash is corrugated (by our mechanics) to meet the corrugations on the strip. The strip is attached to the sash by means of the:

Williams Truncated Cone Pivot—A reliable and effective pivot by which the weight of the sash is automatically used to draw the reversible strip and sash tightly together. The corrugations in the strip and sash are thereby firmly meshed and make a dependable weather-tight joint. This pivot also holds the sash in position when tilted.

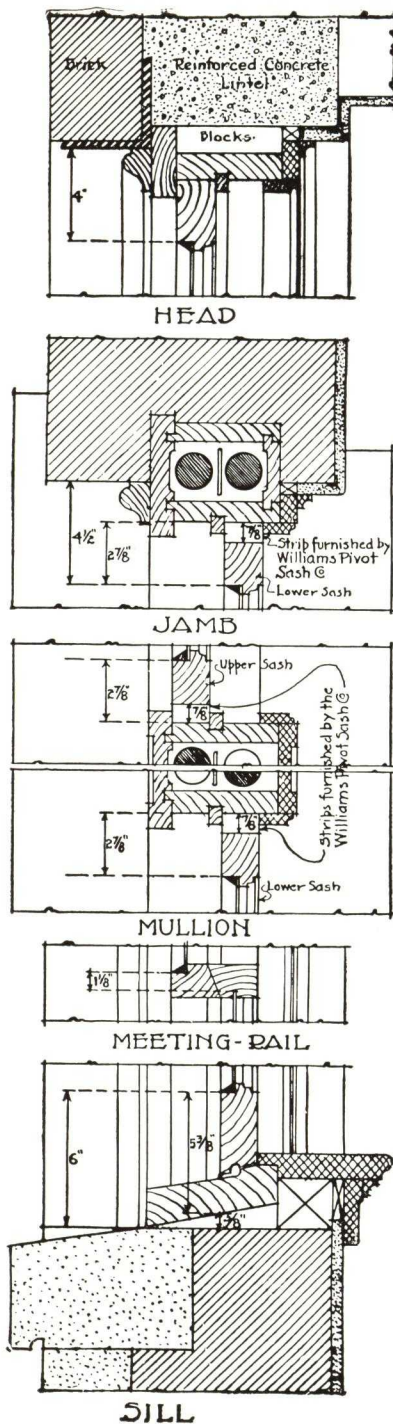
Spring Rollers—In the back of the reversible strip is embedded a series of roller and spring devices. Acting against the jamb when the window is closed, these help keep the strip in snug contact with the sash, preventing the window from rattling and allowing the sash to slide freely.

Finishing Hardware—Standard locks, handles, sockets, and poles may be used with the double hung equipment. We do, however, recommend the use of our finishing hardware especially designed for the plank frame equipment.

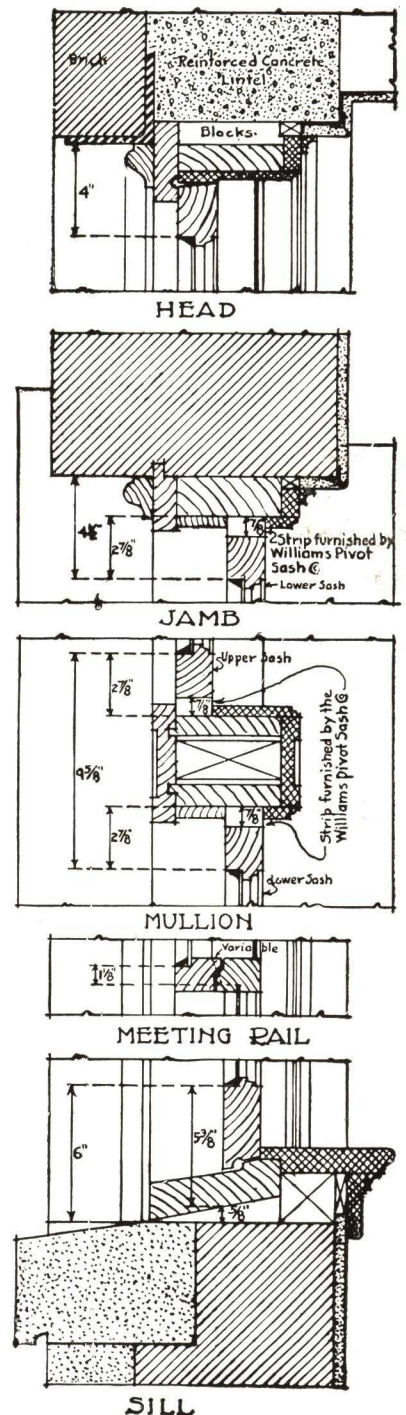
Specifications

Double Hung—All double hung wood sash to be equipped with reversible fixtures as manufactured and installed by THE WILLIAMS PIVOT SASH Co., Cleveland, Ohio. Said Company to fit and install all sash on which their fixtures are to be used.

Plank Frame—All window sash to be of the plank frame type and equipped with reversible fixtures as manufactured by THE WILLIAMS PIVOT SASH Co., Cleveland, Ohio. The contractor shall furnish all frames and sash. THE WILLIAMS PIVOT SASH Co. shall apply their strips to the sash, and they shall fit and place these sash in their respective openings. The hardware (locks, lifts, sockets, and poles) for all windows equipped with Williams Fixtures shall be furnished and installed by them, and shall conform with the other hardware in metal and style of finish.



Double Hung
Scale Details sent on request



Plank Frame
Scale Details sent on request

Installations Typical of Several Thousand Williams Equipped Buildings**Double Hung—Banks, Office Buildings, Corporations**

First National Bank, Detroit, Mich.
Central Depositors Bank Bldg., Akron, Ohio
First National Bank, Youngstown, Ohio
Geo. D. Harter Bank, Canton, Ohio
Ford Motor Co., Detroit, Mich.
Detroit Edison Co., Detroit, Mich.
The Hoover Co., North Canton, Ohio
Canadian Westinghouse Bldg., Hamilton, Ont.
Penton Publishing Co., Cleveland, Ohio
McKinney Steel Co., Cleveland, Ohio
Ohio Edison Bldg., Akron, Ohio
Fisher Body Plant, Cleveland, Ohio
Republic Iron & Steel Co., Youngstown, Ohio
Carnegie Steel Co., Youngstown, Ohio
B. F. Goodrich Co., Akron, Ohio
Monongahela R. R. Station, Brownsville, Pa.
Cleveland Hotel, Cleveland, Ohio
Statler Hotel, St. Louis, Mo.
Statler Hotel Addition, Detroit, Mich.

Double Hung—Hospitals

University Hospital Group, Cleveland, Ohio
St. Luke's Hospital, Cleveland, Ohio
Huron Road Hospital, Cleveland, Ohio
St. Anne's Hospital, Chicago, Ill.
Children's Memorial Hospital, Nurses' Home, Chicago, Ill.
Lying-In Hospital, Philadelphia, Pa.
Woman's Hospital, Philadelphia, Pa.
Jeanes Hospital, Philadelphia, Pa.
General Hospital, York, Pa.
St. Francis Nurses' Home, Pittsburgh, Pa.
Grace Hospital, Detroit, Mich.
City Hospital Bldgs., St. Louis, Mo.
St. Francis Hospital, LaCrosse, Wis.
St. Joseph's Hospital, Milwaukee, Wis.
Provident Hospital, Beaver Falls, Pa.
Akron City Hospital, Akron, Ohio
Children's Hospital, Akron, Ohio
Columbus Hospital, Great Falls, Mont.
Evangelical Deaconess Hospital, Brooklyn, N. Y.

Plank Frame—Schools

McKinley High School, Canton, Ohio
Senior High School, York, Pa.
Girls Catholic High School, Philadelphia, Pa.
Tippencanoe School, Milwaukee, Wis.
Mt. Washington School, Cincinnati, Ohio
High School, Dumont, N. J.
Liberty High School, Bethlehem, Pa.
Public Grade and High Schools, New York, N. Y.

Double Hung—Schools and Institutions

Laurel School, Shaker Heights, Ohio
Monticello School, Cleveland Heights, Ohio
Maine Twp. High School, Des Plaines, Ill.
Sacred Heart Seminary, Detroit, Mich.
St. Mary's Academy, Monroe, Mich.
Holy Name Rectory, Chicago, Ill.
Bishop Loughlin Memorial High School, Brooklyn, N. Y.

GRANT PULLEY AND HARDWARE COMPANY

Sash Pulleys and Casement Window Hardware

TELEPHONE
CONNECTION

33-36 Fifty-seventh Street
WOODSIDE, LONG ISLAND, N. Y.

CALIFORNIA REPRESENTATIVE: W. H. Steele Co., 443 South San Pedro Street, LOS ANGELES, CAL.

Agents in all the principal cities of the United States and Canada, and our Name will be found listed in the Telephone Directories

PRODUCTS

Grant Overhead Sash Pulleys.
Grant Show Case Pulleys.
Grant Ball Bearing Door Sheaves.
Lee Cast Iron Sash Pulleys.
Gem Cast Iron Sash Pulleys.
Star Cast Iron Sash Pulleys.
Ace Cast Iron Sash Pulleys (steel wheels).
Grant All Steel Sash Pulleys.
Grant Pulleys for Interior Sash and Grilles.
Grant Friction Sash Centers.
Queen Anti-friction Casement Hardware.
Queen Friction Casement Adjusters.

Grant Sliding Casement Window Hardware.
Grant Anti-friction Vertical Pivot Lifts.
Morewood Window Cleaning Devices.
Grant Revolving Window Strips and Fixtures.
Turner Anti-friction Drawer Slides.
Gem Anti-friction Drawer Slides.
Grant Improved Ball Bearing Drawer Slides.
Grant Under Carriage Ball Bearing Drawer Slides.
Queen Ball Bearing Drawer Slides.
Grant Ball Bearing Bench Slides.
Grant Heavy Duty Ball Bearing Drawer Slides.
Grant Ball Bearing Garment Carriers.

For Door Hangers, and Bar Locks, see page of Grant Elevator Equipment Corp., as listed in File Index

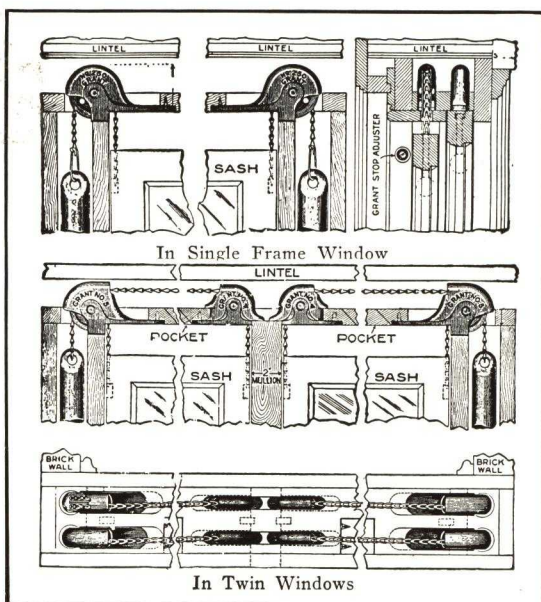
Selling Agents for

"Gem" Ball Bearing Door Hangers.

Grant Overhead Pulleys

On account of additional pocket room gained by the use of Grant pulleys, iron instead of lead weights can be used for the heaviest plate glass windows, thus materially reducing cost. Frames are cut for Grant pulleys by a regular pulley machine.

Grant overhead pulleys are also made for triple, quadruple and quintuple windows.



Grant Anti-friction Vertical Pivot Lifts

The Grant anti-friction pivot lift, when applied to sash pivoted top and bottom, can be quickly and easily opened for ventilation.

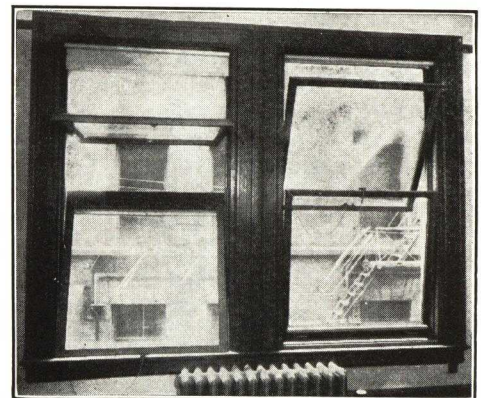
Anti-friction Drawer Slides

We offer a variety of anti-friction easily-installed drawer slides for light, medium and heavy duty. Types are available for mounting on the sides of the drawer or between the bottom of the drawer and case. Further information on request.

Tabor Reversible Window Hardware

Tabor Reversible Hardware is made for double hung windows, weightless windows, transom bar windows and pivoted sash. Style "A" equipment in illustration makes it possible to pivot an ordinary double hung window, thus giving 100% ventilation when needed; also eliminating the danger and use of window cleaning equipment. All cleaning is done from the inside of the building.

Send for catalog, full size details, specification data and prices.



Win~Dor

T H E C A S E M E N T H A R D W A R E C O M P A N Y



THE CASEMENT HARDWARE COMPANY

ESTABLISHED 1906

PRODUCTS: A complete correlated line of tested devices for installing, operating, and controlling wood and metal casement windows.

• **THE COMPANY:** Originators and pioneer manufacturers of American casement hardware, the Company has been closely identified with the growing popularity of casement windows during the past thirty-three years. During this period **Win-Dor developments have accounted for the major improvements in the art of casement operation and control.**

• **EXPERIENCE:** Over 200 thousand buildings equipped with Win-Dor devices serve as the greatest experience base in this field. The benefits of this wide and diversified experience contribute greatly to the superior performance and greater life characteristic of Win-Dor products.

• **SAFETY FACTOR CONSTRUCTION:** Design and standards being based on ample experience rather than theoretical calculation accounts for the ability of Win-Dor devices to operate satisfactorily under severe conditions and stand up against abuse. (To withstand strains frequently encountered in actual use, casement operators require 100% more strength than indicated necessary for "normal" function of such devices.) (See chart on opposite page.)

• **MANUFACTURING FACILITIES:** A modern plant located in the convenient west side manufacturing district of Chicago gives facilities for efficient manufacture and prompt service for all territories.

• **COST:** Specialization and volume permit manufacturing efficiencies which largely absorb the cost of more expensive materials. Important further savings in final costs to users are made by "fool-proof" simplification of installation features (reversibility, attaching tolerances, etc.).

• **DISTRIBUTION: Products for Wood Sash:** Distributed nationally through builders' hardware dealers in all major market centers. Most of these maintain stocks and all receive direct service from the factory on contract requirements. In smaller towns, through retail hardware and lumber dealers served by strategically located jobbers stocks.

Devices for Steel Sash: Win-Dor Series 28 Operators (page 9) are applicable to most American light section casements and to all intermediate types. Win-Dor Series 32 Operators (Page 10) are for all oversize and heavy casements. Several manufacturers will supply Win-Dor on specification at a very slight extra over their own production standard equipment.

NOTE: The Company does not duplicate Win-Dor devices for sale under private marks of sash manufacturers or distributors.

• **IDENTIFICATION:** For protection of specifiers and users, the mark Win-Dor is stamped on all products and labeled on all containers.

Win-Dor
TRADE MARK

FACTORY AND GENERAL OFFICES

406 N. WOOD ST., CHICAGO, ILL., U.S.A.

BRANCH

101 Park Avenue, New York, N. Y.

FAR WESTERN REPRESENTATIVES

W. H. Steele Co.

443 S. San Pedro St.
Los Angeles, Calif.

C. I. Yates

7 Front St.
San Francisco, Calif.

K. C. Morley

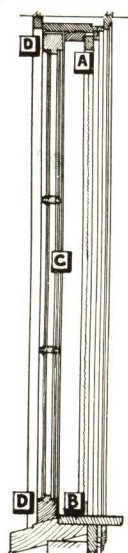
2107 Lanihuli Drive
Honolulu, Hawaii

C. A. King

2135 Second Ave.
Seattle, Wash.

MEMBER: PRODUCERS' COUNCIL

EXHIBITS: ARCH. SAMPLE CORP., NEW YORK, and at the factory, 406 N. WOOD STREET, CHICAGO, ILL.

**SPECIFY WIN-DOR**

at each of these points:

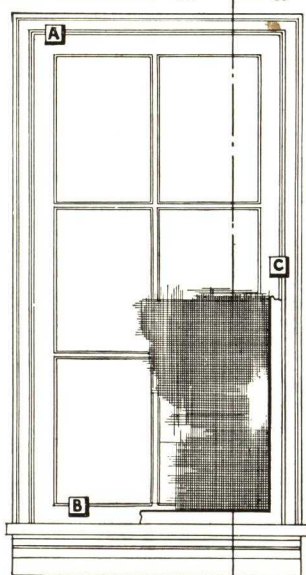
A Here is where casements do not always close. Use Win-Dor automatic top closers for bringing them in snug and to overcome warping.

B Win-Dor offers six different operators in this catalog. They provide positive and convenient control at the stool.

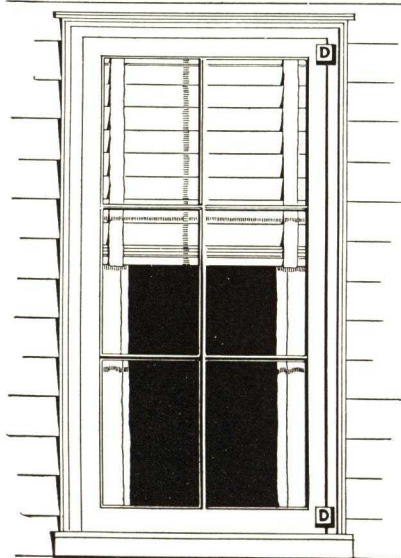
C Where manual locking at the center of the sash is desired, use Win-Dor locking handle. It does not interfere with screens.

D The weakest spot in casement sash; the corners. Reinforce them with Win-Dor close or extension corner-bracing hinges.

SECTION THROUGH "aa" — a










INSIDE ELEVATION — a



OUTSIDE ELEVATION

GUIDE FOR OPERATOR SIZES AND COMBINATIONS OF WIN-DOR HARDWARE FOR WOOD CASEMENTS

SIZE OF SASH	OPERATOR		CORRELATED Hinges and Locking Devices
	Close Hinges	Extension Hinges	
 6 SQUARE FEET	SERIES 29	SERIES 29	With No. 762 or No. 752 hinges use No. 45 top closer or No. 800 locking handle.
 6 SQUARE FEET	SERIES 35	SERIES 35	With No. 762 or No. 752 hinges, No. 45 top closer.
Sash up to 8 Lights or Equal to 6 Square Ft. in Area	SERIES 30	SERIES 30	With No. 762 or No. 752 hinges, No. 45 top closer or No. 800 locking handle.
 6 SQUARE FEET	SERIES 29		With No. 762 hinges, No. 45 top closer or No. 800 Locking handle.
 6 SQUARE FEET	SERIES 31	SERIES 31	With No. 762 or No. 752 hinges, No. 45 top closer or No. 800 locking handle.
 6 SQUARE FEET	SERIES 30		With No. 762 close hinges, No. 45 top closer or No. 800 locking handle.
Sash up to 10 Lights or Equal to 8 Square Feet in Area	SERIES 26	SERIES 26	With No. 762 or No. 752 hinges, No. 45 top closer or No. 800 locking handle.
 10 SQUARE FEET	SERIES 26	SERIES 26	With No. 762 or No. 752 hinges, No. 45 top closer or No. 800 locking handle.
 12 SQUARE FEET	SERIES 33		With No. 762 close hinges, No. 45 top closer and 800 locking handle.

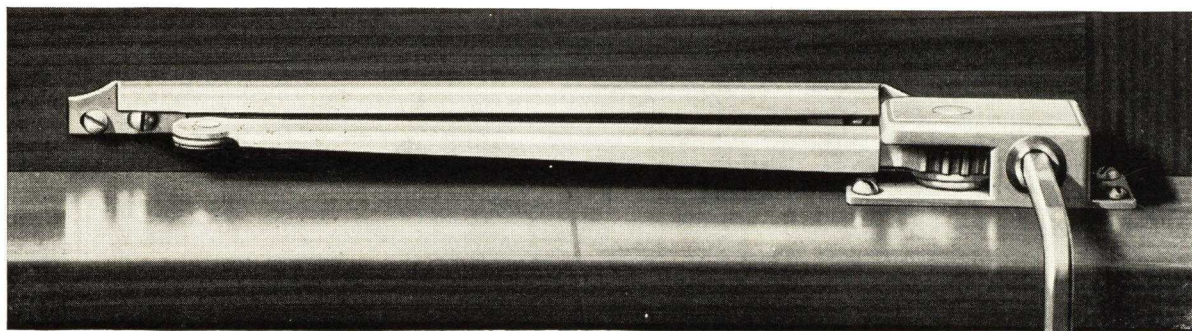
★ In the table above are listed the various sizes of sash and the operators best suited for them with suggested hinge and locking device combinations. Any of the operators indicated will also work satisfactorily on smaller sizes of sash.

Win-Dor operators are strong enough to provide a large safety factor even in cases of unusual strain but where sash are double glazed, approximately 50% is added to the weight of the window increasing the operating load about 25%. We recommend using the next heavier operator where double glazed sash are specified.

Win-Dor development follows through to the little details which mean saving in the cost of erection and the assurance of uniformly good results. It is for this reason we have prepared the above information.

It is a guide for the use of architects in detailing casement sash.

SERIES 26 OPERATOR



THIS operator is the accepted standard for casement window operation. Over a quarter of a million are in use today. Such a performance record proves the quality and merit of this Win-Dor reversible operator. It is worm and gear type and works through-the-screen. See below for complete description of the exclusive construction features of this operator and opposite, on page 4, for details and recommendations. **The operators on this page are reversible for right or left hand sash.**

A Here is one of two critical parts in an operator. It is where the greatest strain occurs and, therefore, where the strongest construction should be. We anticipate far greater stress than will ever be applied, by using a large $\frac{3}{4}$ inch naval bronze self-cleaning and anti-freezing worm strongly held in the housing.

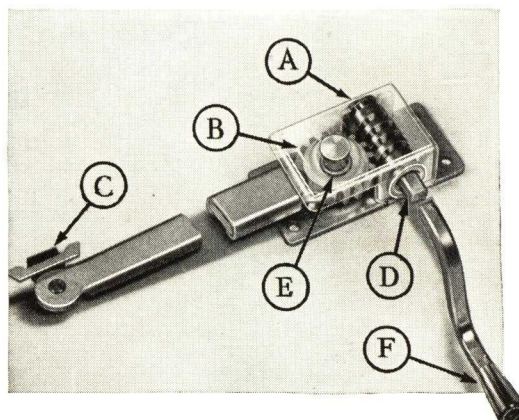
B Another critical part. As the full pressure of the sash is applied to the arm, the gear must be capable of abuse, so Win-Dor uses a machine cut, heat treated gear of $\frac{1}{4}$ inch thickness and $1\frac{3}{8}$ inch diameter interlocked (without rivets) to the arm.

C Neither rust nor other atmospheric conditions will attack and destroy this tension spring (which slides in the operator channel) because it is made of bronze.

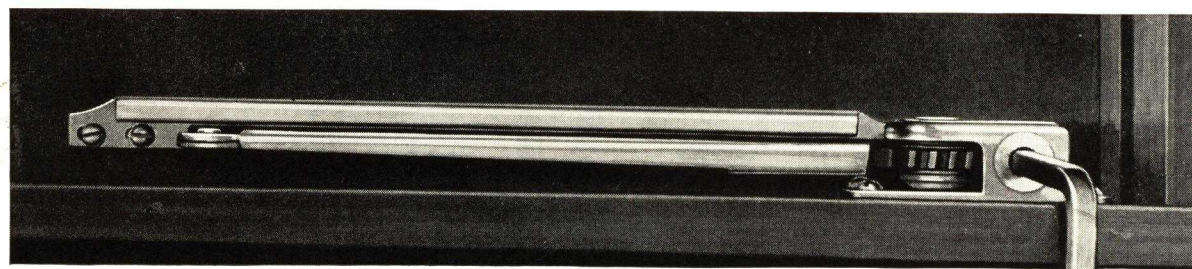
D Handle stock is of $\frac{5}{16}$ inch rounded special section steel or brass, fitting snugly in the worm seat with a bearing length of $\frac{3}{4}$ inch.

E At this point, we use bronze again for a bushing through which the rivet is placed that holds the operator arm solidly in the housing.

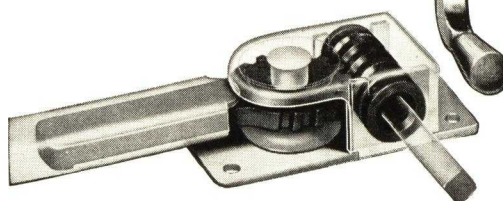
F Handles for Series 26 and Series 30 operators are all equipped with accurately machined brass roller knobs.



SERIES 30 OPERATOR

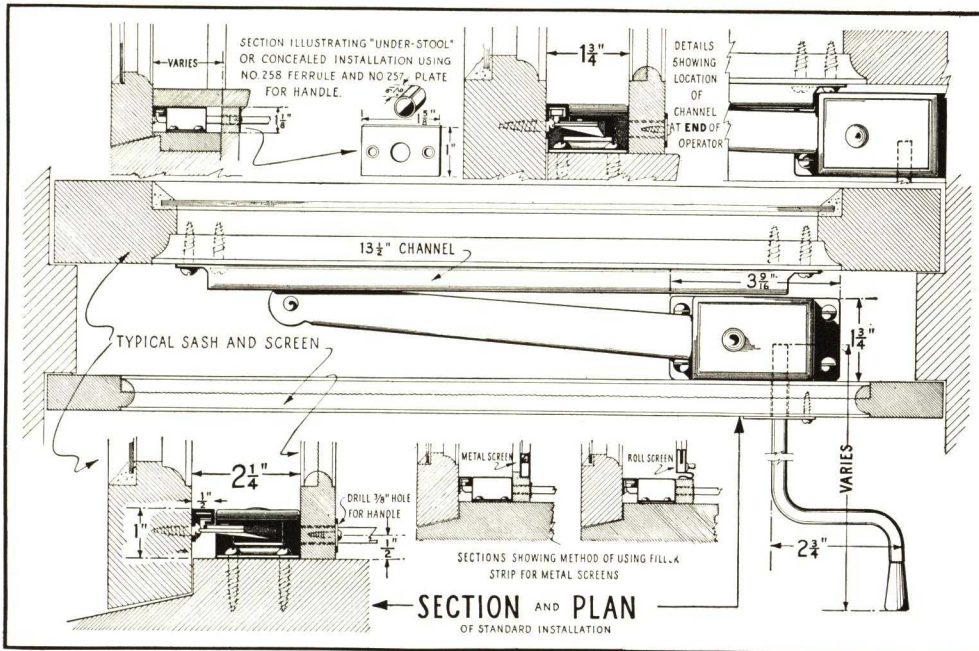


SIMILAR in construction to Series 26 Operator illustrated above, Series 30 Operator is designed for narrow frames, where sill space is at a premium. It is also reversible and made with the same high standard of materials and workmanship as Series 26. In "x-ray" drawing note simple construction and interlocking arm and gear segment with typical Win-Dor machine cut gear $\frac{1}{4}$ inch thick and $1\frac{3}{8}$ inches in diameter and $\frac{3}{4}$ inch naval bronze worm.



THE CASEMENT HARDWARE CO.

SERIES 26 RECOMMENDATIONS



Above details show suggested installations of Series 26 Operator which fits all out-swung windows 15 inches wide or wider. (See page 2). Series 26 Operator is tolerant to the hardest usage which devices of this kind receive and it may be specified with complete assurance of satisfactory performance and long life.

CATALOG DATA

No. 26, steel arm, channel, and housing; bronze worm and bushing; **reversible**; with No. 251 steel handle or No. 251B solid brass handle, 8 inches standard length.

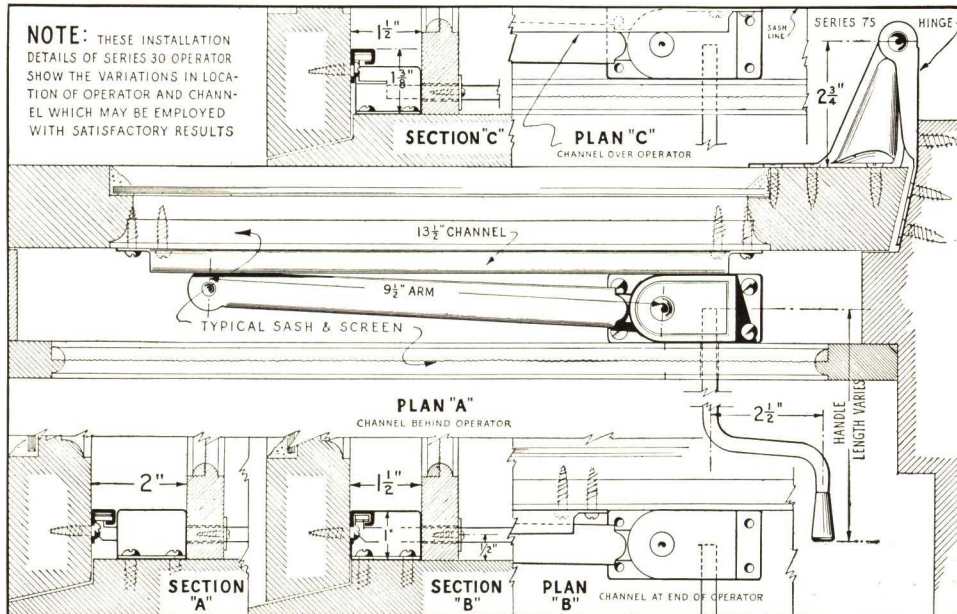
No. 26B, all brass except steel gear segment.

No. 26BM, all brass with monel metal gear segment.

No. 26BX, all brass with silicon bronze gear segment; brass handles as above.

NOTE: The last two catalog designations are recommended for seacoast installations and places where atmospheric conditions have a corrosive influence on ferrous metal.

SERIES 30 RECOMMENDATIONS



The details shown above for Series 30 Operator, illustrate the narrow clearances possible with this operator. (See chart on page 2 for other recommendations). Installed with close hinges or standard butts, the minimum dimension between sash and screen is 1 1/2 inches. With extension hinges it is 2 inches. Section "C" (above) shows channel over operator for 1 1/2-inch screen clearance with extension hinges. This is No. 300 Operator installation.

CATALOG DATA

No. 30, steel arm, channel and housing; bronze worm and bushing; **reversible**; standard handle 8 inches for sills up to 9 inches wide. No. 251, steel, No. 251B, solid brass.

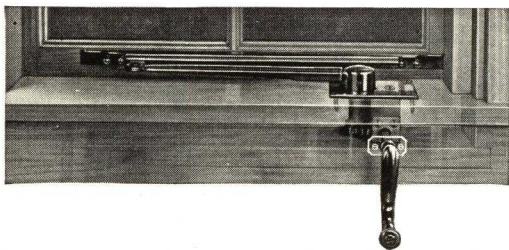
No. 30B, all brass except steel gear segment.

No. 30BM, all brass with monel metal gear segment.

No. 30BX, all brass with silicon bronze gear segment; brass handles as above.

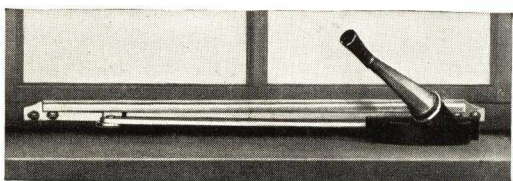
No. 300, same as number 30 except special arm connection to permit placing channel over operator.

SERIES 35 OPERATOR



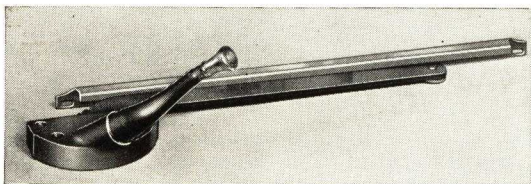
HALF SURFACE OPERATOR: One of the finest operators of this type available. As illustrated, mechanism is concealed below window stool providing for convenient screening and blinding. The operator itself is readily accessible. All exposed parts are of bronze.

SERIES 29 OPERATOR



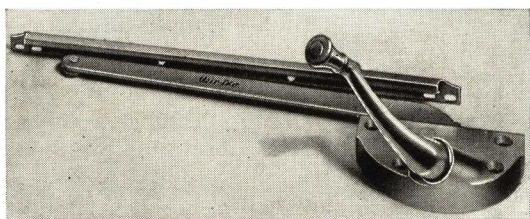
ANGLE DRIVE OPERATOR: This operator is constructed with housing and handle of die cast zinc alloy (A.S.T.M. XXIII Specifications) having steel arm and channel or with housing and handle cast bronze with brass channel and silicon bronze, monel metal, or steel arm. The handle has a $\frac{1}{8}$ inch rounded special section shaft fitting snugly in the internal worm seat. This operator is not reversible.

SERIES 31 OPERATOR



ANGLE DRIVE OPERATOR: Larger than Series 29 Operator and made only with solid cast bronze housing and handle, this operator is for sash between 8 and 10 square feet in area. (See table on page 2.) It is the proper choice for intermediate casements.

SERIES 33 OPERATOR



ANGLE DRIVE OPERATOR: This large all bronze operator is for over-size windows. It tests over 300 lbs. lateral arm pressure.

CONSTRUCTION FEATURES

- This de luxe operator is designed for use in monumental buildings, for government and institutional work and for the finest residences where quality is the first consideration in specifying hardware, and unobtrusive sill installation is desirable. It is also especially recommended for seacoast installation where atmospheric conditions would be disastrous to hardware of this type made from other than non-ferrous metals.

- This operator is especially suited for use on wide sills as long projecting handles are eliminated and it provides outswung casement control in a compact unit of neat appearance, easy installation and wide application. (See Page 2.) Wood frame screens are notched for case, and metal or rolling screens are used with wood filler strip notched as shown in detail on opposite page.

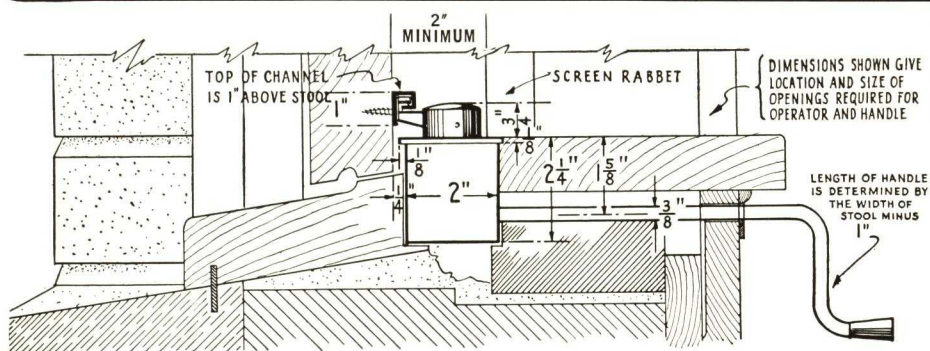
- The popularity of the angle drive type of operator has been responsible for this new Series 31 Win-Dor Operator to meet the requirements of satisfactory operation on larger than average sash. Construction is similar to Series 29 Operator with naval bronze worm, strong interior handle connections and the patented Win-Dor sash channel.

- For all buildings residential or public where large wood casements are specified, the architect will find in this operator the extra strength needed for smooth opening and closing operation. The 12-inch arm is of hardened carbon steel with machined gear working on full $\frac{3}{4}$ -inch hardened worm housed at 45 degrees. Arm is connected to housing with $\frac{3}{8}$ -inch brass pivot extending through both top and bottom of case which has four screw holes for strong attachment to sill.

THE CASEMENT HARDWARE CO.

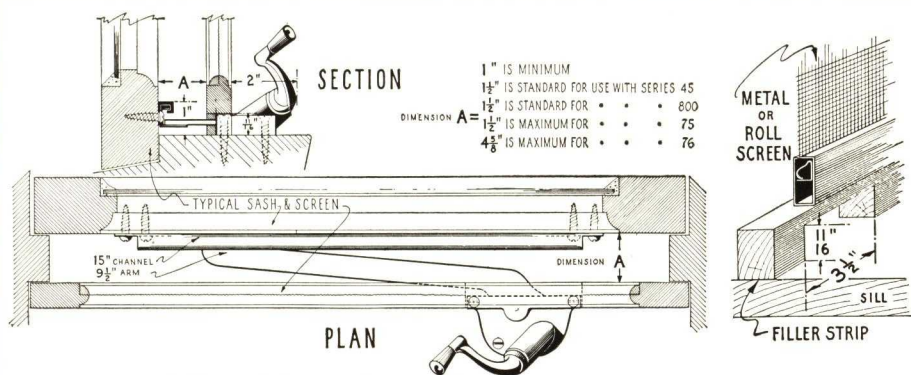
RECOMMENDATIONS

CATALOG DATA



No. 35B, all brass and bronze operator with silicon bronze gear segment; **reversible**.

Standard handles, **No. 251B**, all brass, as in drawing or **No. 252B**, ornamental cast bronze as in operator illustration on page 5.



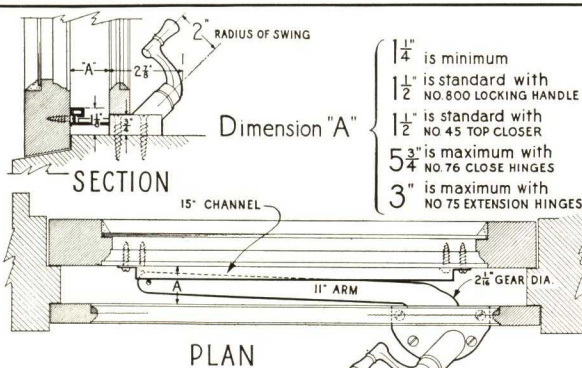
No. 29Z, die cast zinc housing and handle. Bronze worm. **Not reversible**, specify right and left from inside. Fixed handle.

No. 29B, all bronze housing and handle. Bronze worm, steel arm and gear.

No. 29BM. Same as 29B except monel metal arm and gear.

No. 29BX. Same as 29B except silicon bronze arm and gear.

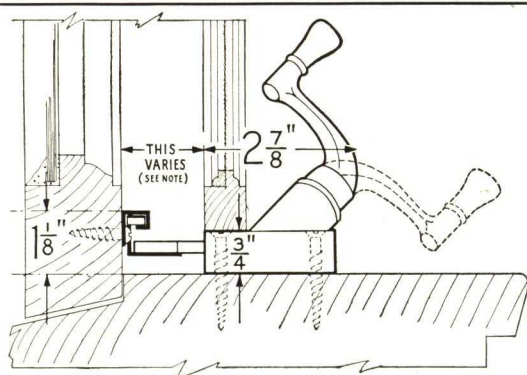
As these details show, Series 31 Operator is fitted with 11-inch arm and 15-inch channel. Screens are used as is shown in above details of No. 29 Operator. Operator housing is of case bronze with four screw holes for strong sill attachment.



No. 31B, cast bronze housing, cast bronze handle with brass roller knob, bronze worm and steel arm and gear.

No. 31BX, cast bronze housing, cast bronze handle with brass roller knob, silicon bronze arm and gear.

Not reversible, specify right and left from inside.



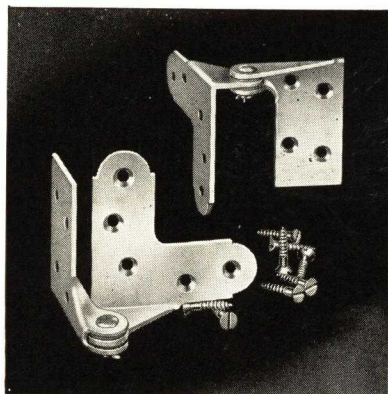
To the left is sectional detail of Series 33 Operator. The distance between sash and screen varies depending upon style of hinges used. Maximum distance is 4 1/2 inches for 1 3/4-inch sash with close hinges or standard butts. If extension hinges are used, maximum is 2 inches with 1 3/4 inch sash and 1 1/2 inches for thicker sash.

No. 33B Operator—All bronze except steel arm and gear. Finished to specification. **Not reversible**, specify right and left from inside.

No. 33BM—Same as 33B except Monel Arm and Gear. Finished to specification.

No. 33BX. Same as 33B except silicon bronze arm and gear.

SERIES 76 HINGE



DESCRIPTION AND CATALOG DATA

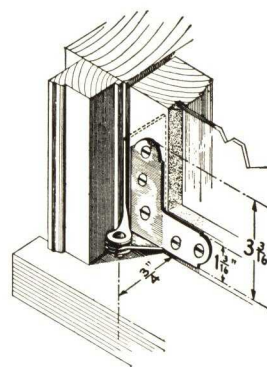
CLOSE HINGE A universal casement hinge featuring corner reinforcement on the sash as illustrated. Projection only $\frac{3}{4}$ inch from sash surface. Frame leaf mortised. Strong rigid construction withstanding 200 pounds downward pressure per pair with 12 inches of attaching surface (see installation details at right and below).

No. 762, steel, (double cadmium plated) corner reinforcing close type with brass washers, bronze bushings and loose pin, one pair to sash.

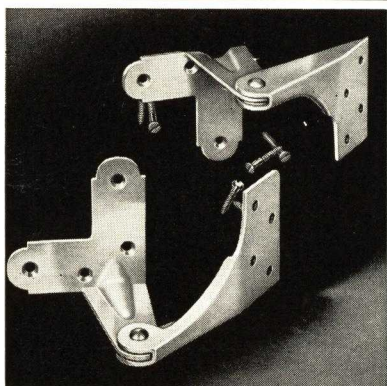
No. 762B—All brass.

No. 763, steel, (double cadmium plated) corner reinforcing close type friction hinge with adjustable friction knuckle.

No. 763B—All brass. Friction type.



SERIES 75 HINGE



EXTENSION HINGE For purposes of cleaning this hinge throws the sash away from the frame sufficiently for 4 inches of cleaning space. Corner reinforcing type, (12 square inches bearing surface on sash per pair). Furnished for straight or beveled frames with loose pin or friction knuckles. Hinge projection $2\frac{3}{4}$ inches beyond frame.

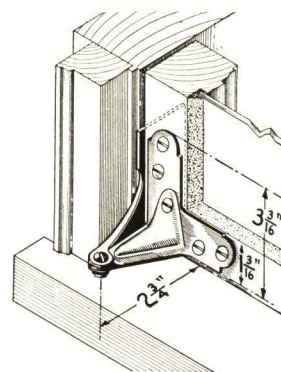
No. 752 extension hinge, steel, double cadmium plated, bronze bushing, brass washers and loose pin.

No. 752B extension hinge, silicon bronze with bronze bushing.

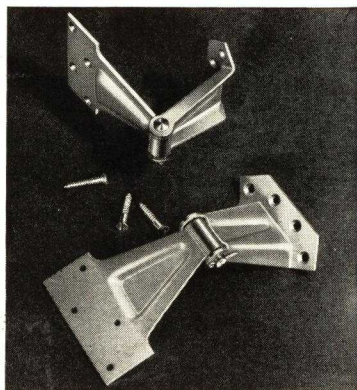
No. 753 extension friction hinge, steel double cadmium plated with adjustable friction knuckle.

No. 753B—Silicon bronze. Friction type.

(See installation details at right and below.)



SERIES 70 HINGE



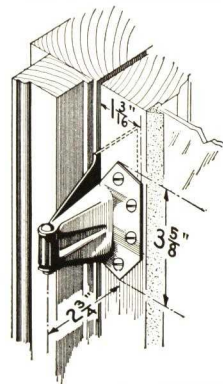
EXTENSION HINGE These hinges are also of the cleaning type. Have the same projection as Series 75 and are half-surface, the frame leaf being mortised and the sash leaf attached to the outside of the window stile. This hinge is especially recommended where extra center hinge is desired on exceptionally high and heavy casements as an auxiliary hinge to Series 75 corner reinforcing hinges. (See installation details at right and below.)

No. 70 steel extension hinges, loose pin, bronze bushing.

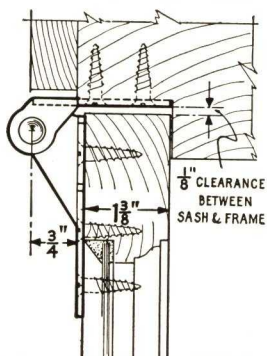
No. 70B—All brass.

No. 701 steel center hinge for sash over 5 feet in height.

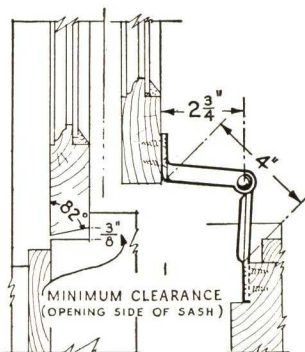
No. 701B—All brass.



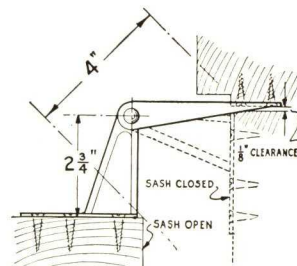
WIN-DOR HINGE INSTALLATION DETAILS



These drawings are installation details of Win-Dor hinges. On the left is a horizontal cross section showing attachment of Series 76 close hinges. Note minimum projection from sash. For sash $1\frac{1}{8}$ -inch thick or thicker.

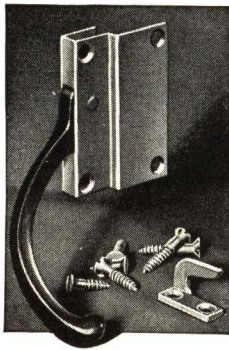


On the left are installation details for Series 70 hinges, showing sash bevel required. On the right is detail for Series 75 hinges. Both of these hinges provide 4 in. of cleaning space as indicated.



THE CASEMENT HARDWARE CO.

SERIES 800 LOCKING HANDLE



This is a simple, well designed manual locking handle for wood casement windows which works around the screen. It is made in two sizes for use with $1\frac{1}{4}$ or $1\frac{1}{2}$ -inch screen stops.

Where manual locking is desired, this handle mortised into stop will close the window for tight weathering.

DESCRIPTION AND CATALOG DATA

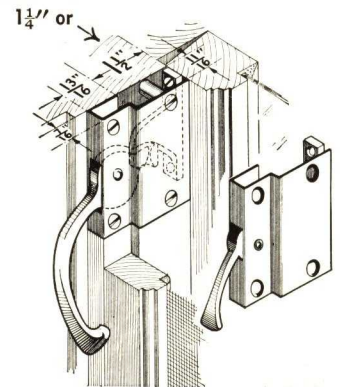
The drawing on the right shows installation method and necessary dimensions also picture of short handle for use with shades or venetian blinds.

No. 800A steel housing and keeper, cadmium finish; handle cast bronze, tumbled brass finish. Specify hand.

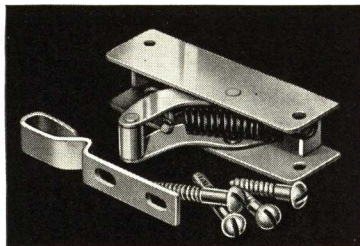
No. 800B all brass, cast bronze handle. Specify hand.

No. 803A same as 800A (short handle).

No. 803B, all brass (short handle).



SERIES 48 TOP CLOSER

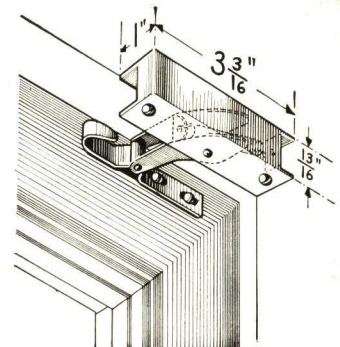


A new intermediate size automatic locking device for light casements and interior cupboard and closet doors. Spring exerts a constant pull of 6 lbs. on door and fits 1 inch space.

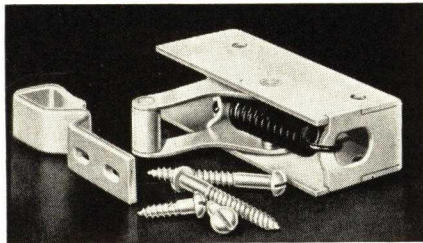
This intermediate size top closer follows the pattern of the well known Series 45 illustrated below and is designed for use on light casements and free-swinging doors to pull them in tight against the stops at the top corner opposite the hinge.

No. 48, steel, cadmium plated case and keeper. 6 lb. steel spring.

No. 48B, all brass with 6 lb. stainless steel spring.



SERIES 45 TOP CLOSER



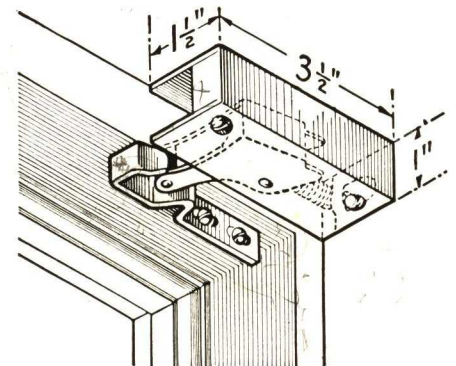
For a number of years this standard Win-Dor automatic top closer has been successfully used on casement sash, storm, screen and closet doors. 8 lb. pull and fits $1\frac{1}{2}$ inch space.

This well known device is installed in the upper corner of the frame or jamb, opposite hinges and may be applied on the surface of the stop or mortised into it. Engages casements or doors, 1 inch away from stop and accomplishes closing with full spring strength of 8 pounds.

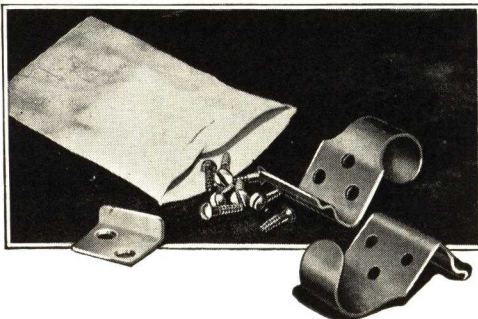
No. 45 Steel, cadmium plated case and keeper.

No. 45S Steel with stainless steel spring.

No. 45B Brass, all brass with stainless steel spring.

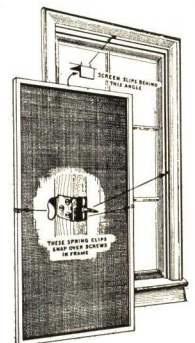


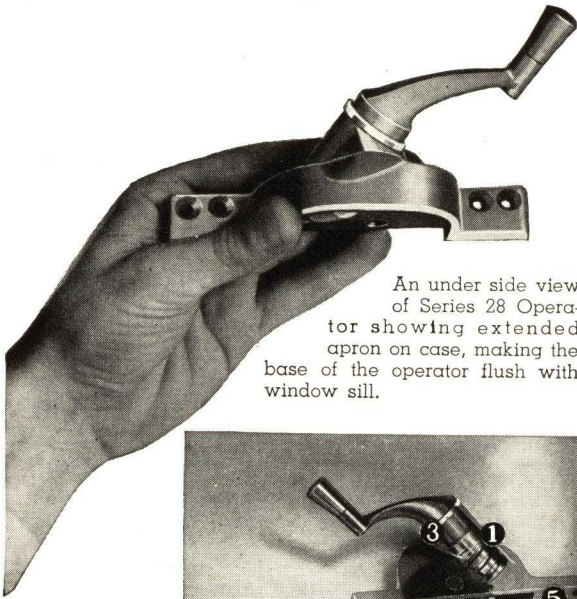
SERIES 81 SCREEN HARDWARE



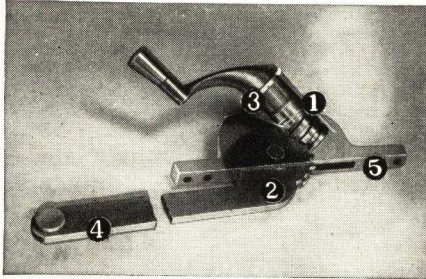
As illustrated on the right, Series 81 screen hardware is a simple arrangement of spring clips and a holding plate used for holding wood frame screens. Frame is mortised $\frac{1}{8}$ inch deep about half way up from the bottom to receive the spring clips; one on each side of the frame. Opposite them in the window frame, are driven round head screws. At the top of the frame the angle plate is fastened. The screen is slipped behind it and snapped over the side screws which hold it firmly in place, with adjustable spring tension.

Series 81B, all brass screen hardware. One set to a screen.

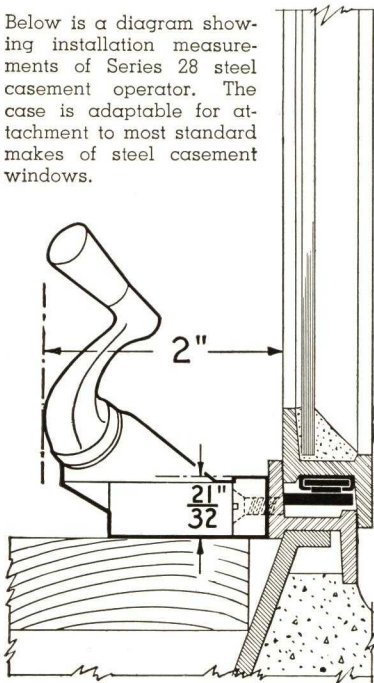




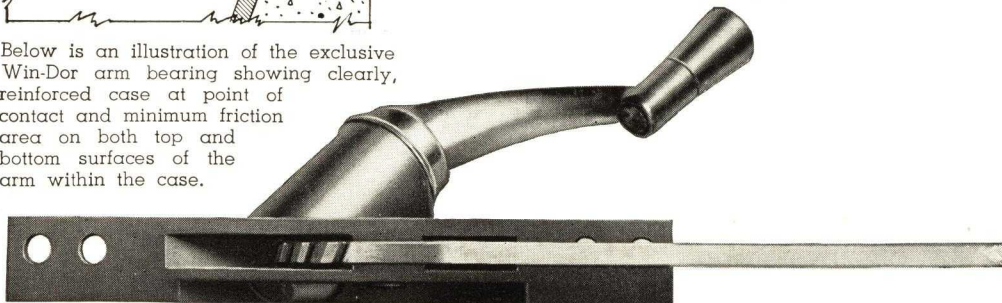
An under side view of Series 28 Operator showing extended apron on case, making the base of the operator flush with window sill.



Below is a diagram showing installation measurements of Series 28 steel casement operator. The case is adaptable for attachment to most standard makes of steel casement windows.



Below is an illustration of the exclusive Win-Dor arm bearing showing clearly, reinforced case at point of contact and minimum friction area on both top and bottom surfaces of the arm within the case.



SERIES 28

FOR LIGHT AND INTERMEDIATE STEEL CASEMENTS

Fine materials, fine workmanship and fine appearance combine to make Win-Dor Series 28 Operator a piece of quality hardware for steel sash. This operator may be obtained from most steel window manufacturers upon specification and is recommended in every instance where quality, low maintenance cost and trouble free operation are a consideration. Here are Win-Dor Series 28 construction features.

- ① Here is shown the big rustless oversized $\frac{3}{4}$ inch diameter naval bronze precision worm gear.
- ② Rigidity reinforced arm pivot. In the Win-Dor operator the arm moves between bearing projections in the housing. At this critical point extra strength is needed.
- ③ Square handle seat. The operator handle has a $\frac{5}{16}$ inch squared steel shaft internal worm connection.
- ④ Extra strong to stand excessive strains. The arm of the Win-Dor operator will withstand a lateral pull equal to a weight of over 150 lbs. at the end of the arm.
- ⑤ Flush base hugs the sill. No projection, no dirt pocket, no notching.

MATERIALS AND FINISHES

Win-Dor Series 28 operators are made in an unusually complete range of materials and finishes. Individual preference in decorative effect may be obtained to secure harmonious and attractive installation whether in standard hardware finishes or combinations in colorful enamels.

No. 28Z operator—Die-cast housing and handle from virgin zinc alloy (A.S.T.M. XXIII) under high moulding pressure according to proven technique. Steel arm and channel heavily cadmium plated. Housing and handle enamel, plated or combination.

No. 28B—Same as No. 28Z except cast bronze housing and handle. Sheet brass channel. Standard finish statuary bronze or finished to specification.

No. 28BM—Same as No. 28B except monel arm and gear. Finished to specification.

No. 28BX—Same as No. 28B except silicon bronze arm and gear.

(Not reversible.)

THE CASEMENT HARDWARE CO.

FOR STEEL CASEMENTS



SERIES 32 FOR OVERSIZE AND HEAVY STEEL CASEMENTS

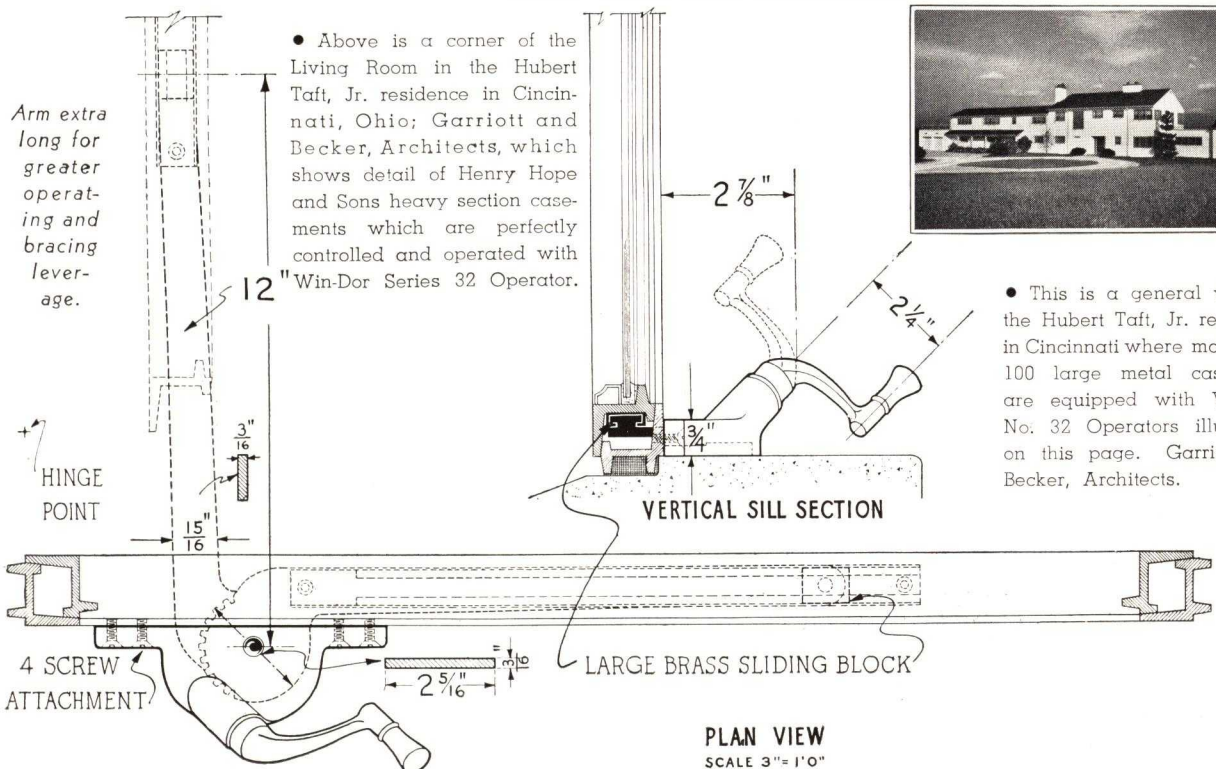
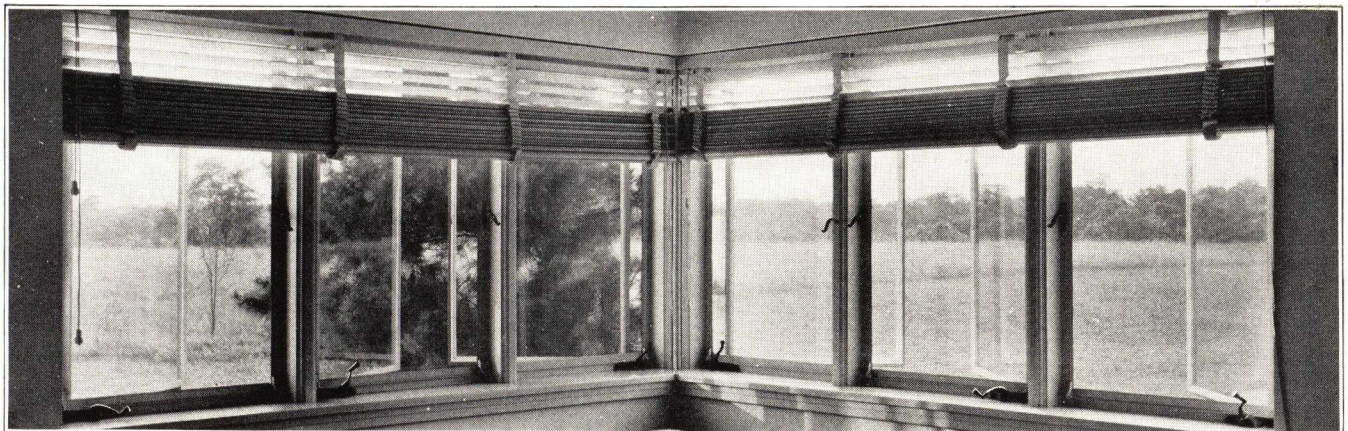
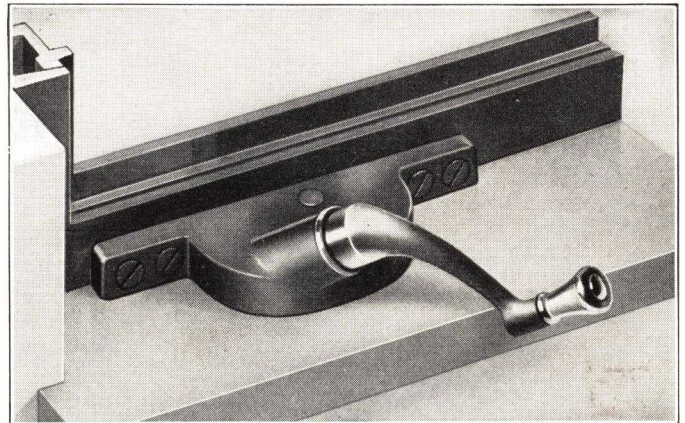
• This strong cast bronze operator (which tests over 300 lbs. lateral pressure) provides excess strength required for large metal casements. See drawings below for complete details and installation data.

No. 32B Cast bronze case and handle. Carbon steel arm and gear, cadmium plated with brass sliding block end piece. Operator finished to specification.

No. 32BM Same as 32B except monel arm and gear. Finished to specification.

No. 32BX Same as 32B except silicon bronze arm and gear. Finished to specification.

(Not reversible.)



• This is a general view of the Hubert Taft, Jr. residence in Cincinnati where more than 100 large metal casements are equipped with Win-Dor No. 32 Operators illustrated on this page. Garriott and Becker, Architects.

THE CASEMENT HARDWARE CO.

Win-Dor

Win~Dor

T H E C A S E M E N T H A R D W A R E C O M P A N Y



JOHN S. GULLBORG MANUFACTURING COMPANY

Casement Window Hardware and Worm Drive Transom Operators

4311 Ravenswood Avenue, CHICAGO, ILL.

Sterling

WORM DRIVE TRANSOM OPERATORS

The Sterling Worm Drive Transom Operators (Patented) incorporate an entirely new principle of control. They are made in two standard models—Model 115 for transoms of ordinary size and weight, and Model 125, heavy duty, for large transoms. Both models are extremely smooth and positive in operation and entirely free from sticking and jamming. The worm drive automatically locks the transom in any position and, when closed, holds it tightly sealed. A unique feature is their positive security from burglars.

MATERIALS—Worms are made of bronze. Rod handle and small rod bracket for Model 125 are die cast zinc. All other parts are made of heavy gauge steel.

FINISHES—Most standard finishes are available. Specify U. S. Standard Nos.

MODEL 125—HEAVY DUTY—This model is reversible and may be used on either top hung, bottom hung or center-pivoted transoms, on either right or left hand side.

Over-all Lengths—4, 5, 6, 7, and 8 ft.

Rod Lengths—39, 51, 63, 75, and 87 in.

MODEL 115—This model is made in four different types, not reversible—bottom and top hung types, each for right and left hand. The bottom hung type may be used on center-pivoted transoms opening in at top. The top hung type may be used on center-pivoted transoms opening in at bottom.

Over-all Lengths—3, 4, 5, 6, and 7 ft.

Crank Lengths—30, 42, 54, 66, and 78 in.

MOUNTING—Main bracket should be mounted halfway between top and bottom of transom. Select operator with a crank or rod length that will reach down from middle of transom to a convenient height.

CASEMENT WINDOW OPERATOR

The Sterling Model 20 Casement Operator is a high quality product, constructed to meet all requirements of strength, and to give long, dependable service.

The worm drive action, with steel gear and bronze worm, provides automatic locking of the casement at any angle, and insures smooth, positive operation. It is reversible, and may be used on either right or left hand outswinging casements. It may be mounted above or concealed below the stool. The extra long slide makes it possible to use the operator with extension hinges.

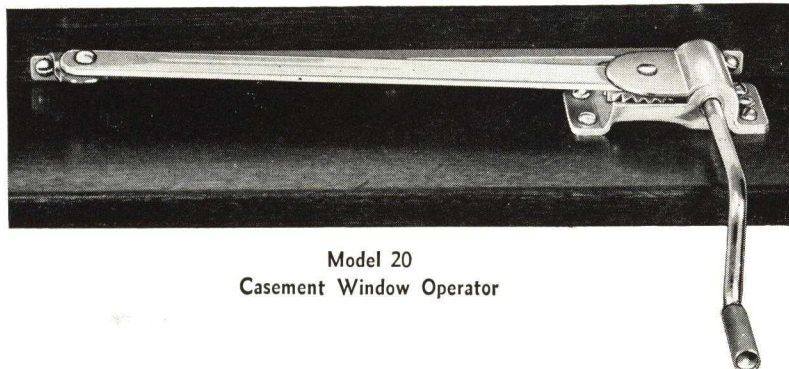
MATERIALS—Worm is made of bronze—all other parts are steel.

FINISHES—Cadmium is standard. Crank is removable, and is dull brass plated.

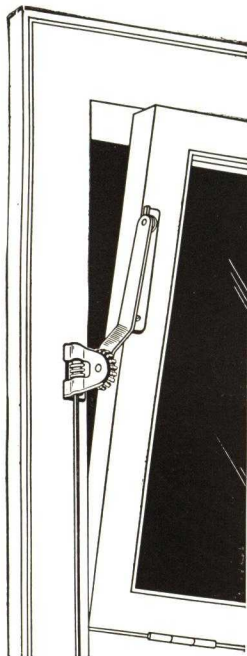
DIMENSIONS—Operator is 1½ in. wide and 11½ in. long. Slide is 11¾ in. long. When extension hinges are used, slide must be mounted on sash so it extends back of operator, and 2 in. is required between sash and screen.

CRANKS—Standard crank is 6 in. from end to bend, for use on stools up to 6½ in. wide. Cranks 5, 7, 8, 10 or 12 in. long furnished when specified. Crank inserts into operator 1 in.

Complete catalog on casement hardware sent on request.

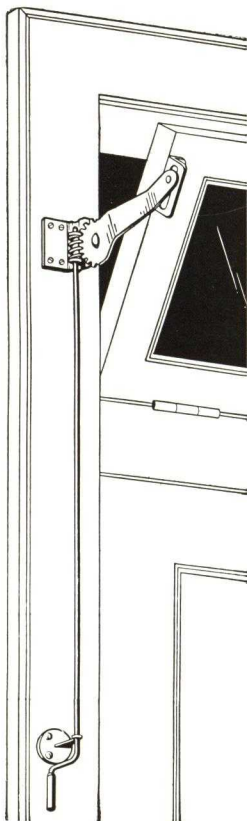


Model 20
Casement Window Operator

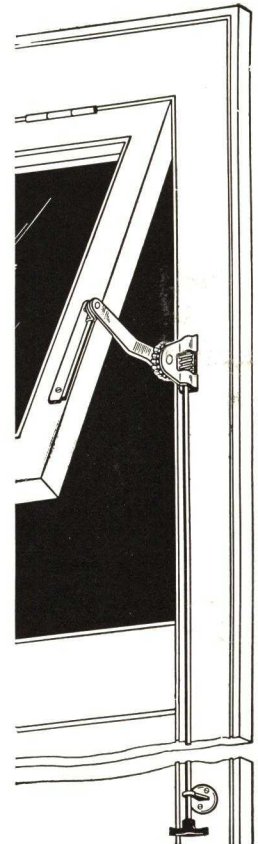


Model 125

Operator mounted on left hand side of bottom hung transom



Model 115
Bottom hung type



Model 125

Operator mounted on right hand side of top hung transom



Model 115
Top hung type

H. S. GETTY & CO., INC.

Manufacturers of Hardware for Casement Windows; Hardware for Metal Doors and Windows; and Hardware Specialties

MAIN OFFICE AND FACTORY

3348 North 10th Street, PHILADELPHIA, PA.

REPRESENTATIVES

NEW YORK, N. Y., C. Byerley, 101 Park Avenue—Telephone, Caledonia 5-5556
DETROIT, MICH., Roy C. Gitschlag, 2640 Crane Avenue—Telephone, Lenox 4508
CHICAGO, ILL., S. P. Gilbert, 311 W. Lake Street—Telephone, State 6817
MILWAUKEE, WIS., C. C. Banholzer, 728 No. Jefferson Street—Telephone, Marquette 7562
SAN FRANCISCO, CALIF., George S. Lacy, 16 California Street—Telephone, Sutter 7672
TAMPA, FLA., J. E. Wood Co., 310½ Franklin Street—Telephone, 2661
PHOENIX, ARIZ., The Southwestern Corporation, 17 W. Monroe Street—Telephone, 3-6503
SEATTLE, WASH., Ralston R. Cunningham Co., 73 Columbia Street—Telephone, Main 2341
HAVANA, CUBA, F. A. Larcada, Apartado 1994—Telephone, M-1712

THE GETTY INTERNAL GEAR OPERATOR FOR CASEMENT WINDOWS

The Getty Internal Gear Operator for Casement Windows is the latest development in casement window controlling devices. Proved reliable through years of exacting service, this compact, modern device is superior in design, performance, and construction.

The Getty Operator possesses all the efficiency, dependability, and endurance necessary for lifelong service.

This Operator is being used on both metal and wood casement windows. It is standard equipment with the leading metal sash manufacturers, and is used on residence (light), intermediate, and heavy section windows. Leading architects throughout the country are specifying it for all types of construction.

Advantages

Facilitates screening of casement windows. Non-screened installations equipped with this Operator can readily be converted to the screened type window.

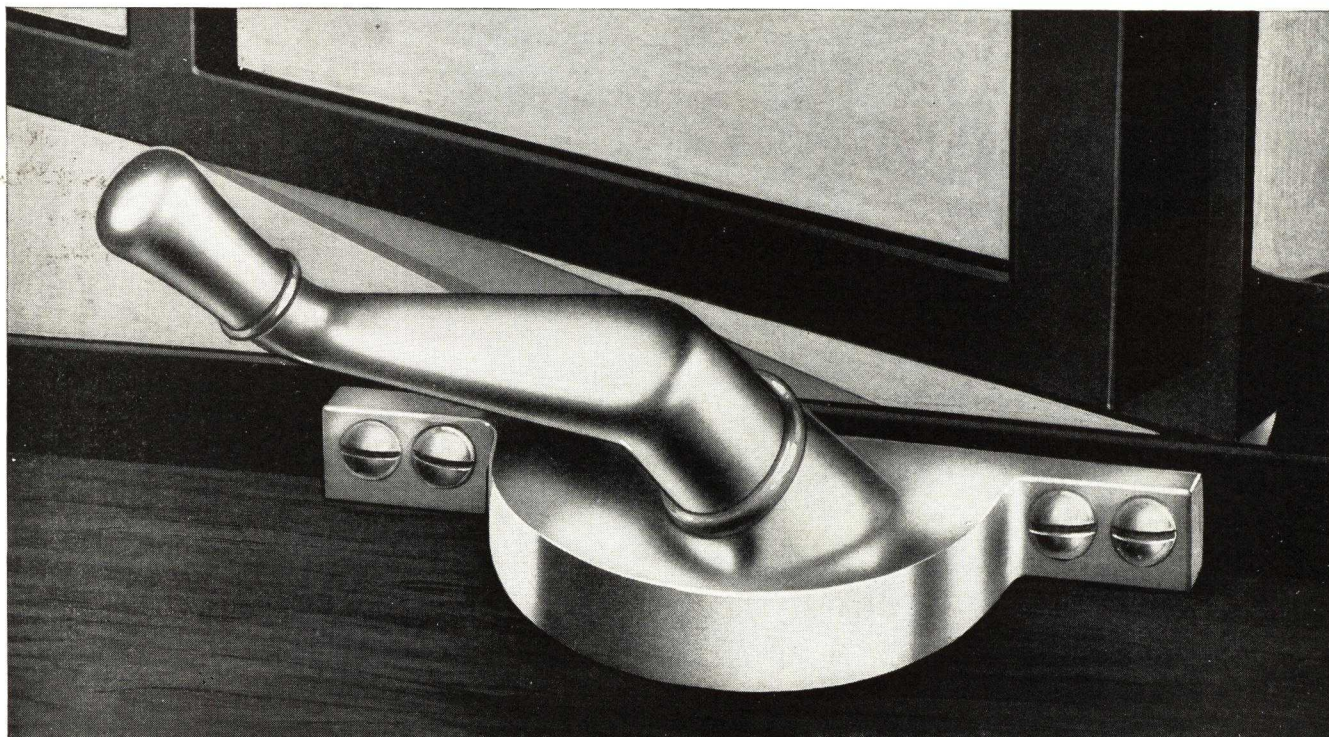
Flat type screens (metal and wood) are usually used with this Operator. Roll screens and other types are also being used.

This Operator leaves the majority of sill space free for use as desired. Drapes, shades, and Venetian blinds can be used to advantage.

Operator can be used with either deep or narrow stools, and is especially advantageous for use with deep stools.

Materials and Finishes

This Operator is furnished in various metals and combinations of finishes. It is generally made of solid bronze, white bronze (20% nickel), zinc die casting, and combinations of metals in the natural (polished or dull), statuary, plated, enameled, or lacquered finishes. It is also supplied in special finishes to correspond with any decorative effect or other hardware.



SECTIONAL VIEW OF THE GETTY OPERATOR, SHOWING EVERY FEATURE OF CONSTRUCTION

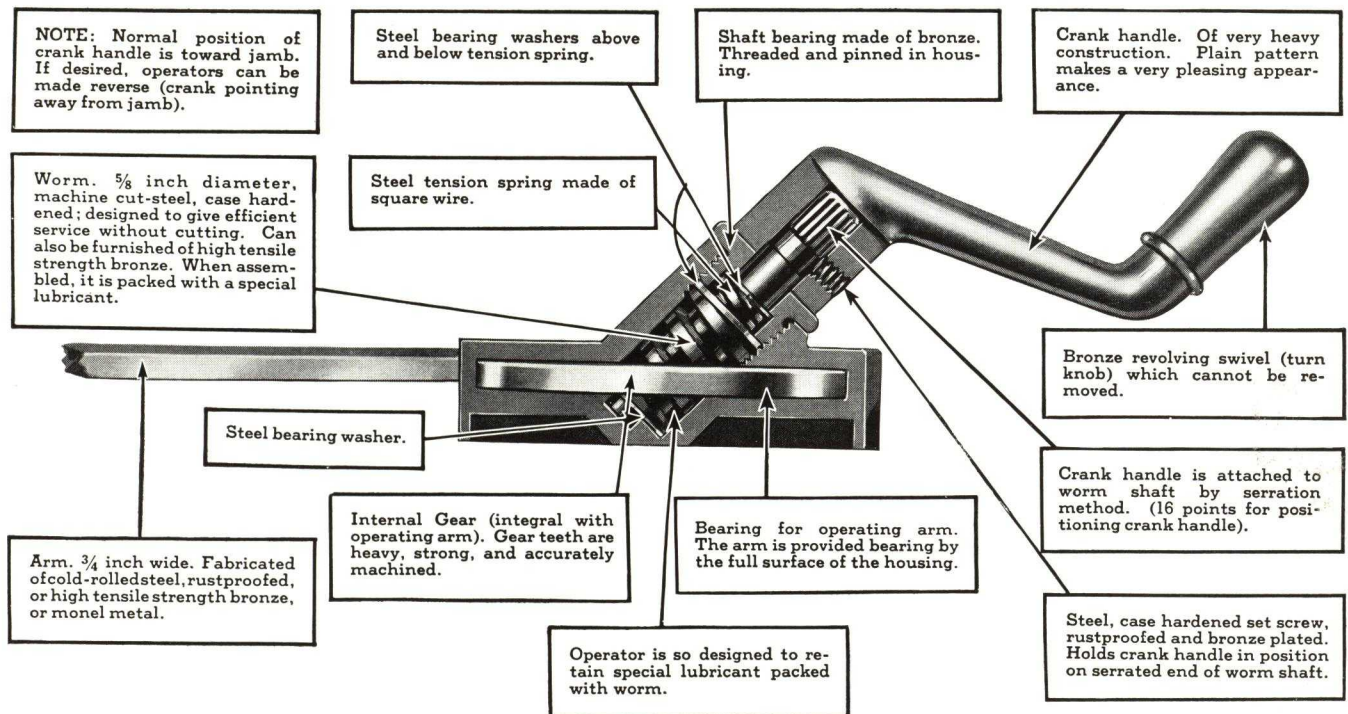
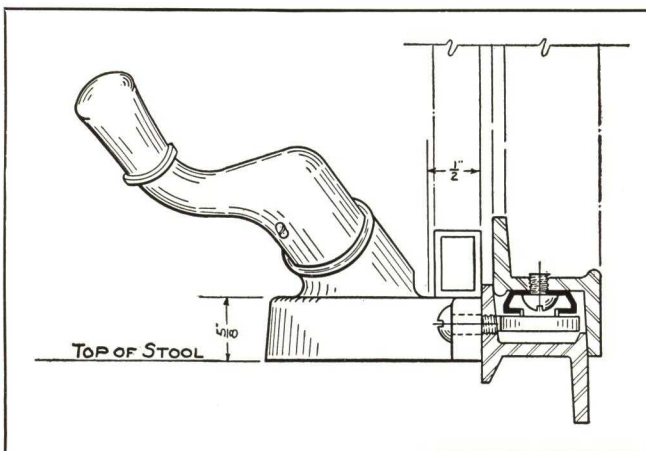


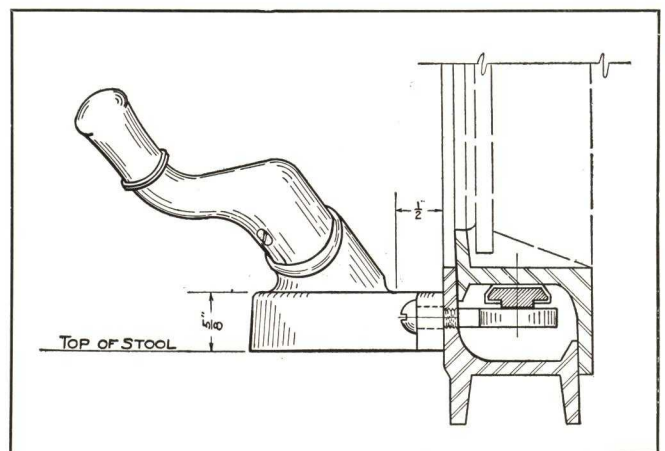
Illustration approximately three-quarter size

SPECIFICATION (For Metal Windows)

All outswinging metal casement windows shall be equipped with the GETTY No. 4703AF Internal Gear Under-screen Operator and No. 4608 Locking Fastener (No. 4609 for casements over five feet high; No. 4611 if Venetian blinds are to be used); as manufactured by H. S. GETTY & Co., Inc., 3348 N. 10th Street, Philadelphia, Pa.

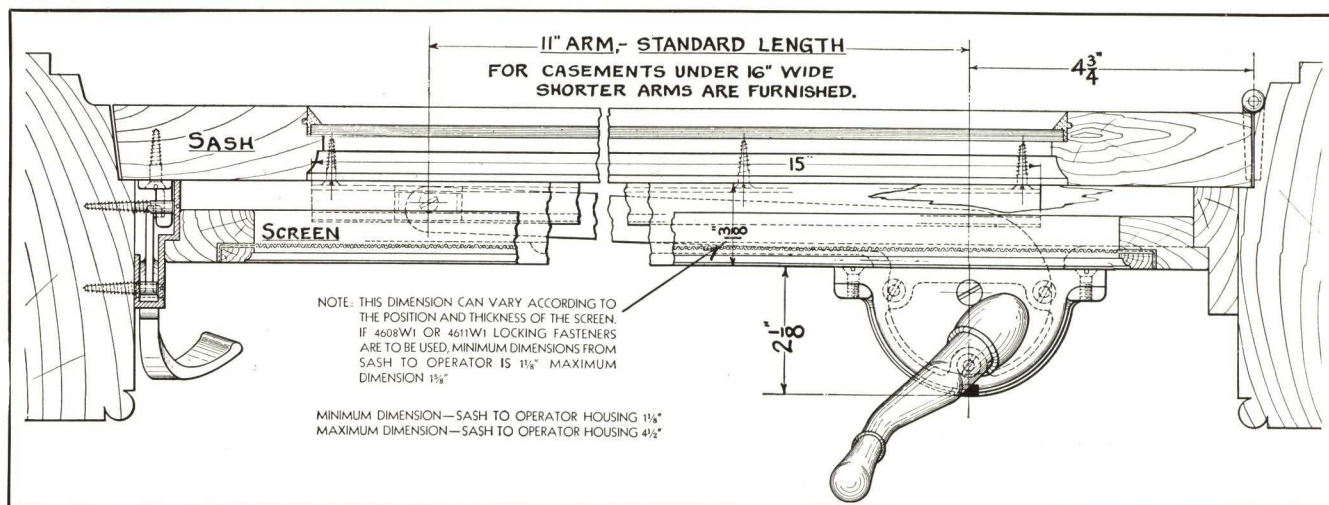


Sectional View Showing No. 4703AF Operator Applied to Residence (Light) Casement Window



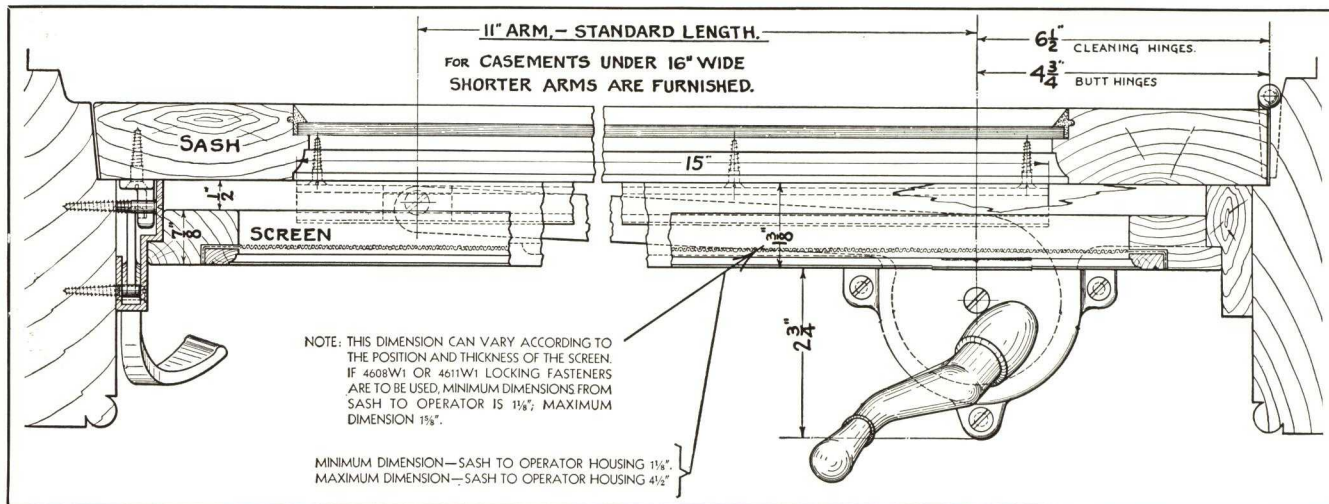
Sectional View Showing No. 4703AF Operator Applied to Intermediate (or Heavy) Casement Window

GETTY INTERNAL GEAR OPERATOR FOR WOOD CASEMENT WINDOWS



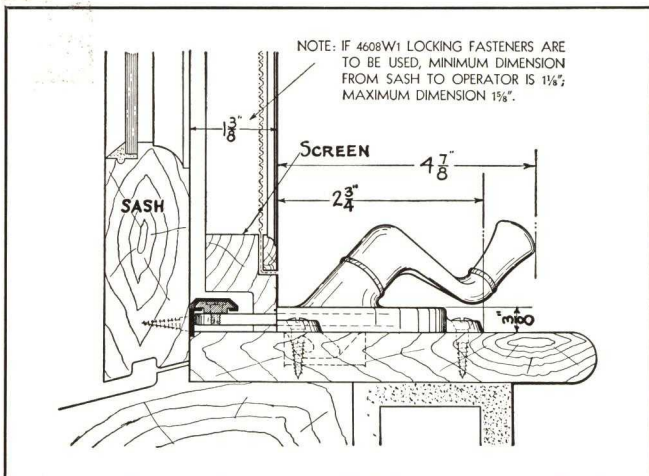
Plan View Showing Application of No. 4703AW1 Underscreen Casement Operator and No. 4608W1 Locking Fastener to a Screened Wood Casement Window Equipped with Butt Hinges

If cleaning hinges are used instead of butt hinges, the dimension from the center of the hinge pin to the center of the operator housing is 6 3/4 in. instead of 4 3/4 in.



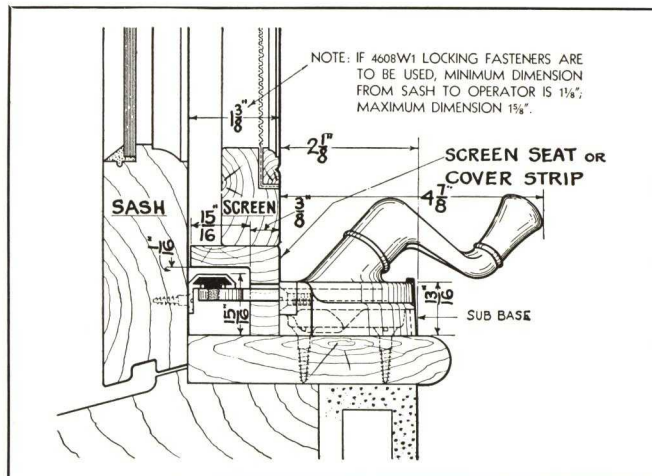
Plan View Showing Application of No. 4703AW2 Underscreen Casement Operator and No. 4608W1 Locking Fastener to a Screened Wood Casement Window Equipped with Butt Hinges

If cleaning hinges are used instead of butt hinges, the dimension from the center of the hinge pin to the center of the operator housing is 6 3/4 in. instead of 4 3/4 in.



Detail Showing Side View of Application of No. 4703AW2 Operator to Wood Casement

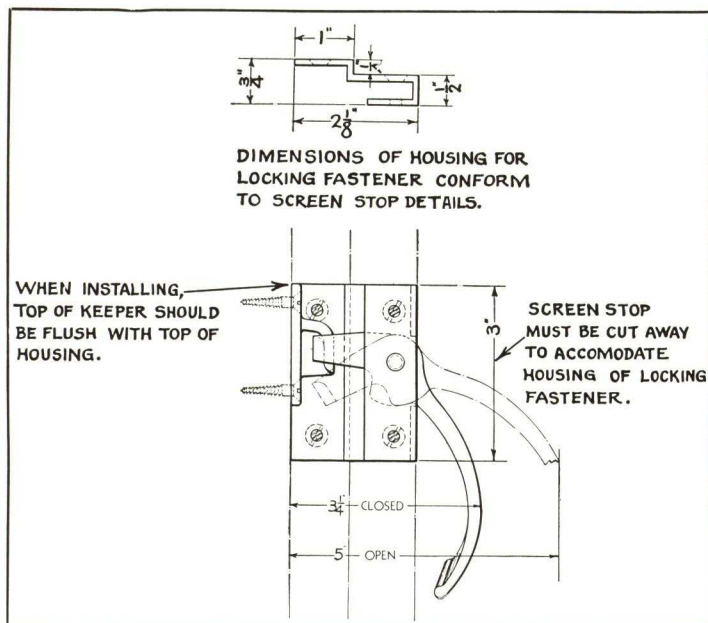
This detail shows the screen mortised in lieu of a screen seat being used



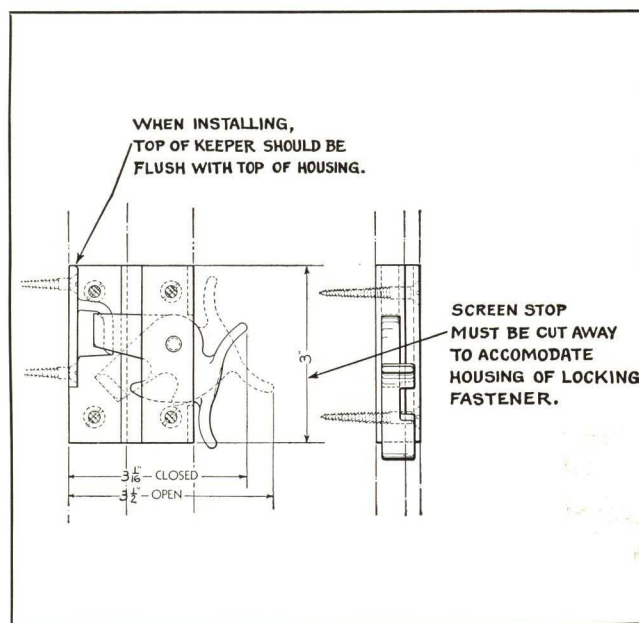
Detail Showing Side View of Application of No. 4703AW1 Operator to Wood Casement

This detail incorporates the use of a seat for the screen. This could be eliminated and the screen mortised to meet the same condition

GETTY INTERNAL GEAR OPERATOR FOR WOOD CASEMENT WINDOWS

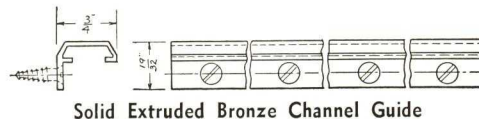
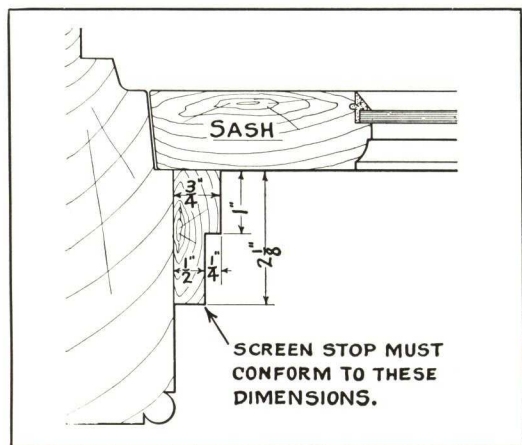


Locking Fastener No. 4608W1



Locking Fastener No. 4611W1

These locking fasteners were especially designed for use with wood casement windows. By their use it is possible (in combination with the No. 4703AW1 Casement Operator), to obtain the same practical, convenient type of screening that is offered by the use of the metal casement, and which, prior to the development of this hardware, it was not possible to obtain with wood casement windows.



Furnished as standard equipment with all Operators for wood casement windows. Four (4) holes are provided in channel guide for attaching screws.

Detail (at the left) Shows the Screen Stop Preparation Required for Proper Application of Either No. 4608W1 Locking Fastener or No. 4611W1 Locking Fastener

SPECIFICATION (FOR WOOD WINDOWS)

All outswinging casement windows shall be equipped with the Getty No. 4703AW1 Internal Gear Underscreen Operator (or No. 4703AW2) and No. 4608W1 Locking Fastener (No. 4611W1 if Venetian Blinds are used) as manufactured by H. S. GETTY & Co., Inc., 3348 North 10th Street, Philadelphia, Pa.

ANDREW HOFFMAN

Casement Window Hardware

5034-5038 South State Street, CHICAGO. ILL.

DISTRIBUTORS IN ALL LARGE CITIES
For Ideal Map and Display Rail, see File Index

COMBINATION CREMONE BOLT

For Hoffman Sliding Casement Windows—Used in Outswinging or Inswinging

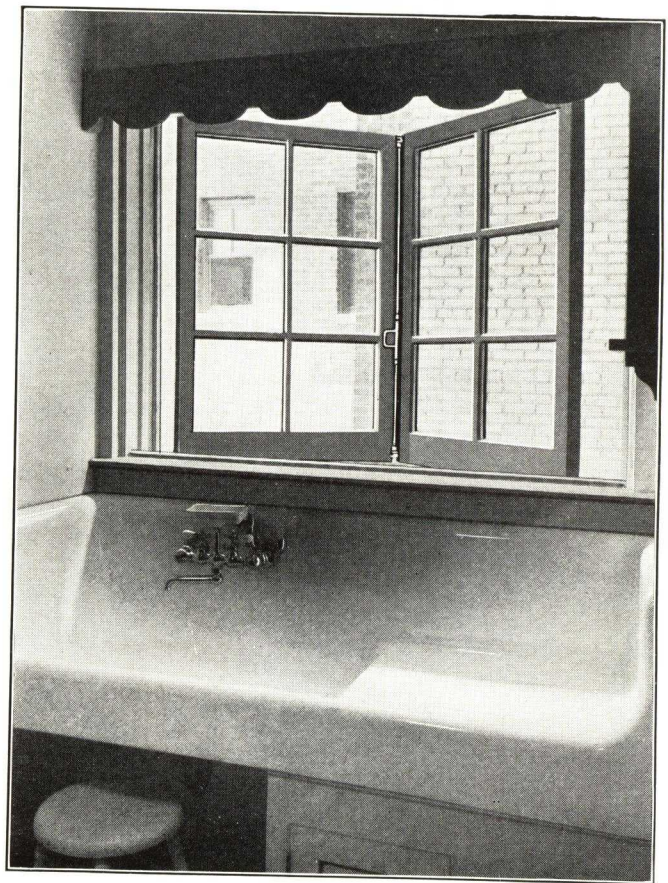
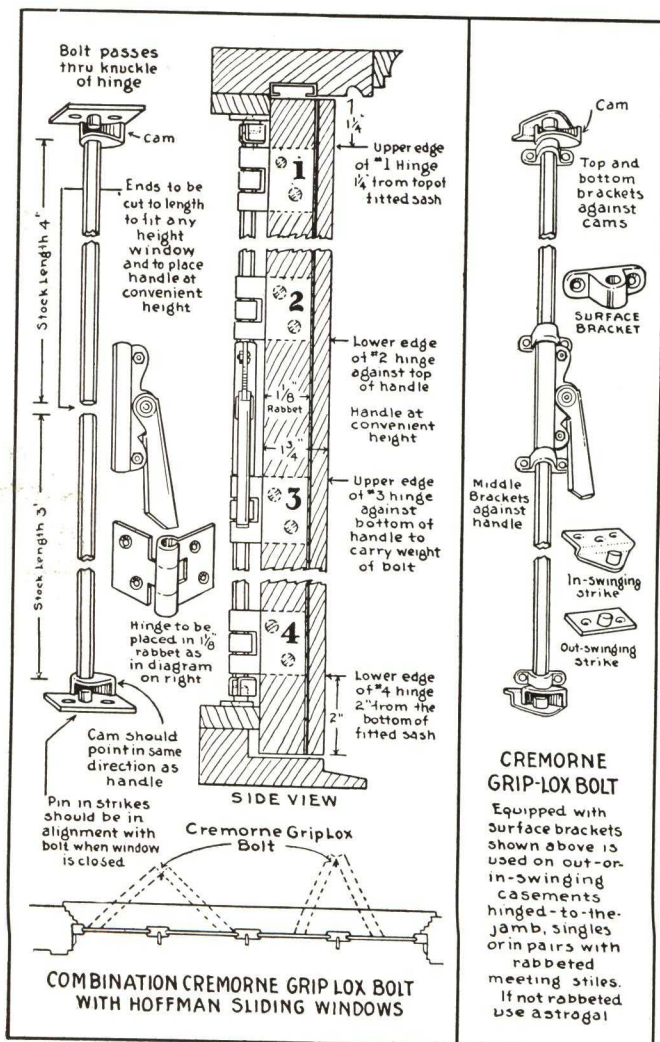
The Hoffman Combination Cremone Bolt combines the functions of hinges, fasteners, and pull handle, and is especially designed for use with outswinging Hoffman Sliding Casement Windows. It makes use of the GripLox principle.

The Hoffman Sliding Casement Windows, when equipped with this combination cremone bolt, are drawn in tightly and locked top and bottom in one operation by a quarter turn on a handle located at a convenient height above the floor.

This combination bolt consists of cams, operating on the Grip Lox principle, at the top and bottom of rods which are joined in a cast bronze handle, the whole assembly being supported by brackets which also act as hinges for the casements.

The use of this full length bolt makes the window easy to open or close, simplifies ventilation control, and closes the window so tightly as to make it weatherproof even in exposed positions.

Especially when windows are difficult to reach, as over a sink (see illustration) or over a radiator, is the unique ease of operation of the Hoffman Sliding Casement Window and combination bolt appreciated.



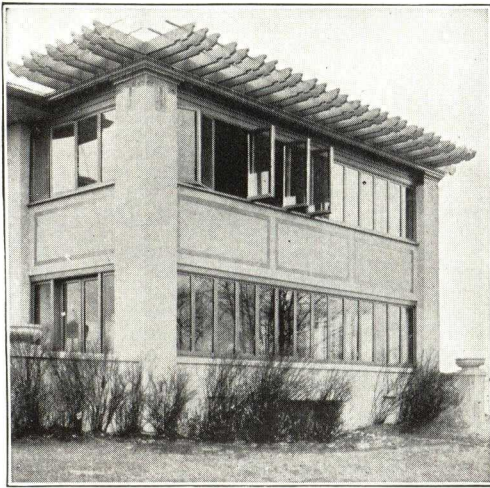
A Pair of Outswinging Casement Windows
(This window is now being developed in steel)

Advantages

The advantages realized by the use of the Hoffman Combination Cremone Bolt are summed up in these points:

- (1) A positive horizontal force is applied to the sash, drawing them in tightly, even though they may be warped or heavily weather-stripped.
- (2) The mechanism is simple and positive with no gears to wear or get out of order.
- (3) There is no disfiguring wear on visible surfaces due to the fact that the bolt does not slide vertically through sleeves.
- (4) The bolt is stocked in 7-ft. lengths and may be cut down on the job to any size, to fit even the shortest windows. The installation is very simple and the hack-sawed ends of the rods are concealed within the handle.
- (5) The price is very moderate; steel plated \$3.00, solid bronze \$5.00.

The Hoffman Combination Cremone Bolt is made of solid brass or plated steel. The bolts are stocked with a 4-ft. upper section and a 3-ft. lower section. The stock bolt therefore may be used on casements up to 7 ft. high, and the handle may be placed as much as 4 ft. below the top of the sash.



Hoffman Casements Installed in Porches

GRIPLOX CREMONE BOLTS*For Single and Double Casements*

Hoffman Cremone Bolts overcome the usual obstacles to easy closing and secure locking of inswinging or outswinging casements by use of the Grip-Lox principle.

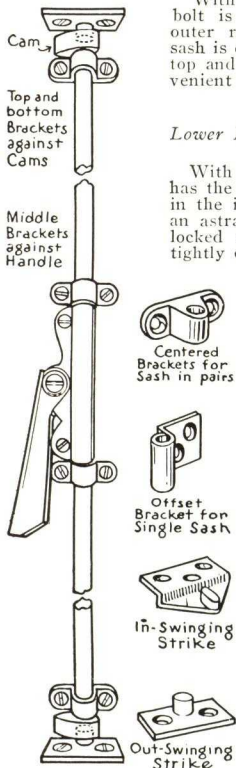
Steel plated bolt, \$3.00 each; solid bronze bolt, \$5.00 each.

*Above Right:***On Double Outswinging Casements**

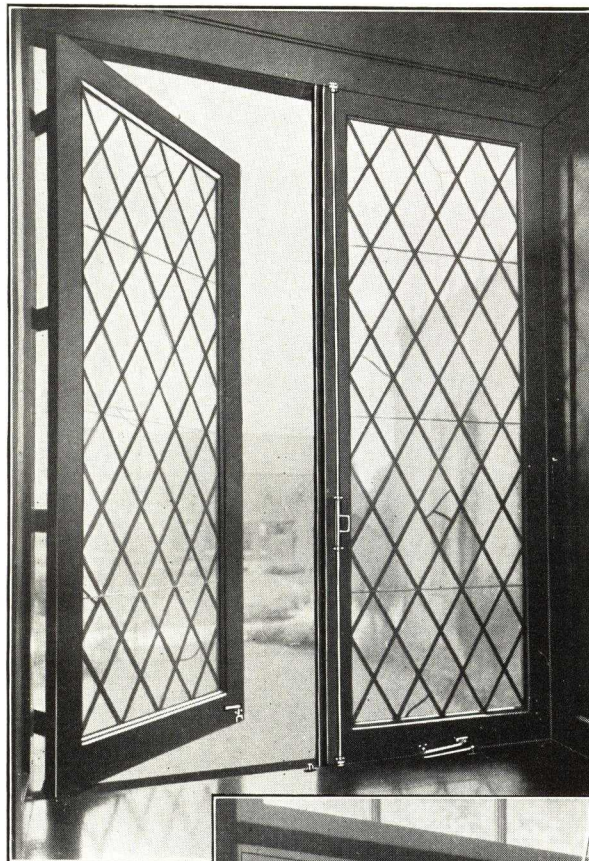
With rabbeted meeting stiles the cremone bolt is applied to the sash that has the outer rabbet projection. When the other sash is closed first, the cremone bolt draws both sash tightly shut, top and bottom at once, by a quarter turn of a handle at a convenient height above the floor

*Lower Right:***On Double Inswinging Casements**

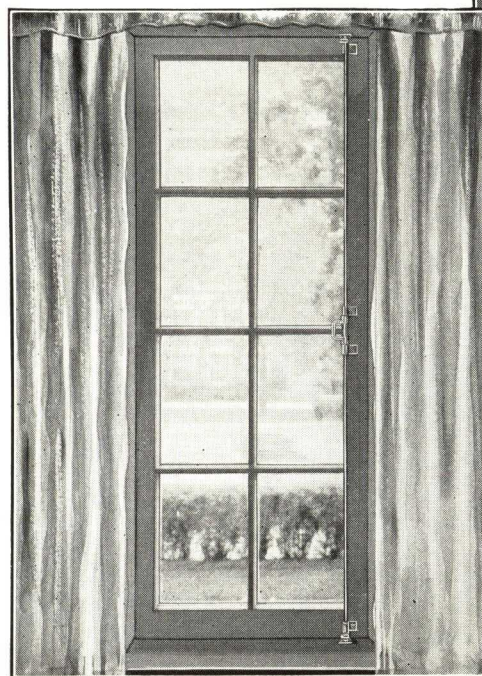
With rabbeted meeting stiles, one bolt applied to the sash that has the inner rabbet projection will clamp both sash shut. If, as in the illustration, meeting stiles are not rabbeted or fitted with an astragal, a bolt is applied to each sash. Notice that the unlocked sash is warped at top. This warped sash is easily and tightly closed with Hoffman Cremone Bolt

**CREMONE
GRIP LOX BOLT**

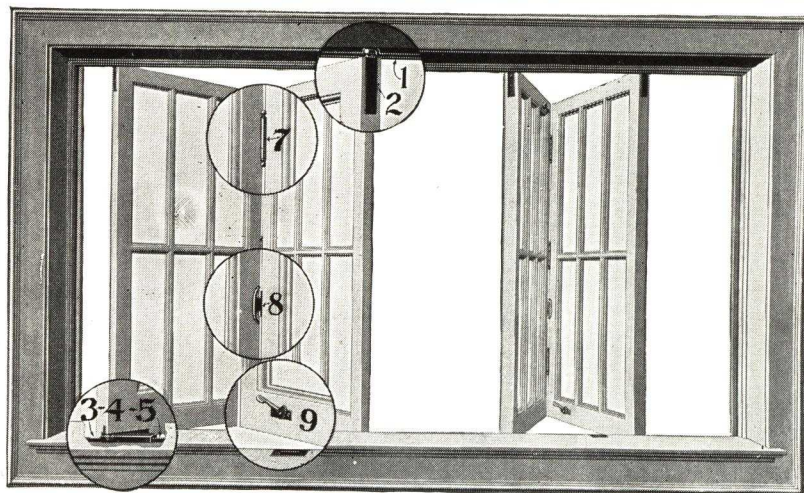
The stock length of the bolt is 7 ft. It is easily cut down on the job to fit any window. Installation is simple and no mortising is required

*Left:***On Single Casements**

Inswinging or outswinging. By attaching the Hoffman Cremone Bolt with offset brackets, handle is placed far enough from the side jamb to give generous clearance for the fingers

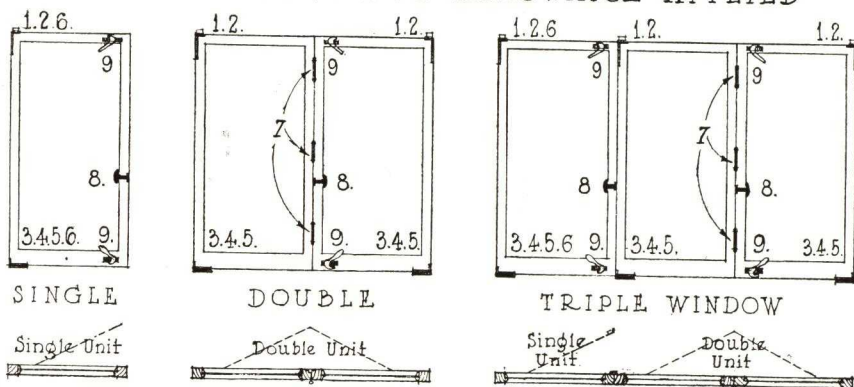


This type of window is now being developed in steel

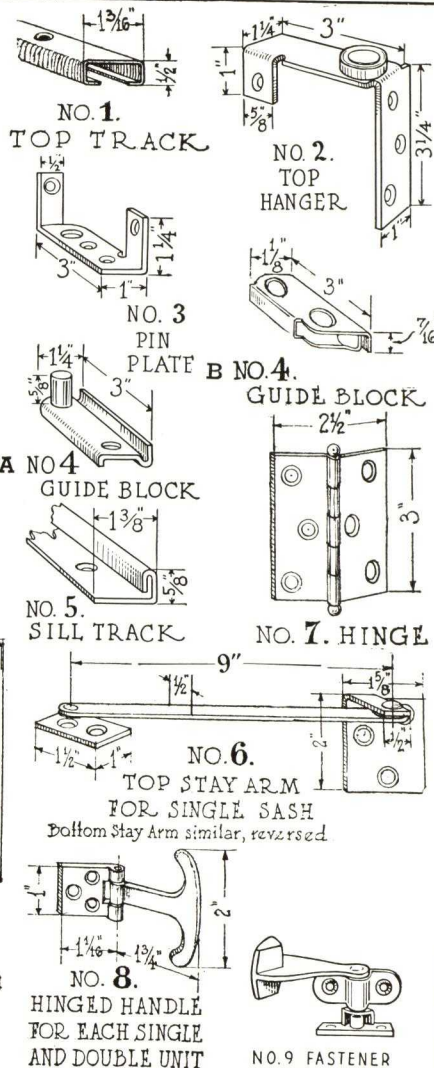


Average shipping weight of a set is 8 lbs.

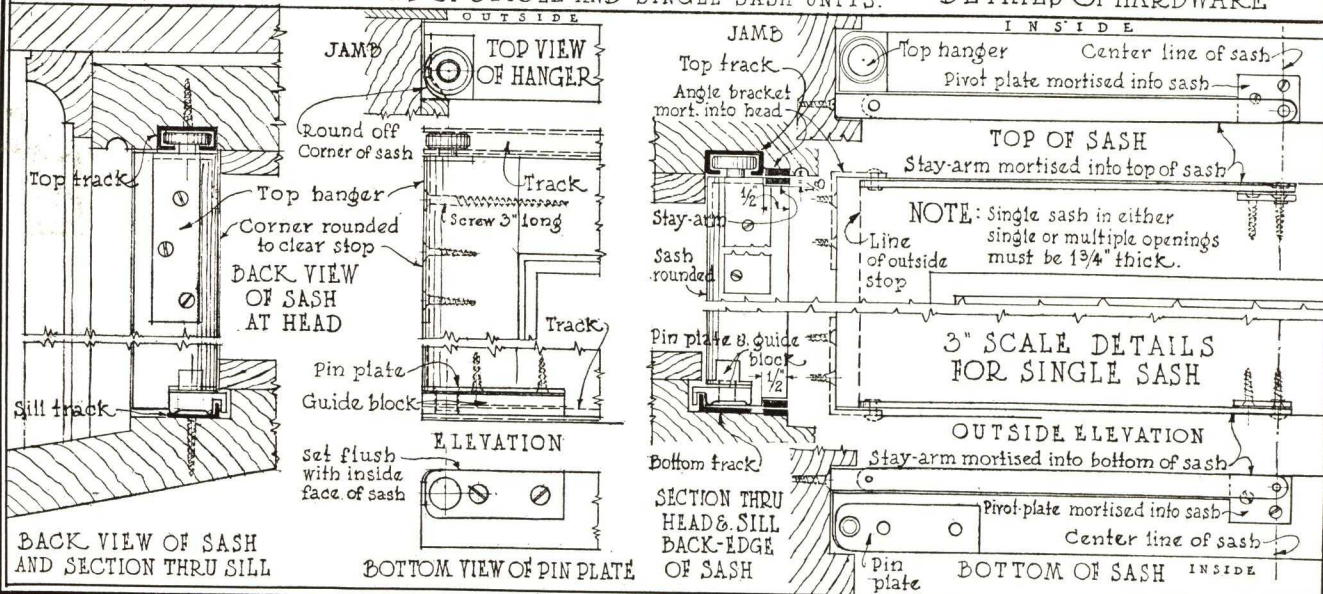
PERSPECTIVE SHOWING HARDWARE APPLIED



KEY PLANS AND ELEVATIONS
SHOWING OPERATION OF VARIOUS COMBINATIONS OF SASH
NOTE: WHEN THERE ARE MORE THAN THREE SASH, THEY ARE MADE
UP OF COMBINATIONS OF DOUBLE AND SINGLE SASH UNITS.



DETAILS OF HARDWARE



DRAWN BY
SWEETS CATALOGUE
SERVICE, INC.

DETAILS OF HOFFMAN CASEMENT HARDWARE
ANDREW HOFFMAN MFG. CO.

SCALE 3"=8 1/4" DRWG
EQUALS 1"=0"
DATE-AUG.27 1

THE H. B. IVES COMPANY

Quality Hardware Since 1876

NEW HAVEN, CONN.

PRODUCTS

THE H. B. IVES COMPANY manufactures a quality line of Double Hung and Casement Window, Transom,

Door, Cupboard and other Miscellaneous Builders' Hardware.

IMPROVED CASEMENT WINDOW CONTROL

The result of over sixty years' specialization in window hardware, the following devices combine distinct

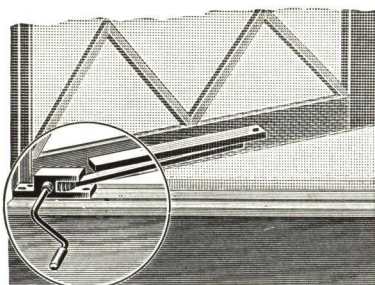
advantages for conveniently operating—through the screen—outswinging casements.



THE IVES AUTOMATIC TOP CLOSER

Tightly seals the sash and prevents warping when placed at top of sash and used with 38700 casement window operator.

No. 35070, wrought steel, cadmium plated.



THE IVES CASEMENT WINDOW OPERATOR

Strong—The worm gear is made of manganese bronze for rugged toughness and resistance to wear and corrosion.

Universal—It is reversible for right or left-hand windows; is adaptable to any width stool; and only requires 1-in. space between sash and screen.

Durable—The possibility of wear at any point is minimized as the bearing surface of the worm and gear is much greater than the conventional type.

Attractive—Being very compact, the device has an unusually neat and attractive appearance.

Easy to Install—Its pleasing appearance makes false stools unnecessary. As a result, it is easy to install and is always accessible. Thus, reasonable final cost is assured.

Crank Handles—Always specify type desired and length when sill is over 8 in. wide.

Finishes—Always specify finish required on 38700 operator, 38000 and 38200 crank handles, which are supplied in all standard finishes. 38137 crank handle supplied in dull brass plated finish only.



38000

For permanent handle installation on top of stool



38200

For permanent handle installation under stool



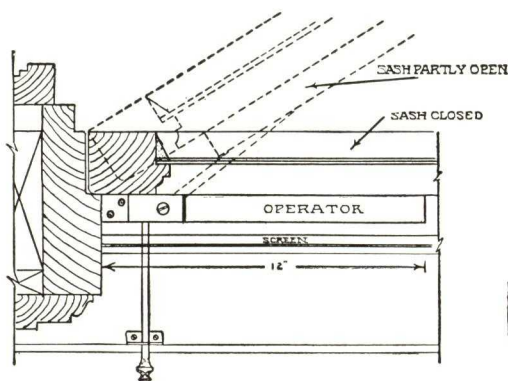
38137

For use when permanent handle installation is not desired

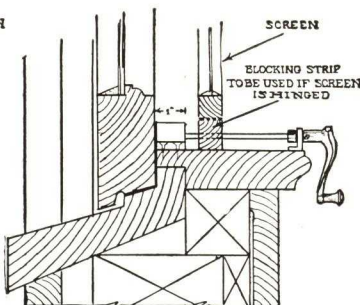


38700

Installed on Top of Stool

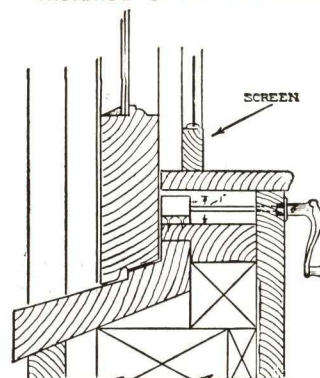


View Looking Down on Sill



Vertical Section Through Sill

Installed Under the Stool



Vertical Section Through Sill

DETAILS SHOWING METHOD OF INSTALLATION

VINCENT WHITNEY CO.

Whitco Casement and Transom Hardware

130 Tenth Street, SAN FRANCISCO, CALIF.

SALES REPRESENTATIVES

NEW YORK, N. Y., Geo. H. Fisher, 416 Broadway
PHILADELPHIA, PA., H. S. Hendrickson, 1015 Chestnut St.
CINCINNATI, OHIO, L. W. Stewart Sales Co., 704 Race St.
BOSTON, MASS., H. E. Holbrook Co., 49 Federal St.

SEATTLE, WASH., R. F. Bevers, 521 30th Ave. So.
LOS ANGELES, CALIF., H. W. Brittain, 3644 Revere Ave.
ST. LOUIS, MO., Herbert Golterman, 423 Louderman Bldg.
SALT LAKE CITY, UTAH, W. L. Glade, 1421 Sherman Ave.



TRADE-MARK
Registered U. S. Patent Office

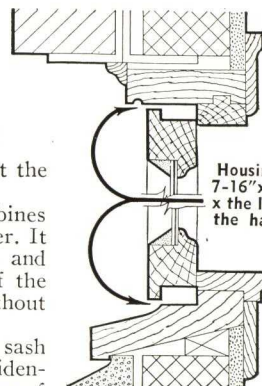
WHITCO CASEMENT HARDWARE

Whitco allows the sash to swing and reverse, so that the outside is conveniently available for washing.

The design of this utility fixture is such that it combines the functions of a hinge and a friction casement adjuster. It makes such effective use of the principles of leverage and friction that it not only assures a perfect operation of the sash at all times, but it holds the sash in any position without rattle.

A set of Whitco is the equipment required for one sash (either casement or transom). It consists of two pieces, identical, except that one is the reverse of the other. The swing of the sash determines the side of the sash to which these respective pieces are attached.

Whitco hardware is attached to the sash by means of a sash plate which extends across the joint between the stile and the rail of the sash, thus reinforcing the weakest point against sagging. All screws are set at right angles to the strain with the result that the installation is strong and dependable.



Housings are 7-16" x 1-16" x the length of the hardware.

Typical Detail of Casement Head or Transom Jamb and Casement Sill

Types and Sizes

Whitco is made in Solid Brass, Steel (rustproofed) and Semi (Brass track, steel arms and sash plate).

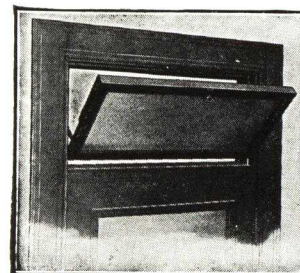
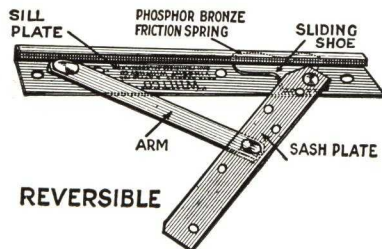
For 1 3/8-in. Sash —

- 8X Whitco maximum sash width 18 in.
- 10X Whitco maximum sash width 24 in.
- 12X Whitco maximum sash width 27 in.
- 14X Whitco maximum sash width 30 in.
- 16X Whitco maximum sash width 33 in.

For 1 3/4-in. Sash —

JUMBO Whitco is much heavier than the standard and was designed for use on large heavy sash.

JUMBO 16 in. Whitco maximum sash width 36 in.

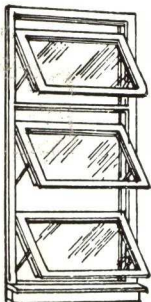


AWNING TYPE WHITCO

Reversible sash hardware for large windows. This type of hardware is largely used on schoolhouses and public buildings. It is of heavy construction and has an additional adjustable friction built into the arm pivot. It is made in the following sizes:

- A.W 24 in.
- A.W 30 in.
- A.W 36 in.
- A.W 42 in.
- A.W 48 in.

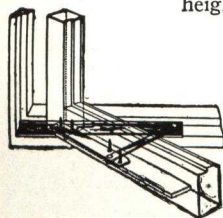
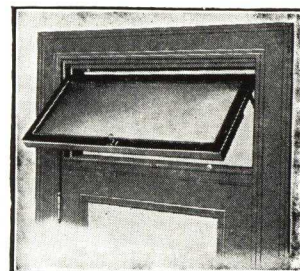
In choosing the proper size to use, take the largest size shorter than the height of the sash on which it is to be used.



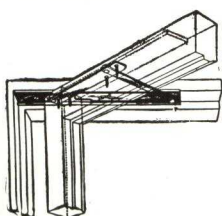
WHITCO TRANSOMS

Transom sash when equipped with Whitco hardware are held in balance at any angle to which they may be opened. They are easily and noiselessly operated. For wood or metal trim.

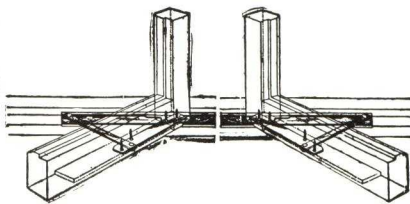
The length of Whitco hardware recommended for transoms is two thirds the height of the sash.



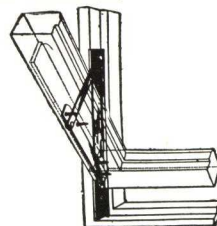
Whitco applied at bottom of casement swinging out.



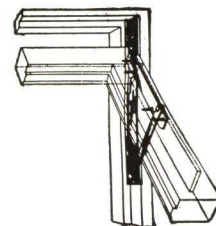
Whitco applied at top of casement swinging in.



Whitco applied at bottom of adjoining pair of multiple sash.



Whitco at left end of transom swinging in from top.



Whitco at right end of transom swinging in from bottom.

G. F. S. ZIMMERMAN CO., INC.

Manufacturers of Fasteners for Shutters and Casements
FREDERICK, MARYLAND

ZIMMERMAN FASTENERS MAKE SHUTTERS USEFUL AS WELL AS ORNAMENTAL

Zimmerman Fasteners make shutters conveniently useful by locking them positively, without rattle, in the closed position as well as wide open back against the wall, and in various intermediate positions. And they can be changed from one position to another quickly and conveniently.

With the head of the adjusting bar in the single hole sill cup, the shutter is held back against the wall with no possible rattle. The holes of the sill plate permit holding the shutter in various

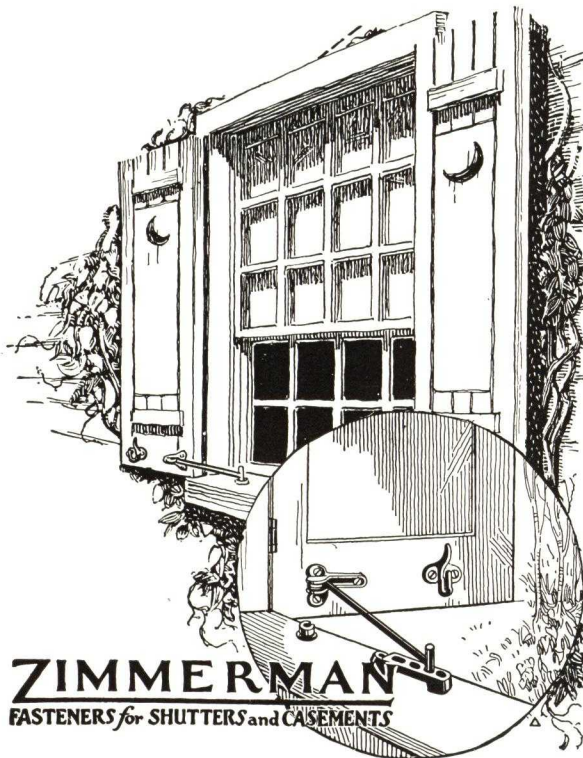
Furnished either galvanized or in black enamel. They are often painted to match the shutters.

Simple in construction and operation.

Inexpensive, strong and efficient.

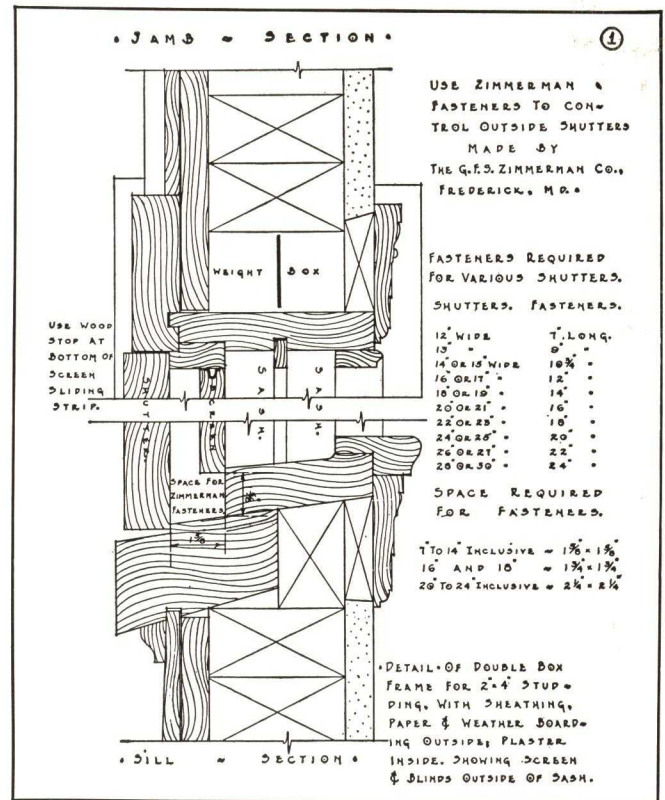
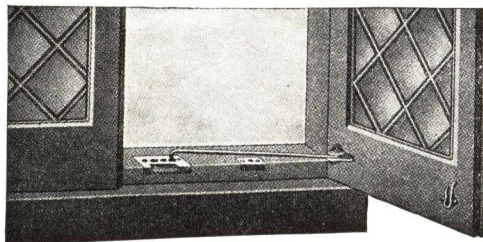
Zimmerman Fasteners are often used as casement operators. Sill fixtures to mortise flush into the sill are supplied specially for this purpose when specified.

Zimmerman Shutter Fasteners, by a special detail, can be used with full length outside screen or storm sash. Full-size detail will be sent upon request.



bowed positions. Placing the adjusting bar through the C-loop on the shutter with the head of the bar in one of the holes in the sill plate locks the shutter closed so that it can not be opened from without.

Made of iron and steel, they do their work efficiently for the lifetime of the house.

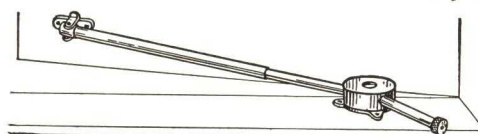


RETAIL PRICE LIST, ZIMMERMAN FASTENERS, PER DOZEN PAIRS

Width of shutter, in.	Size of bar length required, in.	Shutter fasteners	
		Black	Galvanized
12 or less	7	\$ 9.00	\$12.00
13	9	10.00	13.00
14 or 15	10 1/4	11.00	14.00
16 or 17	12	12.00	15.00
18 or 19	14	13.00	16.00
20 or 21	16	14.00	17.00
22 or 23	18	16.00	20.00
24 or 25	20	17.00	21.00
26 or 27	22	19.00	23.00
28 or 30	24	20.00	24.00

ZIMMERMAN IMPROVED CASEMENT ADJUSTORS

Zimmerman Improved Casement Adjustors, made of strong brass tubing and brass castings, operate on the sill, through inside screens where desired. A slight



Zimmerman Improved Casement Adjustor
Retail price, \$2.00 each. Solid brass

turn of the locking nut on the end of the handle releases or engages the friction cap and permits movement of the window by swinging the handle.

MEMORANDA

THE GIBSON & KIRK COMPANY

Warner and Bayard Streets, BALTIMORE, MD.

G-K WINDOW OPERATORS FOR OFFICES, BANKS, THEATRES AND WHEREVER ATTRACTIVE APPEARANCE IS ESSENTIAL

G-K Window Operators are built for every type of sash used for residential or semi-industrial applications. Simplicity of design, strength of individual parts, ease of assembly and facility for final adjustment combine to make an efficient, durable and attractive window operator. The various types of operators shown below are furnished in three distinct sizes: the Midget for transom-size sash; the Standard for practically all size sash and conditions of loading; Heavy Duty for extremely heavy load conditions.

Material—These operators can be furnished in the following materials: Bronze (Red Brass) (Hardware Bronze)—White Bronze (Nickel Silver)—Aluminum—Malleable Iron and Steel.

Combinations of various materials on the same operator to produce an attractive and economical operator are available when desired. Stainless steel shafting is also available when specified.

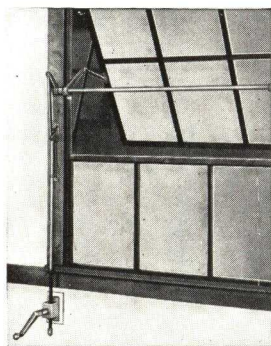
Finishes—The standard iron and steel operators are furnished with one shop coat of grey paint. Special metallic base paints can be supplied on specification. Where dampness requires it, the operators may be galvanized or protected with any of the patented rust inhibitors. Bronze, White Bronze and Aluminum Operators can be furnished in any finish corresponding to those adopted as the United States Standard.

Service to Architects

Through the facilities of our Engineering Department, foundry and machine shop, we are prepared to undertake the designing and manufacture of any type of control adaptable to existing conditions. The Engineering Department will gladly co-operate with the architect in the application of G-K Operators for any condition without obligation.

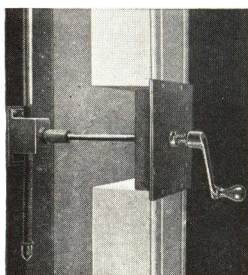
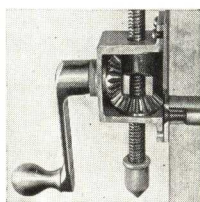
THREE MAJOR TYPES OF OPERATORS TO MEET EVERY REQUIREMENT

(1) Rising Vertical Rod Type



The illustration shows the mechanism installed between the gear box and the window. Note the unique guide bar assembly which increases the efficiency of the operator. The G-K bracket assembly eliminates the tendency of the vertical rod to rotate by providing the knuckle with a slotted base through which the guide bar is placed. By means of this guide the clevises of the knuckle and operating arm are kept in perfect alignment, thereby eliminating any tendency to bind which would normally be present in any other operator of this type.

Gear Box Operation—The gear box illustrated is the standard box for the Rising Vertical Rod Operator. It has been designed to be as inconspicuous as possible, without sacrificing any of its tremendous effort. A feature of the design is the detachable, grease-tight bottom plate which provides for easy inspection and lubrication when necessary and greatly simplifies the problem of installation.



Concealed—G-K Semi-concealed Window Operators are the same in design as the exposed. An angle iron support to carry the vertical rod assembly overcomes the difficulty of installing and aligning. We do not recommend the use of galvanized steel covers over the working parts which are concealed. The use of access plates at the horizontal rod and over the gear box should, however, be provided in all instances.

The Hook and Eye Bell Crank (Revolving Vertical Rod Type)

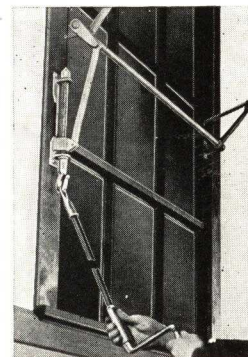
The Hook and Eye Bell Crank Operator represents an economical modification of the Angle Gear Box Type. It possesses all of the good qualities, except that it is not always suitable for multiple operation of vents arranged vertically and lacks the power obtainable with the Gear Box Type.

G-K Hook and Eye (Rising Vertical Rod Type)

The Rising Vertical Rod Operator, with angle gear box, has all of the advantages of the Hook and Eye Bell Crank type

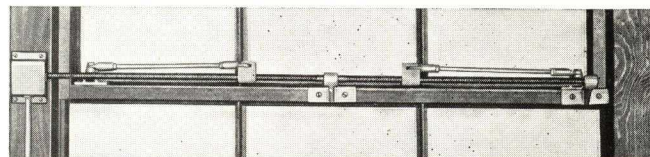
plus sufficient power to operate under the most stringent conditions of vent loading.

The angle gear box used in conjunction with the rising vertical rod type operator affords a satisfactory method of providing tamper-proof control of ventilation by mounting all parts above the level at which protruding parts might cause injury. This operator is comparable in power to the other gear box-driven rising vertical rod type operators.



(2) Duplex or Twin Screw Type (Gear Box or Pulley Cord Operated)

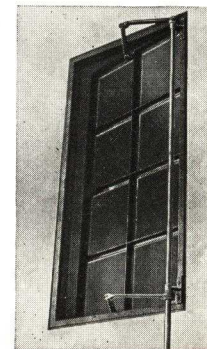
This design is pre-eminently noted for its compactness, positive control and tight closing sash. It gives maximum support and prevents wobbling and weaving due to wind, etc. Excellent for use where Venetian Blinds, screen or draperies require operator to be as close to the sash as possible. On the horizontal rod is chased a double lead Acme thread, left hand on one-half of the rod and right hand on the other. When this rod revolves, the two nuts controlling the window links travel in opposite directions, thus opening or closing the vent. Duplex operators are best suited for use with hinged vents.



(3) Worm Gear Type

(a) **Side Hung Vents**—Provision for the operation of side hung vents presents a simple and compact design. The control box is of the worm gear type. The Vertical Rod rotates the vent arms opening and closing the window at will. The worm and gear arrangement makes possible the positive closing or stopping of the vents at any desired point without the use of any additional locking device. This design provides from 75 to 90 deg. opening.

(b) **Worm Gear Drive for Continuous Runs**—When conditions require the use of an attractively designed operator for continuous sash or long runs of sash with a chain pull we can supply a worm gear power with connections to the vents by conventional link and lever fittings.



VONNEGUT HARDWARE CO.

Von Duprin Self-releasing Fire Exit Devices

INDIANAPOLIS, IND.

VON DUPRIN SALES AND SERVICE REPRESENTATIVES

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BINGHAMTON, N. Y., Bliss Vance, 108 Grand Blvd., Tel. 6-3344
BOSTON, MASS., Kenneth H. Bullard, 751 Little Bldg., Tel. Liberty 7171
CHICAGO, ILL., John C. Bold & Co., Great Lakes Bldg., 184 No. Wacker Drive, Tel. Franklin 4888
CLEVELAND, OHIO, Ben G. Gesing, 750 Prospect Ave., Tel. Cherry 0078
DALLAS, TEX., Karl Hormann, 3609 Southwestern Blvd., Tel. 58-2951
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EL PASO, TEX., C. C. Gaines Co., 902 Mills Bldg., Tel. M-5900
EVANSTON, ILL., G. A. Silvers, 2200 Grant St., Tel. University 9511
INDIANAPOLIS, IND., H. G. Nutt, 626 Architects' Bldg., Tel. Riley 3873
JOHNSTOWN, PA., C. W. Tilley, Alma Hall, Main St., Room 12, Tel. 5186J
LOS ANGELES, CAL., W. H. Steele Co., Calo Bldg., 443 So. San Pedro St., Room 201, Tel. Mutual 8455

MINNEAPOLIS, MINN., A. N. Stark, 205 Lumber Exchange, Tel. Geneva 0280
NEW YORK, N. Y., H. B. Fenn, 370 Seventh Ave., Tel. PEnnsylvania 6-0111
PHILADELPHIA, PA., H. S. Hendrickson, 1015 Chestnut St., Room 1203, Tel. Walnut 0589
SAN FRANCISCO, CAL., Chas. I. Yates, 7 Front St., Tel. Sutter 8854
ST. LOUIS, MO., W. E. Way, 825 Chemical Bldg., Tel. Chestnut 5640
SEATTLE, WASH., Robert F. Bevers, 521 30th Ave. So., Tel. Prospect 8187
WASHINGTON, D. C., W. I. Peak, 2755 Macomb St., N. W., Tel. Metropolitan 6100
AUSTRALIA, Universal Hdwe. Co., Ltd., 16 Spring St., Sydney
HAWAII, Lewers & Cooke, Ltd., Honolulu
PORTO RICO, Dario Nuin, Mayaguez
CHILI, Morris Rosen, P. O. Box 3187, Santiago

WHEN YOU BUY THE GENUINE NEW SERIES TYPE "B2" VON DUPRIN, THIS IS WHAT YOU GET

Von Duprin

TRADE-MARK
(Registered U. S. Pat. Off.)



Drop Forged Brass or Bronze

Protected by numerous United States and Foreign Patents and Trade-mark registration

A highest grade, most reliable, strong, extra heavy mortise lock type panic device, a device embodying every refinement known in panic device construction—a device listed as standard by the Underwriters' Laboratories, Inc.

All interior parts are made of special bearing metal, bars and exterior members are made of brass or bronze only.

The cross bar is double acting, to or from the door, and is made of 1-inch, 16-gauge seamless brass or bronze tube.

The ball compensating vertical rod construction permits rods to compensate with the winding or warping of doors and positively prevents the binding of the rods.

The cross bar is dogged down with a direct drive into the lever arms

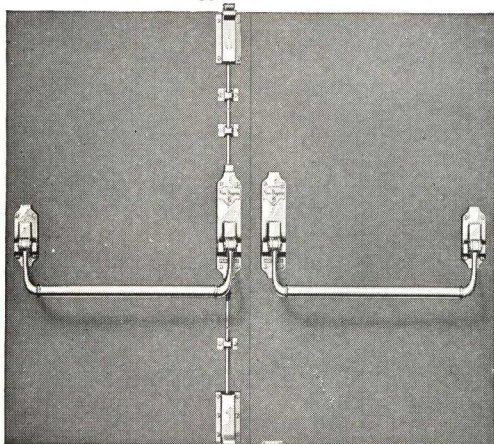
at both ends of the cross bar, insuring absolute rigidity. The dogging action is controlled by a key each end of bar.

Cross bar axles are so constructed that they can not drop out or be easily removed.

The vertical latches are of easy spring Pullman type, with a long swing, and operate entirely independent of each other.

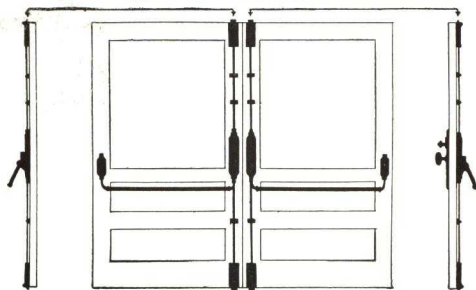
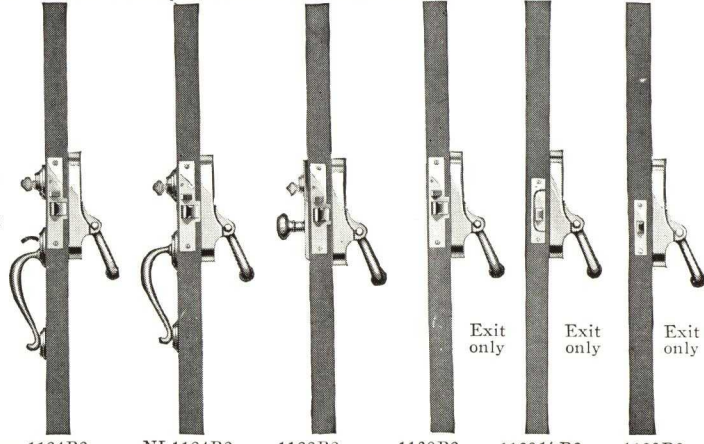
All springs are of the compression type and are made, to our specifications, of phosphor bronze.

Heavy wearing parts are covered with case hardened steel sleeves, reducing friction to a minimum. The cylinder locks are made specially for panic bolt service and have remarkably long life. All stumps receiving unusual shock are made of hardened steel.



A Typical Type "B2" Von Duprin Combination

Furnished with Thru Sex Bolts



Vertical Rod Combinations for Double Entrance Doors Opening Outward

*Where Threshold Is Used

Combination No. 11B2—Inactive door equipped with No. 1127B2, Type "B2" Von Duprin. Active door equipped with No. 1123B2, Type "B2" Von Duprin.

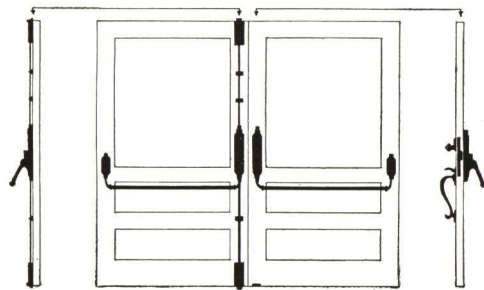
Combination No. 011B2 Ittner—Inactive door equipped with No. 1127B2, Type "B2" Von Duprin. Active door equipped with No. 1123B2x2660 Ittner Type "B2" Von Duprin.

Combination No. 15B2 for Double Exit Doors Both doors equipped with No. 1127B2, Type "B2" Von Duprin.



Inactive 1127B2 Active 1123B2 1123B2x2660 Ittner

*In all Combinations Prefix LR where no threshold is used



Mortise Lock Combinations for Double Entrance Doors Opening Outward

*Where Threshold Is Used

Combination No. 12B2—Inactive door equipped with No. 1127B2, Type "B2" Von Duprin. Active door equipped with No. 1724B2, Type "B2" Von Duprin.

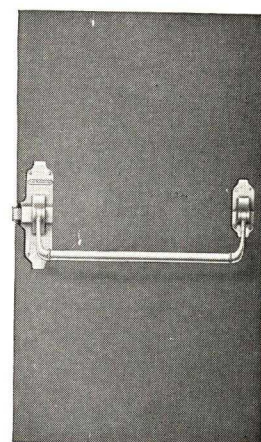
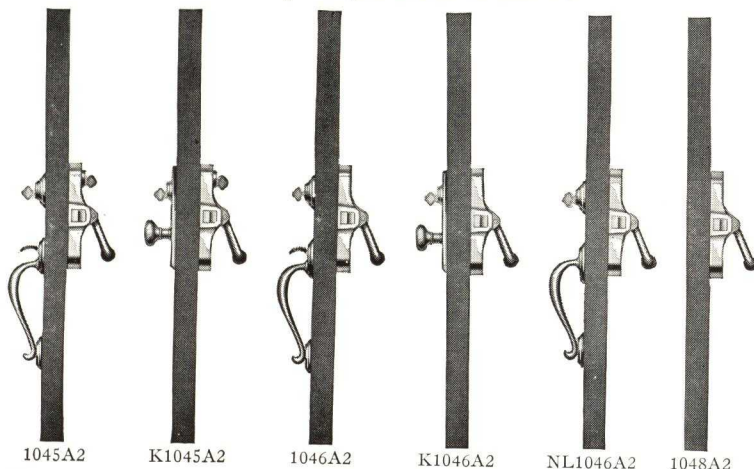
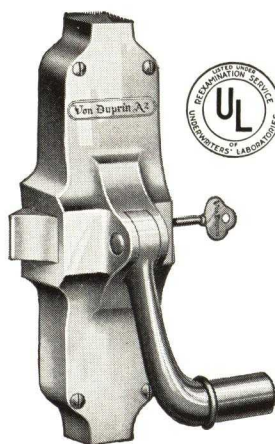
Combination No. 13B2—Inactive door equipped with No. 1127B2, Type "B2" Von Duprin. Active door equipped with No. NL1724B2, Type "B2" Von Duprin (grip and cylinder, no thumbpiece, on outside of door).

Combination No. 14B2—Inactive door equipped with No. 1127B2, Type "B2" Von Duprin. Active door equipped with No. 1722B2, Type "B2" Von Duprin.

Ask us for complete specifications covering our highest grade devices

THE NEW VON DUPRIN TYPE "A2" MASTER RIM DEVICE

All Drop Forged Brass or Bronze



Inside Elevation

The highest quality self-releasing exit device with rim latch and lock. For single doors and double doors with mullions—opening outward. Designed to give the balanced appearance heretofore obtainable only in mortise lock devices and engineered to include every desirable feature required in exit device operation—with backsets so as to center outside trim on stiles of various widths.

Features—Double acting; a slight pressure against, or pull up, on the crossbar will withdraw the latch-bolt from its housing. Heavy Pullman latch-bolt has $\frac{3}{4}$ -in. throw and easy spring action, pivots on monel metal axle. (Extra quick release eliminating binding in jamb strike.) Adjustable roller strike has anti-friction bronze roller. Double compression concealed springs. Lever arms supported by $\frac{1}{2}$ -in. diameter floating axes. Dogging feature at each end of the crossbar with a direct drive into the lever arms makes the crossbar a solid unit with the lock-case and the hinged end case. Sex bolts furnished regularly for wood, kalamein or tin clad doors.

Operation—No. 1045A2—Latch-bolt is operable from inside by crossbar at all times—from outside by thumbpiece (except when same is set by key through inside cylinder), then by key through outside cylinder.

No. K1045A2—Latch-bolt is operable—from inside by crossbar at all times—from outside by knob (except when same is set by key through inside cylinder), then operated by key through outside cylinder.

No. 1046A2—Latch-bolt is operable—from inside by crossbar at all times—from outside by thumbpiece (except when same is set by key through outside cylinder).

No. K1046A2—Latch-bolt is operable—from inside by crossbar at all times—from outside by knob (except when same is set by key through outside cylinder).

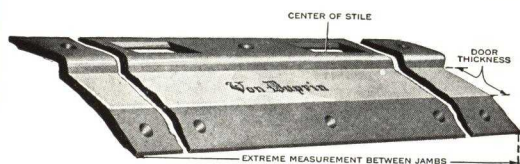
No. NL1046A2—Latch-bolt is operable—from inside by crossbar at all times—from outside by key only.

No. 1048A2—Latch-bolt is operable only from inside by crossbar.

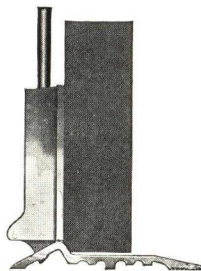
Von Duprin All-Weather Thresholds—Series 12390

Extruded Bronze or Aluminum

Continuous Rabbet Makes Desirable Windbreak and Watershed
Patented June 27, 1933—No. 1916116



Patented
June 27, 1933
No. 1916116



Section Through Threshold Showing Latch in Position

Width, 5 in. Height, $\frac{3}{8}$ in. Height of buffer, $\frac{5}{8}$ in. For $1\frac{3}{4}$ to $2\frac{1}{4}$ in. doors.

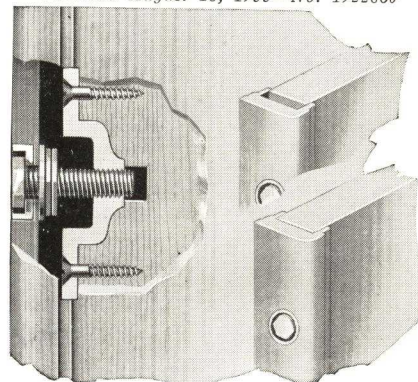
By specifying Von Duprin Thresholds with buffers, strikes and integral parts, you automatically eliminate practically all chance of an unsatisfactory installation and consequent condemnation of the panic bolts.

These thresholds are made of architectural bronze to your order, are shipped with the devices so that they may be installed at the same time, and are ready for installation with screwholes drilled, complete with $1\frac{1}{4} \times \frac{1}{8}$ -in.—18 brass machine screws and A. J. Type expansion shields.

These thresholds cost very little, if any, more than the ordinary brass or bronze threshold and do very much to assure a highly satisfactory installation.

Von Duprin Compensating Astragal Hardware

Patented August 18, 1933—No. 1922860



When double doors have astragals applied with this hardware, clearance is quickly adjusted with special wrench—no skilled labor required—prevents loss of heat, picking of lock, and permits perfect closing of doors.

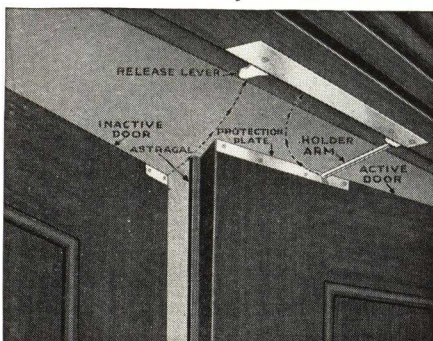
Von Duprin Co-ordinator No. 1243

Pat. Oct. 1, 1935—
No. 2015996

Co-ordinating, Interference or Controlling Device for double doors with overlapping astragal or rabbeted face doors to insure the closing of the inactive door before the active door closes.

Cast Brass or Bronze

Applied to Soffit: Inside of doors—can be mortised flush into stop, or surface mounted. **Reversible:** Will fit regardless of which door is active. **Size of Case:** $1\frac{1}{2}$ in. wide, 13 in. long, $\frac{5}{8}$ in. thick. **Holder Arm:** $7\frac{1}{2}$ in. long—can be cut to proper length on job. In cutting arm make same $\frac{1}{2}$ in. shorter than required length, then drive in the special bullet nosed tip.

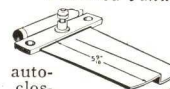


Active door is held open by Holder Arm until inactive door engages the Release Lever. This causes Holder Arm to travel into the case of the device and permits the active door to close only after the inactive door has first closed.

Von Duprin Co-ordinating Devices

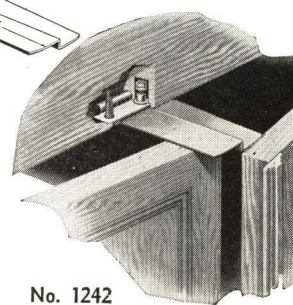
Cast Brass or Bronze

Patented January 22, 1929—
No. 1699758



These devices automatically control closing of doors with overlapping astragals, as well as rabbeted face doors. By simply holding the active door until inactive door has closed, they frustrate any attempt to close the active door first.

No. 1242 type will be found very satisfactory where some adjustment may be necessary at time of installation, since it is a simple matter to shorten the arm of this type by cutting with a hack saw.



No. 1242

AMERICAN CABINET HARDWARE CORP.

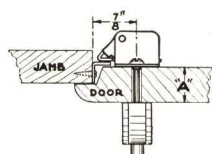
416 South Main Street
ROCKFORD, ILL.

SOLD BY LEADING DEALERS AND JOBBERS—SEND FOR COMPLETE CATALOG

Luster-Chrome "DELUXE" CABINET HARDWARE IN COLOR

Designed for America's finest homes, Luster-Chrome DeLuxe Cabinet Hardware costs but few dollars more for the average installation. Pleasingly modern in design and mechanically superior, this hardware will add distinctive beauty and convenience to any room or kitchen in which it is used.

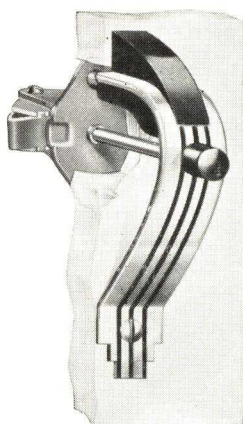
Beautiful polished chromium platings with embossed lines and moulded plastic bases in Ebony Black, Red, Delphinium Blue, Green, Ivory and Yellow, all serve to aid the architect in carrying out harmonious color designs. Catches, Knobs, Pulls and Hinges all match perfectly in design.



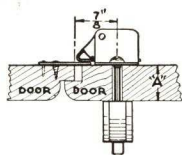
Catch Applied to Overlapping Door Using "D" Strike



"D" Strike



No. E08760 Brass Catch (Design Patent D109464)



Catch Applied to Flush Door Using "B" Strike



"B" Strike

"PUSH BUTTON" SELF-LOCKING CATCH

"Push Button" Self-locking Catch can be easily applied to Flush or Offset doors up to 1½" thick. Instructions furnished with every Catch. Reversible—for Right Hand or Left Hand Doors. Only Handle and Plunger show when door is closed.

Winged Latch Bolt precision mechanism eliminates beveled bolt, reducing friction and assuring easy, yet positive action.



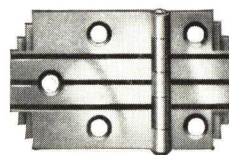
No. E08215 Brass Door Pull 2½-in. Centers (Design Patent D109464)



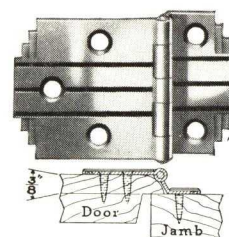
No. E0563 Brass Knob (Stainless Steel Cap)



No. E08260 Brass Drawer Pull—3-in. Centers (Design Patent D109464)



No. E3002—Steel
No. E03002—Brass
For Flush Doors



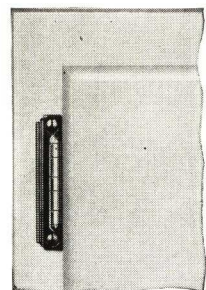
No. E3004—Steel
No. E03004—Brass
For Overlapping Doors
¾-in. Offset

MODERN SEMI-CONCEALED HINGES FOR LIP DOORS

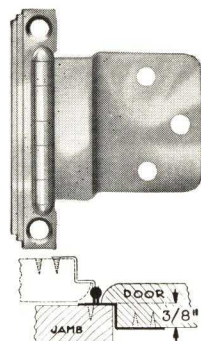
*Sturdy Five Knuckle Joints—Raised Type**

Lip doors offer several advantages over Flush doors. They are not as quickly affected by warping, swelling, or shrinkage of the door. They cover up irregularities of out-of-square openings and also help

to align the fronts. The quarter-round on the face edge of the door overlaps the frame for a permanently attractive installation. Hinges shown below require no mortising and are easy to apply.



Semi-Concealed Hinges show only the small leaf and knuckle when door is closed. Illustration above shows application on Overlapping (Lip) Door

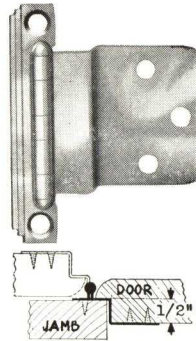


No. E7558—Steel
No. E07558—Brass
For Overlapping Doors
¾-in. Inset

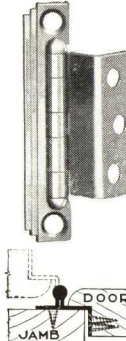
*RAISED TYPE

Raised Joint permits door to open all the way back, see profile views below each hinge. This prevents undue strain on hinges and screws when doors are hastily opened. Hinges are regularly supplied in Steel, heavily Chromium plated.

All illustrations on this page are one-half actual size



No. E7570—Steel
No. E07570—Brass
For Overlapping Doors
½-in. Inset



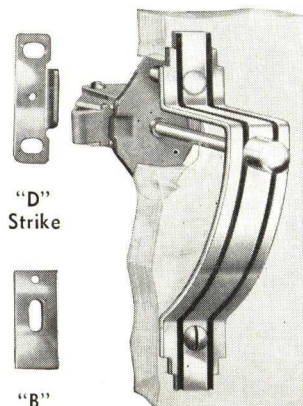
No. E7610—Steel
No. E07610—Brass
For Overlapping Doors
½-in. Inset or more

Luster-Chrome "MASTER" CABINET HARDWARE— COLOR EMBOSSED

Luster-Chrome Cabinet Hardware is heavily Chromium plated with generous undercoats of Nickel on Brass items, and Copper and Nickel on Steel items, to assure many years of brilliant beauty. Colors are

oven-baked onto the metal to prevent chipping and wear. Available in polished Chromium with lines of Black, Red, Green, Blue, Ivory or Yellow.

For high grade cabinet hardware in COLOR at moderate cost specify Luster-Chrome "Master"—Color Embossed.

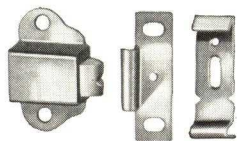


"D"
Strike

"B"
Strike

No. E04650 Brass Catch

Reversible Catch for Flush or Overlapping doors up to 1 3/8-in. thick. See application views on opposite page



No. E3655 Roll Point
(Reg. U. S. Pat. Off.)

Catch with "S" and "T"
Strikes for Flush and Offset
doors



No. 0252
Brass Door Pull
2 1/2-in. Centers



No. E0253 Brass Pull—3 1/4-in. Centers



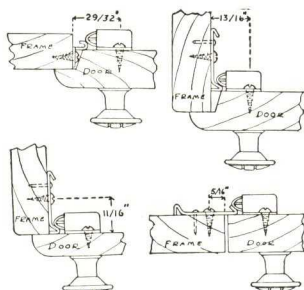
No. E0562 Brass Knob
(Stainless Steel Cap)



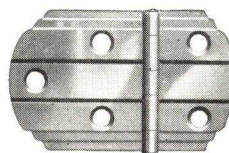
No. E0265 Brass Pull—2 1/2-in. Centers



No. E0266 Brass Pull—2 3/4-in. Centers



A few applications of No. E3655



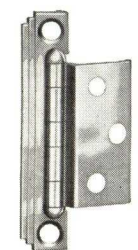
No. E3022—Steel
For Flush Doors



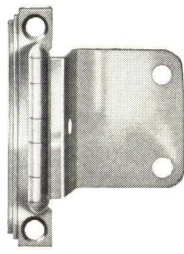
No. E3024—Steel
For Overlapping Doors
3/8-in. Offset

MODERN SEMI-CONCEALED HINGES FOR FLUSH DOORS

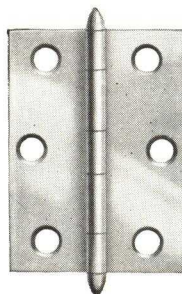
Sturdy Five Knuckle Joints



No. E7640—Steel
No. E07640—Brass
For Flush Doors



No. E7660—Steel
For 3/4-in. Flush
Plywood Doors



BUTT HINGE
No. E7525—Steel
2 1/2 x 1 13/16 In.
No. E7515—Steel
2 x 1 3/8 In.



No. E5988—Steel
For 3/4-in. Flush
Plywood Doors

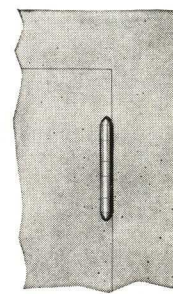


Illustration shows application of No. E5988 Hinge for 3/4-in. Laminated Doors. Only knuckle shows when door is closed

Hinges are regularly supplied in Steel, heavily Chromium plated.

All illustrations on this page are one-half actual size

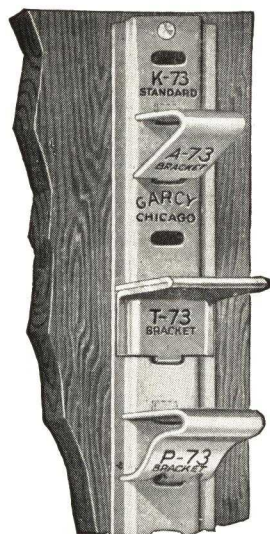
GARDEN CITY PLATING & MFG. CO., INC.

Showcase and Store Fixture Hardware
Corner Ogden Boulevard and South Talman Avenue
CHICAGO, ILLINOIS

NEW YORK OFFICE and WAREHOUSE, 133 Wooster Street

REPRESENTATIVES IN PRINCIPAL CITIES

For our pages on Lighting Equipment, see File Index

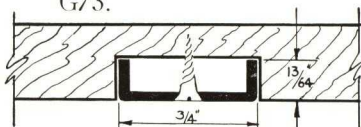


Hardware for Adjustable Shelving

Shelves are easily and quickly moved up or down. Brackets snap in and out easily, yet cannot be budged by load. They are tested up to 600 lbs. Slots in pilaster strips are numbered, making it easy to line up shelves.

No. K-73 Pilaster strips are $\frac{7}{8}$ in. wide with slots every $\frac{1}{2}$ in. Stock lengths, 3, 4, 6 and 12 ft. Also available for $\frac{1}{4}$ in. adjustment; $1\frac{1}{8}$ in. wide for $\frac{1}{2}$ in. adjustment. Free samples upon request.

NEW STANDARD for flush mounting. Makes neat installation, and can be painted or finished to match woodwork. No. U73 pilaster standard has slots every $\frac{1}{2}$ in. and can be had in lengths up to 12 ft. Illustration shows the two types of brackets for use with this standard—X73 and G73.

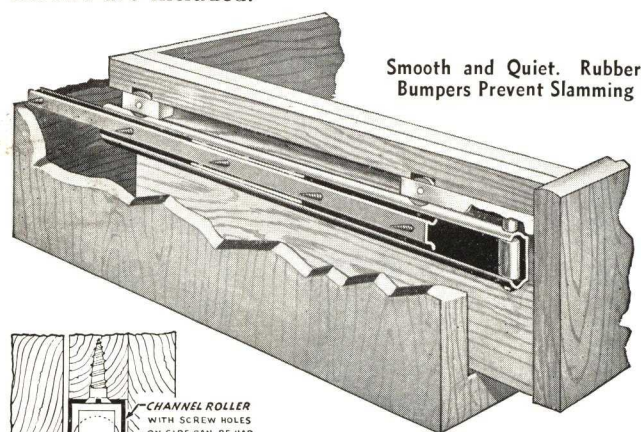


Full Size Section of U73

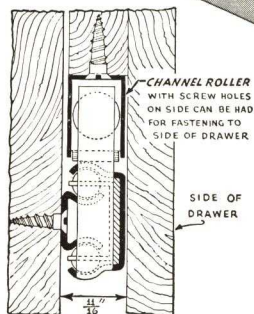


Ball Bearing Drawer Slides

Heavily laden drawers slide easily. Drawers pull out full length—all contents may be easily reached. Drawers are moved with ease. Easily installed—blue prints explaining installations sent on request. Slides furnished completely assembled ready for fastening to framework. Screws are included.



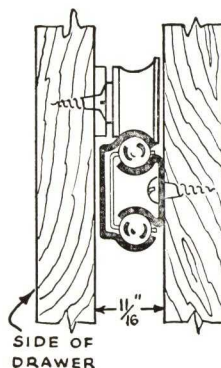
Smooth and Quiet. Rubber Bumpers Prevent Slamming



No. 361 Rollers contained in channel which is fastened to side of drawer. $\frac{1}{2}$ size section

Note: Two styles of upper rollers. We recommend No. 361 (section at left) to fasten upward to wooden drawer strip. Also furnished to screw directly to side of drawer if ordered. No. 363 arranged to screw directly to side of drawer. Stock sizes every inch 12 to 36 in. Other sizes made to order.

Length of slides must not exceed depth of drawer, as measured on outside from back of front panel to rear end of drawer.



No. 363 Rollers directly fastened to side of drawer $\frac{1}{2}$ size section

"Ball-Kary" Hardware for Sliding Glass Doors

Also made for wood frame doors (No. 2001) with shoe that will fit any thickness of door.

New, smooth, frictionless ball bearing track for sliding doors. Easy to install. Durable and troubleproof. Dirt and other accumulations cannot interfere with its operation. It is safe, strong, noiseless—operates on feather touch and cannot jump tracks. Heavy steel balls spaced $3\frac{1}{2}$ in. apart. Safe for heaviest doors.

Made of steel or bronze any finish. Steel statuary bronze is standard.

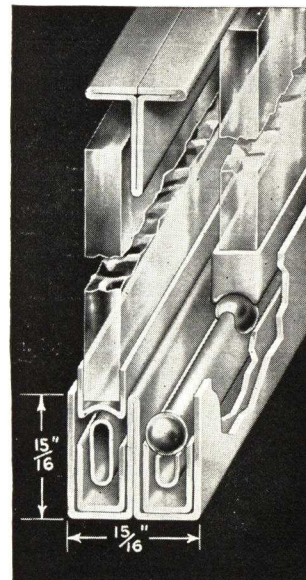


Illustration $\frac{3}{4}$ size No. 2000 Assembly for all glass doors. Shoes furnished for $\frac{1}{4}$ -in. glass

SPECIAL METAL WORK FOR STORES

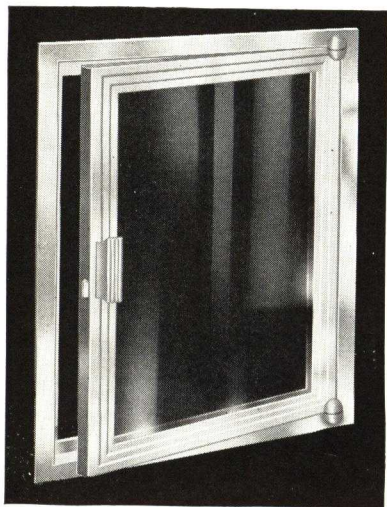
Metal Showcase Frames, Display Case Frames, Door and Mirror Frames, Metal Signs, Reflectors and Lighting Fixtures, and

GARCY
TRADE MARK REG.

all other metal work for store fixture use.

Write for literature. State items in which you are interested.

Metal Frames for Doors



ner frame, $\frac{1\frac{3}{8}}$ -in. face, pivot hinges and latch, with No. 2400 outer frame $\frac{1\frac{7}{8}}$ -in. face.

Illustrated left and below are several types of metal frames for doors. Channels are obtainable in a variety of shapes, made of formed or extruded metal in brass, bronze, nickel silver, or aluminum. Any number of combinations of outer and inner frames can be had.

There are also many types of hinges, latches and locking devices to choose from. Left is shown No. 2117 in-

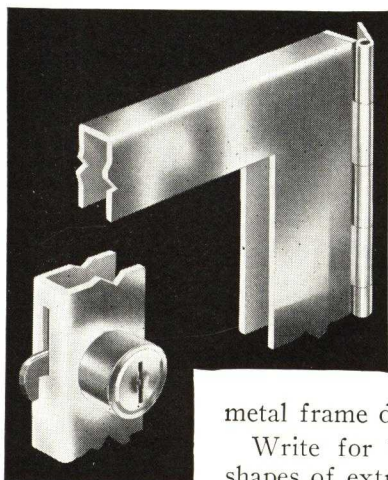
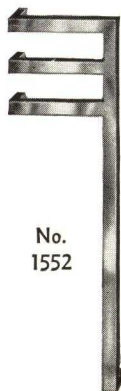


Illustration shows No. D2134 channel with cylinder lock and piano hinge. Channel face is $\frac{1\frac{5}{8}}$ -in. Lock is No. 2455 which can be applied to channels $\frac{1\frac{5}{8}}$ -in. face, or wider. Different styles of locks for narrower channels can be had.

When ordering metal frame doors, send full details.

Write for book showing various shapes of extruded metals and illustrated with suggestions as to their uses.

Modern Push Bars

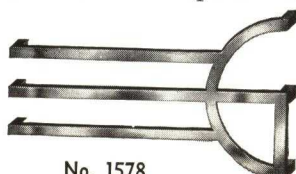


No.
1552

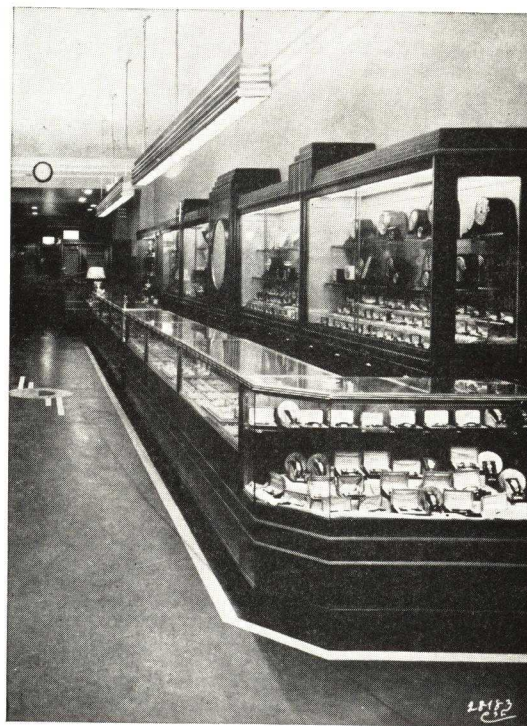
The grab and push bars illustrated are suggestive of the variety of designs in the Garcy line. Our forty years of experience in the field of metal manufacturing enables us to handle special metal work of almost any nature.

In addition to the regular line, push bars are made to specifications. Correspondence is invited.

Garcy Bulletin 36-120 (A.I.A. File 27B).



No. 1578



New Store of Block Jewelry Co., Flint, Mich.
Equipped with showcase frames, sliding door hardware, lighting fixtures and other special metal work—all by Garcy

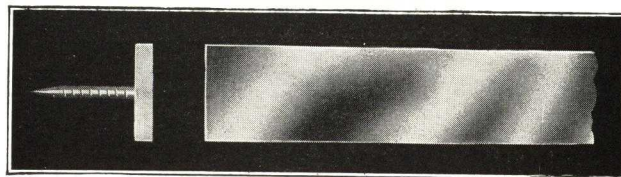
Metal Moulding

Flat, bent or extruded. Also snap-on. A complete line for a variety of architectural treatments is fully illustrated in Garcy Bulletin 37-41 (A.I.A. File 16E2).

Nail-On Flat Moulding

With concealed nails

Nails are embedded in back of strips. Can not be pulled out. Do not show on face. Moulding is held very rigid.



Made of brass, in satin brass, chrome plated and other finishes: $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and 1 in. wide, $\frac{3}{32}$ in. thick.

Moulding made of steel: $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and 1 in. wide, $\frac{3}{32}$ and $\frac{1}{8}$ in. thick.

Moulding made of aluminum: $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and 1 in. wide, $\frac{1}{8}$ in. thick.

KNAPE & VOGT MANUFACTURING COMPANY

MAIN OFFICE AND FACTORY
GRAND RAPIDS, MICH.

NEW YORK, N. Y., 5 East 12th St.
BOSTON, MASS., 104 Hanover St.
PHILADELPHIA, PA., 1234 Wakeling St.

BRANCH SALES OFFICES
LOS ANGELES, CALIF., 757 South San Pedro St.
SAN FRANCISCO, CALIF., 462 Bryant St.
SEATTLE, WASH., 2412 First Ave., So.

PORTLAND, ORE., 3707 N.E. 24th St.
DENVER, COLO., 312 Bank Block Bldg.
VANCOUVER, B. C., Bekins Bldg.

K-V ADJUSTABLE SHELF STANDARDS AND SUPPORTS

*Easily installed. Save time and labor.
Strength tested to 700 pounds.
Supports fit tight and secure.
Shelves instantly adjustable every half
inch.*

Standards No. 233 and No. 255 are numbered every inch to simplify adjustment and insure perfect alignment of the shelves. Screw holes every 6 inches.

No. 233 may be mortised flush or applied to surface of pilaster without mortise. No. 255 recommended mortised flush.

Selection of supports, Nos. 237, 239, 235 for No. 233 standard, as illustrated. All fit tight and secure, carry a heavy load. Use No. 256 support with No. 255 standard.

Stock lengths: standards, every 6 inches from 2 to 6 feet. Longer lengths to 12 feet, or cut to exact size.

Stock finish: No. 233, nickel plate, statuary bronze, cadmium plate on steel or brass; No. 255, nickel plate and statuary bronze on steel. Any finish as required.

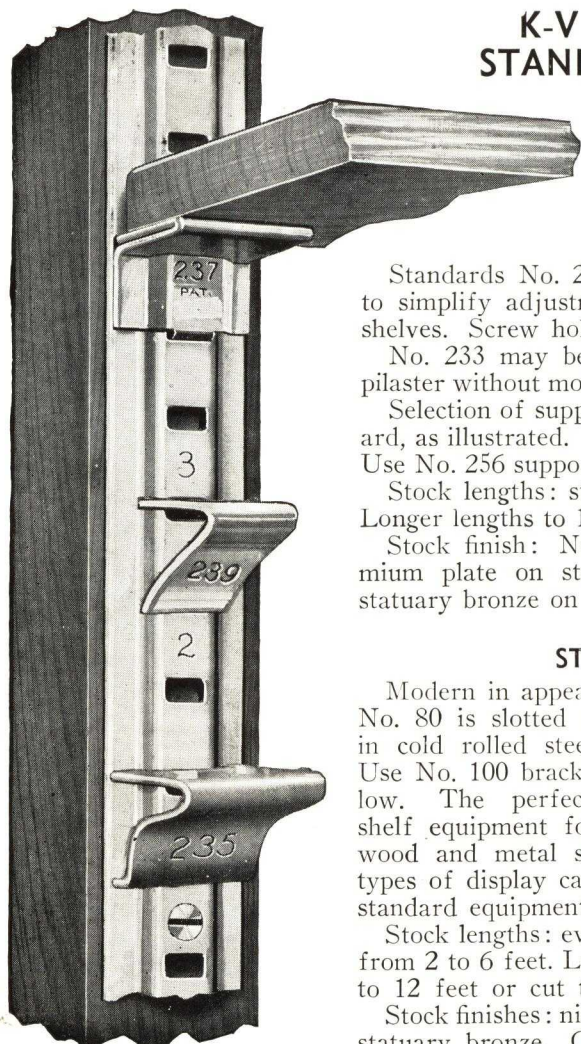
SHOWCASE SHELF STANDARD AND BRACKET

Modern in appearance, sturdy, efficient. Peerless Standard No. 80 is slotted for 1-inch shelf adjustment and is made in cold rolled steel and brass.

Use No. 100 bracket shown below. The perfect adjustable shelf equipment for glass, also wood and metal shelves in all types of display cases. Used as standard equipment.

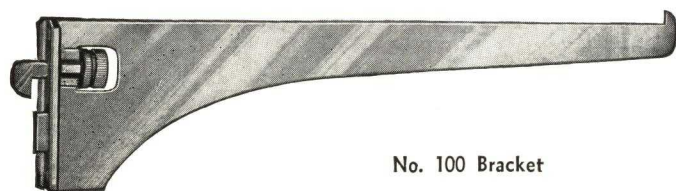
Stock lengths: every 6 inches from 2 to 6 feet. Longer lengths to 12 feet or cut to exact size.

Stock finishes: nickel plate and statuary bronze. Other finishes as required. Use brass, any finish, or steel, cadmium plated, if exposed to moisture.



No. 233 Standard

$\frac{11}{16}$ in. wide, $\frac{1}{2}$ -in. adjustment. With Supports Nos. 237, 239, 235



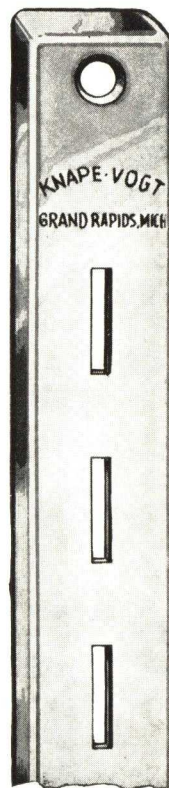
No. 100 Bracket

NO. 100 PEERLESS BRACKET

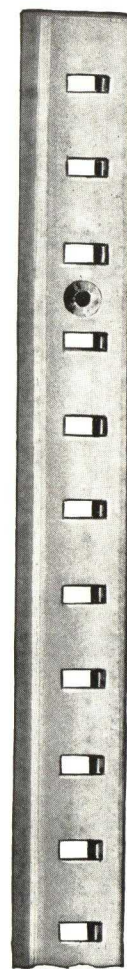
For use with Peerless Standard No. 80 illustrated at right. Fastens firmly by means of improved locking bolt and nut, simplifying adjustment and assuring great strength. Made in cold rolled steel and brass.

Stock sizes in inches: 4, 5, 6, 8, 9, 10, 12, 14, 16, 18, 20.

Stock finishes: nickel plate and statuary bronze.

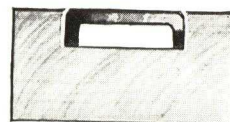


No. 80 Standard



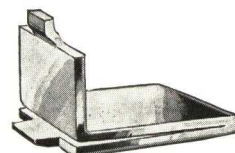
No. 255 Standard

$\frac{1}{2}$ -in. adjustment. Channel size, $\frac{3}{8} \times \frac{1}{8}$ in.



Cross Section

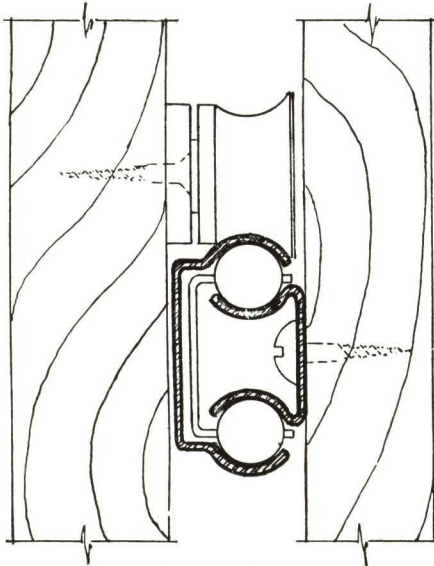
Illustrating flush installation. No. 255 Standard



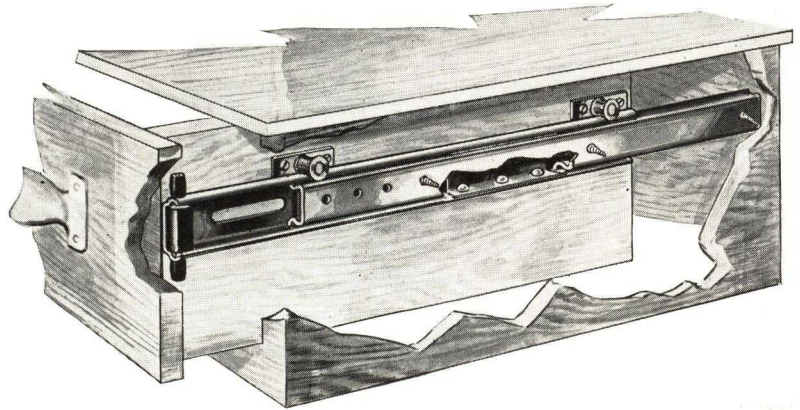
No. 256 Support

Cold rolled steel. Fits No. 255 Standard

K-V 1400 BALL BEARING EXTENSION DRAWER SLIDE



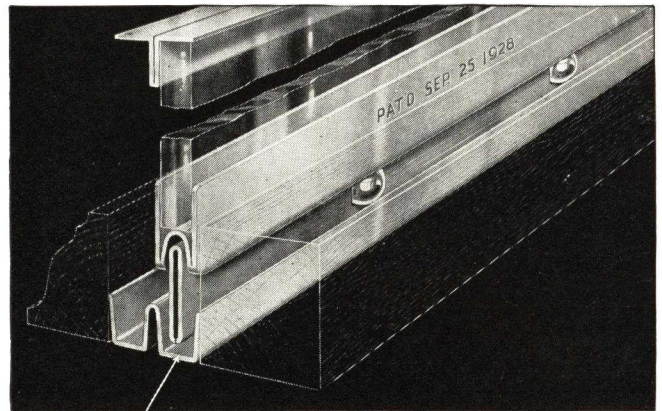
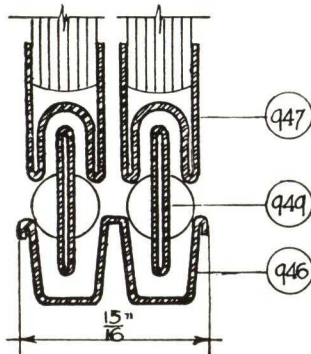
Full Size End View



Ideal for all built-in drawers in residences, banks, stores, offices, institutions, where quick response to a slight pull is desirable, regardless of the size or weight of the drawer and its contents. Permits opening drawer to full length.

Only measurement required is the distance from back of front drawer panel to back of the drawer. Easily installed. Stock sizes every inch from 15 to 38 inches. Finish: statuary bronze and cadmium plate.

EUSTIS BALL BEARING SLIDING GLASS DOOR TRACK



K-V latest improved glass door track—new frictionless ball bearing operation—noiseless, free running, easily installed. Accumulation of dirt in lower channel cannot affect the smooth and silent operation of the ball bearing.

Complete assembly per foot of opening, consists of 1 foot No. 953 Upper "T," one foot of No. 947 Shoe, 1½ foot No. 949 Carrier, and 1 foot of No. 946 Lower Track.

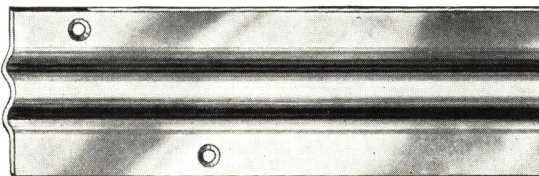
Metal shoe takes ¼ or ⅝-inch glass. Ball bearings in carrier

spaced on 4-inch centers. Tested to carry 792 pounds per foot of track. No oiling, frictionless, durable.

This assembly also is suited for use with wood frame sliding doors. For this purpose No. 947 Shoe may be mortised into the door frame and either No. 946 or No. 947 mortised into the base as track.

Stock lengths: 8, 10, 12 feet. Standard finish: statuary bronze and white nickel on steel. Also offered in brass or bronze.

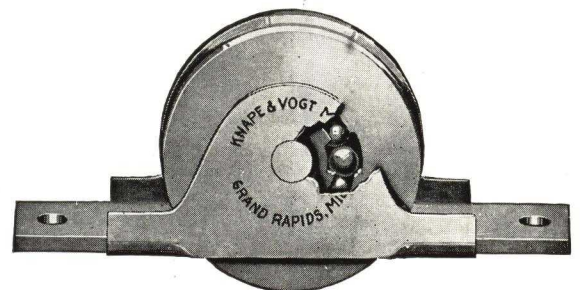
WOOD FRAME SLIDING DOOR SHEAVES AND TRACK



No. 465 Solid Brass Flush Track
⅞ in. wide. Use with No. 413 Sheave



No. 461 Solid Drawn Steel Track
⅞ in. wide. Use with No. 431 Sheave



No. 413 Axle Bearing Sheave
Brass frame, bronze wheel. For use with No. 465 Brass Flush track

No. 430 Ball Bearing Sheave
Steel. For use with No. 461 Steel track
Frame for above 2¼ x 1½ ins. Wheel 1⅞-in. diameter.



No. 550—Swinging Trouser Hanger

Holds 4 pairs trousers, full length, by the cuffs; always in press, easily accessible. Also women's skirts. Each arm swings individually. Fastens anywhere. 13½ ins. long.

*Actually Double
Clothes Closet
Capacity*



No. 3—Garment Bracket

Extra long and strong for as many as 8 coats or a dozen less bulky garments. Allows hanging more clothes in less space. 10 ins. long.



No. 4—Shoe Rack

Keeps shoes off the floor in neat and orderly arrangement. Adjustable from 18 ins. to 32 ins. in length to fit available space. Toe guard prevents shoes falling off swinging door.



No. 1182—Shoe Rack

18 ins. long closed, 32 ins. extended full length. Holds any size adult shoe firmly in place by toe guard. Keeps each pair of shoes in perfect condition up off the floor.



No. 798—Disappearing Towel Rack for Under-Sink Cabinets

A practical rack that slides out at a touch, then back out of sight and out of the way. Towels slip conveniently over free ends of four parallel bars. Excellent drying rack. Length 20 ins. Space required 8 ins. wide. Exposed parts, polished chrome.

K-VENIENCE CLOTHES CLOSET FIXTURES



K-Venience No. 1—Clothing Carrier

Slides in and out of the closet on ball bearing rollers, carrying garments out of the closet into the light of the room. Doubles hanging space. Made in seven sizes. Adjustable to fit any clothes closet.

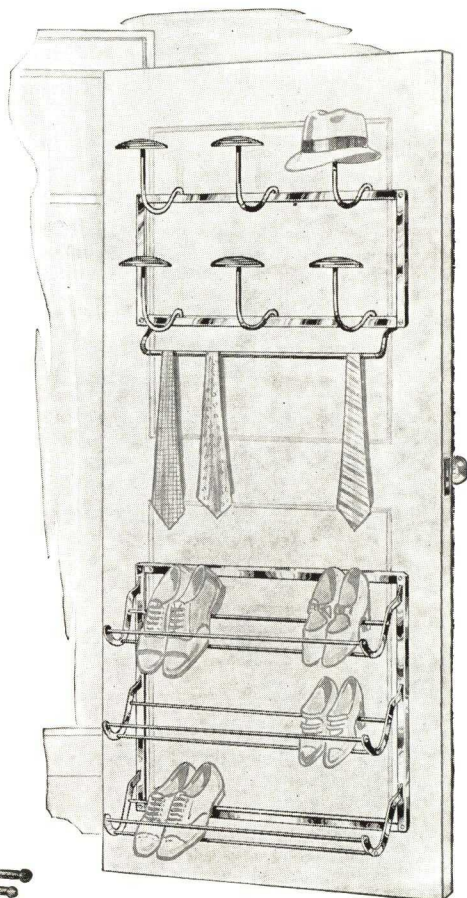
12-in. size fits any closet 12 ins. to 16 ins. deep.
16-in. size fits any closet 16 ins. to 20 ins. deep.
20-in. size fits any closet 20 ins. to 24 ins. deep.
24-in. size fits any closet 24 ins. to 30 ins. deep.
30-in. size fits any closet 30 ins. to 36 ins. deep.
36-in. size fits any closet 36 ins. to 42 ins. deep.
42-in. size fits any closet 42 ins. to 48 ins. deep.



K-Venience No. 2—Extension Closet Rod

Easily attached to wall or hook rail. Three sizes.
18-in. size—adjustable from 18 ins. to 30 ins. in length.
30-in. size—adjustable from 30 ins. to 48 ins. in length.
48-in. size—adjustable from 48 ins. to 78 ins. in length.
72-in. size—adjustable from 72 ins. to 96 ins. in length.

*All Fixtures made of Steel, Polished Nickel-plate or
Polished Chromium-plate Finish*



Upper Fixture—No. 782 Hat and Tie Combination

Holds 6 hats and a large number of ties. 20½ ins. wide, 18½ ins. high.

Lower Fixture—No. 784 Shoe Rack Combination

Holds 8 to 12 pairs of shoes securely in place by toe guards. 20½ ins. wide, 26 ins. high.

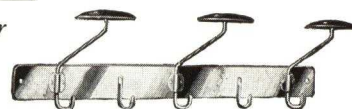
These combination fixtures are packed individually. May be used one above the other as shown, or separately. Easily attached to door or closet wall. Convert waste space to practical use.



No. 6—Hat Holder

A closet or hall fixture that looks well, and serves its purpose to equal advantage. Arms swing to desired position. Fills a need in every home.

*Convert Waste
Space to
Practical Use*



No. 786—Hook Strip and Hat Rack

Has hooks for clothing, and swinging hat holders for hats. More attractive than other wall hooks and better for hats. Easily mounted on any wall or closet door. 24 ins. long.



No. 777—Swinging Tie Rack

Square arm, set with dividing pegs, swings to left or right against wall or door when not in use. Keeps ties in perfect order. Arm 18 ins. long.



No. 771—Folding Tie Rack

A new principle in tie racks. Pulls out from door or wall affording easy access to ties, then folds back out of the way. Has full 36 separate compartments, each holding one or several ties. Handy to use, nothing like it in design. 20 ins. wide.



No. 547—DeLuxe Tie Rack

This rack provides space for literally dozens of ties in perfect array, or 21 ties each on a separate peg. Offers the advantage of removing one tie without dislodging others. 24 ins. long.

KASON HARDWARE CORPORATION

MAIN OFFICE AND FACTORY

127-137 Wallabout Street, BROOKLYN, N. Y.

CHICAGO BRANCH: 1411 South Michigan Boulevard

SALES REPRESENTATIVES IN PRINCIPAL CITIES

For Kason Refrigerator Hardware, etc., see File Index

TELEPHONE
EVergreen 7-1173

Products

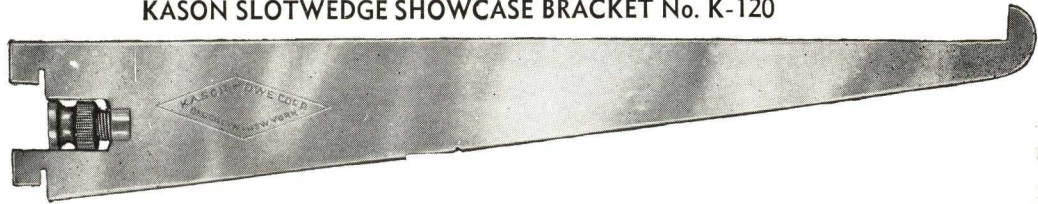
Adjustable Shelf Supports; Counter Brackets; Ball Bearing Sheaves; Sliding Door Tracks; Tracks and Carriers for Frame-

less, Sliding Glass Doors; Drawer Pulls and Handles; Showcase Fittings; Hinges and Latches; Wardrobe Hooks; Mirror Hinges; Garment Carriers; and Display Stands.

KASON SLOTWEDGE SHOWCASE BRACKET No. K-120



Slotwedge
Standard K-121



A note of beautiful modernism and a sturdy shelf support are provided in the Kason Slotwedge Brackets. The two notched projections on the bracket fit into the slotted standard. The bracket is firmly fastened into the standard by means of the adjustable locking wedge provided.

Made in the following metals and finishes:

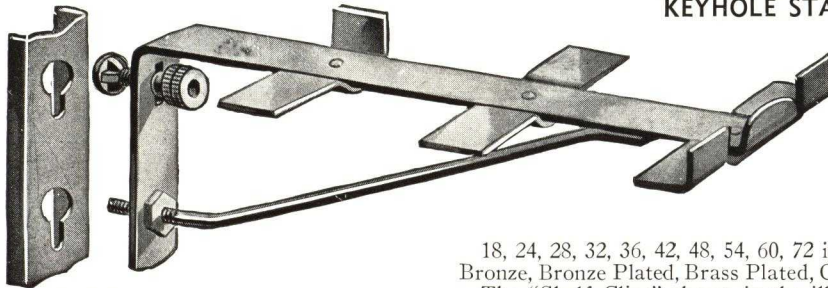
Brass: Polished Brass, Nickel Plated, Dull Nickel, Chromium Plated in bright or satin finish.

Steel: Statuary Bronze, Cadmium Plated, Nickel Plated and Chromium Plated in bright or satin finish.

Sizes: 4, 6, 8, 10, 12, 14, 16, 18 and 20 ins.

Slotwedge Standards are made of the same metals and in the same finishes as the brackets. Stocked in all standard lengths.

KEYHOLE STANDARDS AND BRACKETS



Keyhole
Standard No. 30

Keyhole Brackets—(Cat. No. 35) $\frac{1}{2} \times \frac{3}{32}$ in. In all standard sizes—from 3 to 18 ins.

Heavy Keyhole Brackets—(Cat. No. 37) $\frac{5}{8} \times \frac{1}{8}$ in. In all standard sizes—from 8 to 24 ins.

Slant Brackets—(Cat. No. 41) same dimensions as No. 37 Bracket. Supplied bent to any angle desired.

Standards—(Cat. No. 30) $\frac{3}{4}$ in. wide. Keyholes spaced $1\frac{3}{8}$ ins. on center. In the following lengths:

18, 24, 28, 32, 36, 42, 48, 54, 60, 72 ins. Made of the finest steel and finished in Statuary Bronze, Bronze Plated, Brass Plated, Cadmium Plated, Nickel Plated and Chromium plated. The "Shelf Clips" shown in the illustration are used to provide sturdier shelf support and to prevent the shelves from slipping.

KASON FRAMELESS SLIDING DOOR ASSEMBLY No. 7

The parts used for this assembly are marked on the illustration. To order this assembly give sizes of openings and size of doors. Made in the following metals and finishes:

Steel: Statuary Bronze, Brass Plated, Dull Nickel, Polished Nickel and Chromium Plated.

Brass: Dull Brass, Statuary Bronze, Dull Nickel, Polished Nickel and Chromium Plated.

PILASTER STANDARDS FOR MAKING ADJUSTABLE SHELVING

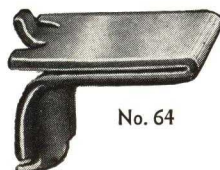
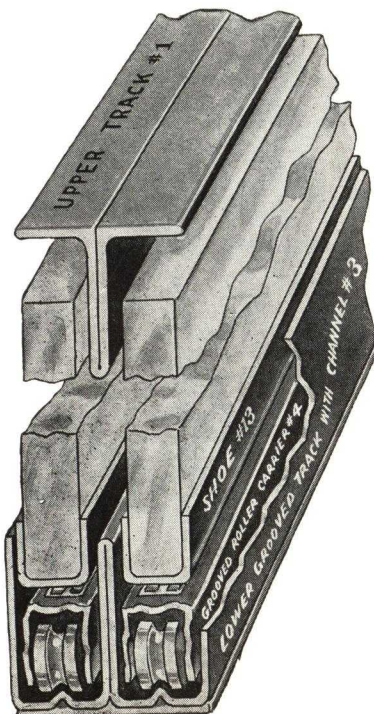
An inexpensive, flexible system of adjustable shelving is made possible with Kason Pilaster Standards (Cat. No. 60) and the Clip Brackets illustrated below. The Clip Brackets can be attached and detached in an instant, yet they will support a tremendous weight. Very easy to install and easily adjusted to meet the changing requirements of the user.

PILASTER CLIP BRACKETS

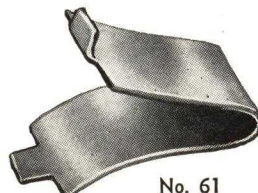
Size: $1\frac{1}{8}$ in. wide. Stocked in lengths from 18 ins. to 12 ft.

Adjustments: Shelves adjusted to the $\frac{1}{2}$ in.

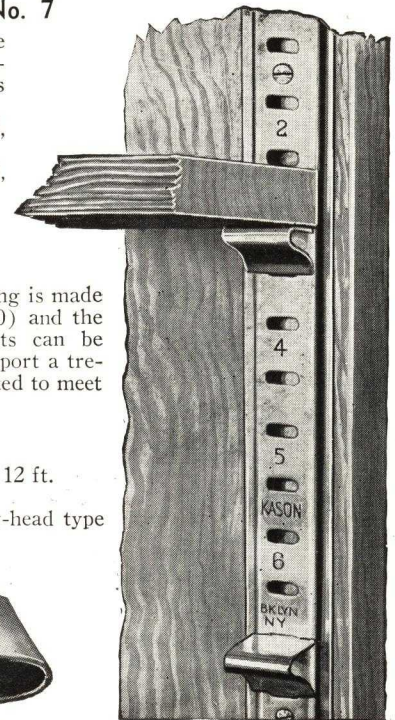
Made of Steel or Brass in all finishes. $\frac{3}{4}$ -in. screw-head type nails furnished.



No. 64



No. 61



Pilaster No. 60

ACKERMAN-JOHNSON CO.

Expansive Screw Anchors, Toggle Screw Anchors, Expansion Bolts,
Concrete Inserts

625 West Jackson Boulevard, CHICAGO, ILL.

NEW YORK OFFICE, 53 Park Place

Products

ACKERMAN-JOHNSON EXPANSIVE SCREW ANCHOR;
EXPANSION BOLTS; CONCRETE INSERTS and KINDRED
APPLIANCES; a new TOGGLE SCREW ANCHOR for use
where Toggle Bolts have been used.

Ackerman-Johnson Expansive Screw Anchor

Adaptability—For attaching objects to hard materials, as concrete, brick, stone, tile, marble, etc.

Description and Operation—Consists of a doubly tapered internally threaded cone made of brass, iron or steel (Fig. 1), within a lead alloy ductile sleeve (Fig. 2). These are assembled at the factory, the sleeve being forced on the cone to a normal position as at Fig. 3.



Fig. 1



Fig. 2



Fig. 3

Ackerman-Johnson Expansive Screw Anchor

When installed as illustrated, the sleeve is driven farther toward base of the cone and is expanded generally to any degree required to swedge tightly against the sides of hole, effecting perfect holding contact throughout the length and circumference of the anchor. Thus consolidated with the wall material, the anchor provides a machine threaded hole the same as an ordinary tapped hole in a machine part. Any object may then be attached with a standard screw or bolt of suitable diameter.

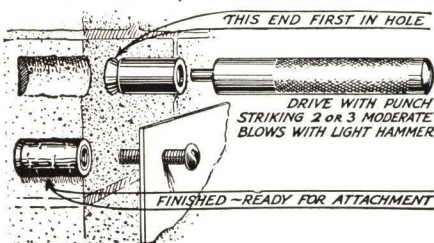


Fig. 4. Manner of Installing Anchor

The piloted setting punch supplied without charge with all anchors

The heavier the load attached, the more forcible becomes the expansion, causing the anchor to resist effort to pull it out far beyond the tensile strength of any screw or bolt.

Distinctive Advantages—Time saving through the use of Ackerman-Johnson anchors compared with old methods more than compensates their total cost.

They save much of drilling cost, requiring least depth for stated load. They are installed instantly, without the aid of the screw, and before the fixture is lifted into position to be fastened. Their margin of safety is equal to that of the steel bolts used.

They necessitate the least displacement of wall material and consequently less injury to buildings. They effect the neatest possible workmanship, while at the same time they are by far the strongest anchorage obtainable for the unusually heavy loads. Test data on request.

Sizes—The size of anchor is designated as the size of the bolt or screw to be used. Example: For No. 10-24 screw, use No. 10-24 anchor; for $\frac{3}{8}$ -in. bolts use $\frac{3}{8}$ -in. anchor.

EXPANSIVE SCREW ANCHORS

List Prices, Not Including Screws

Anchor size No.	Minimum dimensions of holes required, in.		Shipping weight, lbs. per 1000	List price per 100
	Diameter	Depth		
6 x32	$\frac{1}{4}$	$\frac{3}{8}$	7 $\frac{1}{2}$	\$ 3.80
8 x32	$\frac{1}{8}$	$\frac{1}{2}$	15	4.50
10 x24	$\frac{3}{8}$	$\frac{5}{8}$	22 $\frac{1}{2}$	4.95
12 x24	$\frac{1}{2}$	$\frac{3}{4}$	34	6.50
$\frac{1}{4}$ "x20	$\frac{1}{2}$	$\frac{7}{8}$	50 $\frac{1}{2}$	7.20
$\frac{1}{8}$ "x18	$\frac{5}{8}$	1	95	9.75
$\frac{3}{8}$ "x16	$\frac{3}{4}$	1 $\frac{1}{4}$	162	12.00
$\frac{1}{2}$ "x14	$\frac{7}{8}$	1 $\frac{1}{2}$	231	15.00
$\frac{1}{2}$ "x13	$\frac{7}{8}$	1 $\frac{1}{2}$	221	15.00
$\frac{5}{8}$ "x11	1 $\frac{1}{8}$	2	512	25.00
$\frac{3}{4}$ "x10	1 $\frac{1}{4}$	2 $\frac{1}{4}$	560	50.00

Packed 50 or 100 in box.

8, 10 and $\frac{1}{4}$ -in. sizes manufactured in special short lengths. For use anchoring in glass and marble panels, etc. $\frac{3}{4}$ x10-in. and 1x8-in. anchors are now available.

Stud Type Expansion Bolts

So great is the holding power of this anchorage, that when set in strong stone or concrete with only its one primary sleeve expanded, the bolt shank can be pulled in two, without the anchorage yielding.



Bolt with Primary Expansive Sleeve Only

Secondary Expansive Units—Made up of an expansive sleeve and a slip steel cone, giving additional anchorage equal to the primary unit. Calculate the minimum depth of holes for setting each unit at twice the diameter of the hole drilled.



Bolt with Primary and One Secondary Expansive Unit



Sectional View Showing Bolt with Primary Expansive Sleeve, One Iron Spacing Sleeve, and One Secondary Expansive Unit

SIZES, STUD TYPE EXPANSION BOLTS

Diam. of bolt at thread, in.	Diam. of hole, in.	Length of bolts in inches
$\frac{1}{4}$	$\frac{3}{8}$	1 $\frac{1}{4}$, 1 $\frac{1}{2}$, 1 $\frac{3}{4}$, 2, 2 $\frac{1}{2}$, 3, 3 $\frac{1}{2}$, 4
$\frac{5}{16}$	$\frac{1}{2}$	1 $\frac{1}{2}$, 2, 2 $\frac{1}{2}$, 3, 3 $\frac{1}{2}$, 4, 5
$\frac{3}{8}$	$\frac{5}{8}$	1 $\frac{3}{4}$, 2, 2 $\frac{1}{4}$, 2 $\frac{1}{2}$, 3, 3 $\frac{1}{2}$, 4, 4 $\frac{1}{2}$, 5, 6, 8
$\frac{1}{2}$	$\frac{3}{4}$	2 $\frac{1}{2}$, 3, 3 $\frac{1}{2}$, 4, 5, 6, 7, 8, 10, 12, 15, 20
$\frac{5}{8}$	1	3 $\frac{1}{2}$, 4, 5, 6, 7 $\frac{1}{2}$, 9, 10 $\frac{1}{2}$, 12, 15
$\frac{3}{4}$	1 $\frac{1}{8}$	4, 5, 6, 7 $\frac{1}{2}$, 9, 10, 10 $\frac{1}{2}$, 12

Other lengths carried in stock and larger sizes made to order.

Ackerman-Johnson Concrete Inserts

For moulding into the concrete when poured. Afford minimum displacement of the concrete and maximum speed in setting. Can be furnished for all sizes of screws and bolts up to $\frac{5}{8}$ -in. diameter.



Exterior view



Embedded in concrete

Ackerman-Johnson Concrete Insert

Users of Ackerman-Johnson Products

Extensively adopted by leading contractors, manufacturers, railroads, shipyards, government departments and public utility companies.

ACKERMAN - JOHNSON TOGGLE SCREW ANCHORS

Toggle Screw Anchors were designed to be used wherever "toggle bolts" could ordinarily have been used.

They make perfect screw anchor-



wing and four-wing types.

Made in two lengths, "long" and "short."

Made also in extra short length for sheet metal and other thin panels.



ages to all wall structures such as hollow tile, hollow or solid soft gypsum tile, expanded metal or wood lath and plaster, every type and kind of wall board, thin wood panels, marble, slate, glass or other materials too thin for the proper setting of Expansive Screw Anchors, also, in soft wood, soft brick, cork or other substances too yielding for a screw or for an expansion bolt and to sheet metal walls, ceilings, air ducts, etc. With the specially designed tool they are easily and speedily *preset*, that is they are set, accurately and firmly, without it being necessary even to have on hand the object to be hung or the screw with which it is to be fastened.

They will remain so *preset* for repeated use, times without limit. It is impossible for the nut to be lost or even to move when it may be necessary at any time to withdraw the screw.

Only the ordinary stock lengths of screws are necessary with these toggles. Screws will average at least $1\frac{1}{4}$ in. shorter than those necessary for "toggle bolts."

There are so many points of superiority over "toggle bolts" in this system of fastening that space on this sheet does not permit covering.

Made for No. 8x32, No. 10x24, and $\frac{1}{4}$ "x20 standard machine screws.

Made in two-

This extra short special made in four-wing type only.

"Extra short" anchors are for wall thickness, $\frac{3}{16}$ in. and less. "Short" anchors are for wall thickness, $\frac{3}{16}$ to $\frac{5}{8}$ in. "Long" anchors are for wall thickness, $\frac{5}{8}$ to $1\frac{1}{4}$ in. Made of steel, cadmium plated, can be furnished in brass. In soft substances, such as gypsum tile, soft brick, mortar, soft wood, cork insulation, etc., where thickness is too great for the anchors to reach through, they will clinch for a perfect setting, as may be seen in two settings shown in the illustration of a section of gypsum tile in Fig. 1 at left. The long, two-wing type is the better choice for gypsum block, the long four-wing for very yielding material such as cork.

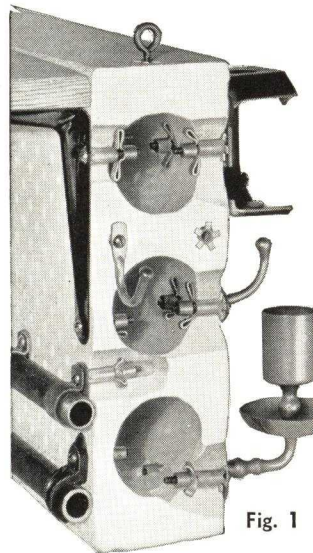


Fig. 1

A Section of Gypsum Tile, Chipped Away to Expose the Set Anchors

Note particularly the perfect clinch of those toggles which could not reach through the gypsum body

LIST PRICES, NOT INCLUDING SCREWS

For screw size	Type	Length to specify	For wall thicknesses	Diam. of holes to drill	List price per 100
8x32	4-Wing	Ex. Short	0 to $\frac{3}{16}$ "	$\frac{3}{8}$ "	\$6.80
8x32	2-Wing	Short	$\frac{3}{16}$ " to $\frac{5}{8}$ "	$\frac{3}{8}$ "	7.00
8x32	4-Wing	Short	$\frac{3}{16}$ " to $\frac{5}{8}$ "	$\frac{3}{8}$ "	7.00
8x32	2-Wing	Long	$\frac{5}{8}$ " to $1\frac{1}{4}$ "	$\frac{3}{8}$ "	7.40
8x32	4-Wing	Long	$\frac{5}{8}$ " to $1\frac{1}{4}$ "	$\frac{3}{8}$ "	7.40
10x24	4-Wing	Ex. Short	0 to $\frac{3}{16}$ "	$\frac{1}{2}$ "	6.80
10x24	2-Wing	Short	$\frac{3}{16}$ " to $\frac{5}{8}$ "	$\frac{1}{2}$ "	7.00
10x24	4-Wing	Short	$\frac{3}{16}$ " to $\frac{5}{8}$ "	$\frac{1}{2}$ "	7.00
10x24	2-Wing	Long	$\frac{5}{8}$ " to $1\frac{1}{4}$ "	$\frac{1}{2}$ "	7.40
10x24	4-Wing	Long	$\frac{5}{8}$ " to $1\frac{1}{4}$ "	$\frac{1}{2}$ "	7.40
10x24	2-Wing	Ex. Long	$1\frac{1}{4}$ " to $1\frac{3}{4}$ "	$\frac{1}{2}$ "	8.00
$\frac{1}{4}$ "x20	4-Wing	Ex. Short	0 to $\frac{3}{16}$ "	$\frac{1}{2}$ "	8.10
$\frac{1}{4}$ "x20	2-Wing	Short	$\frac{3}{16}$ " to $\frac{5}{8}$ "	$\frac{1}{2}$ "	8.40
$\frac{1}{4}$ "x20	4-Wing	Short	$\frac{3}{16}$ " to $\frac{5}{8}$ "	$\frac{1}{2}$ "	8.40
$\frac{1}{4}$ "x20	2-Wing	Long	$\frac{5}{8}$ " to $1\frac{1}{4}$ "	$\frac{1}{2}$ "	8.90
$\frac{1}{4}$ "x20	4-Wing	Long	$\frac{5}{8}$ " to $1\frac{1}{4}$ "	$\frac{1}{2}$ "	8.90

Setting tool for No. 8x32 or No. 10x24, complete, \$.050

Extra Draw Spindle No. 8x32 or No. 10x24,20

When ordering Toggle Screw Anchors, please specify according to first three columns.

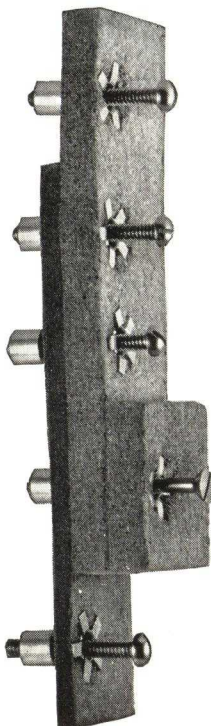
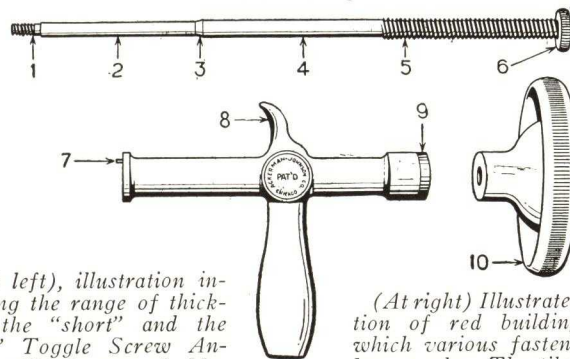


Fig. 2

Use of Setting Tool



(At left), illustration indicating the range of thickness the "short" and the "long" Toggle Screw Anchors will take care of. Materials pictured are Masonite and Celotex wallboards

(At right) Illustrated, is a section of red building tile to which various fastenings have been made. The tile has been chipped away to expose some of the settings

(Above) 3 parts comprising the setting tool. (1) to (3) chrome vanadium, heat treated stud, butt welded at (3) to larger section of draw shaft. (5) Fast, double lead thread. (6) Knurled thumb nut for loading, integral with shaft. (7) Hardened stud, prevents rotation of anchor while being set. (8) Comfortable forefinger grip. (9) Hardened steel thrust bearing. (10) Hand wheel threaded to fit (5)

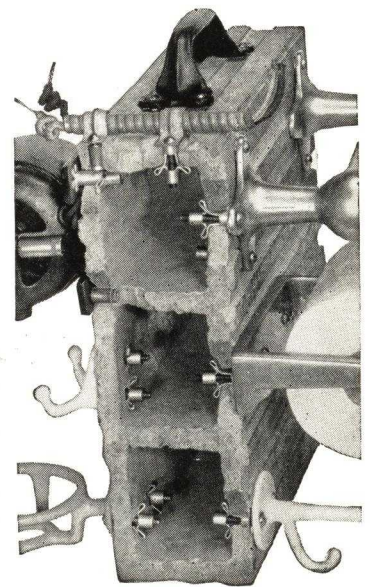


Fig. 3

CROESSANT MACHINE WORKS

Manufacturers of Molly Expansion Bolts and Molly Boiler Repair Plugs

39-41 Moss Street, READING, PA.

MOLLY EXPANSION BOLTS

ADVANTAGES OF MOLLY UNIVERSAL SCREW ANCHORS

Mollys are especially effective and valuable when used in panels or in soft or fragile materials.

In solid materials a single Molly can hold several hundred pounds against a direct, outward pull and much more against lateral pressure.

With a Molly you may take out the screw as often as you like without loosening the anchor.

Mollys do not depend for their grip on bursting pressures on the sides of holes into which you put them.

Mollys spread their grip in four directions at least and over a large surface, avoiding concentrated pressures that may crack plastered walls or other fragile materials.

Mollys fit snugly into small holes and support screws at both ends so there can be no sag or movement to wear out holes and create dirt.

Molly head flanges cover and protect the edges of holes into which they are set.

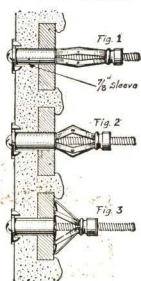
The design of the Molly and its application are such that there is always some spring left in its expanded fingers, enabling it to hold like a lock washer against vibration.

You will be astonished to find how quickly and surely Mollys can be applied, without elaborate tools. A screw driver alone is generally sufficient, but in weak plaster or soft or crumbling materials Molly Safety Wrenches protect the material and insure successful applications.

When large numbers of anchors are to be set, economies may be effected with the Molly High Speed Setter used in a spiral screwdriver or carpenter's brace.

The design of Molly Screw Anchors is original. It makes use of the inherent rigidity of the triangle and is protected by U. S. Patent No. 2,018,251.

USE OF MOLLYS IN LATH AND PLASTER

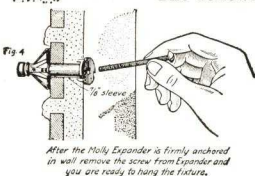


It is no longer necessary to tear out plaster work to "back up" for installations. The Molly Screw Anchor makes its own backing. It is the only screw anchor that will work in wallboard and all similar types of plaster substitutes, as well as in lath and plaster or plaster over expanded metal lath. It is equally well suited for use in concrete or brick, whether plastered or unplastered, or in hollow tile, gypsum block, concrete block or any other material.

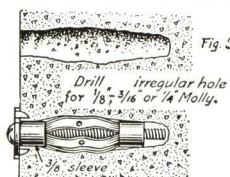
Instructions will be found in each package of Mollys. The following information will also be helpful.

In walls $\frac{3}{8}$ to $\frac{5}{8}$ in. thick use the S type Molly. In walls $\frac{5}{8}$ to $1\frac{1}{2}$ in. thick use the L type Molly. In solid walls, unplastered, use the S type Molly. In solid walls, plastered, use the L type Molly.

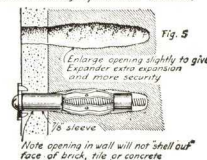
When using Mollys in solid walls prepare hole as in Figs. 5 and 6. Insert anchor and give screw 1 to 2 full turns—no more—then remove screw, attach fixture and give one more full turn.



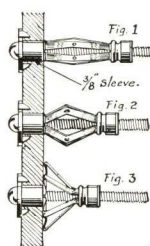
MOLLYS IN SOLID WALLS



PLASTER OVER BRICK OR CONCRETE
1/8, 3/16 or 1/4 Molly Expander use Star Drill.



MOLLYS IN WALLBOARD

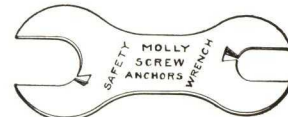
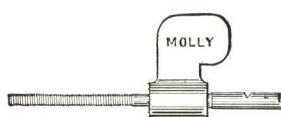


With Mollys you can fasten anything to walls, ceilings or floors of any kind and do it quicker, more neatly and safely.

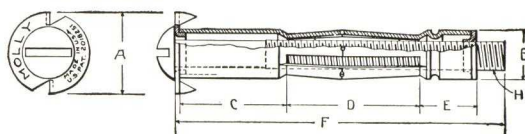
Plumbing fixtures, bathroom and other accessories, cupboards, closets, medicine cabinets, mirrors, pictures, book racks, signs, theatre chairs, shelves, partitions, draperies, decorations and what-have-you-else to fasten—Mollys will hold them securely and without damage to buildings or materials.

Fastened with Mollys, fixtures may be removed and replaced, without difficulty, as often as desired for redecorating and other purposes.

The Molly High-Speed Installer, shown at left below, is for use where large quantities of Mollys are to be installed. The Molly Safety Wrench, shown at right below, is for particular use where walls are very brittle and crumbly.



STANDARD SIZES



STANDARD SIZES (INCHES)

Bolt series	Head diam.	Body diam.	Sleeve length	Expander length	Nut length	Over-all length	Bolt Size	Max. exp.
*4-S	A	B	C	D	E	F	H	
*4-L	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{4}$	$\frac{1}{4}$	$1\frac{1}{8}$	6-32	$\frac{1}{8}$
6-S	$\frac{5}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$1\frac{1}{8}$	$\frac{3}{8}$	$2\frac{1}{4}$	10-24	$1\frac{1}{8}$
6-L	$\frac{5}{8}$	$\frac{3}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	$\frac{3}{8}$	$2\frac{3}{4}$	10-24	$1\frac{1}{8}$
8-S	$1\frac{1}{8}$	$\frac{7}{8}$	$\frac{3}{8}$	$1\frac{1}{8}$	$\frac{3}{8}$	$2\frac{1}{4}$	$\frac{1}{4}$ -20	$1\frac{1}{8}$
8-L	$1\frac{1}{8}$	$\frac{7}{8}$	$\frac{7}{8}$	$1\frac{1}{8}$	$\frac{3}{8}$	$2\frac{3}{4}$	$\frac{1}{4}$ -20	$1\frac{1}{8}$

Packed 50 to a box.

*Packed 100 to a box.

Special—Extra long sleeves up to $1\frac{1}{2}$ in. long can be supplied on request.

MOLLY BOILER PLUGS

Easily and Permanently Repair Destructive Range Boiler Leaks



The Molly is really a bolt and nut assembly with an oversized "nut" or 5-pointed "spider" that opens inside a boiler. It will not cut or pull through weakened boiler walls and it is unnecessary to cut threads in the walls in order to hold.

Enlarge leak to $\frac{3}{8}$ in. opening. Insert Molly Plug, draw up tight as possible with screwdriver and leak is fixed quickly, easily and permanently.

The construction of a Molly insures a permanent repair. There are five points of contact on the inside, reaching out over an area of $1\frac{1}{8}$ in. It is as effective as a solid nut on the inside of a boiler.

Molly Boiler Plugs have been tested by direct steam pressure to 225 lbs.



THE PAINE COMPANY

Builder's Anchoring and Hanger Specialties

MAIN OFFICE AND FACTORY
2949 Carroll Avenue, CHICAGO, ILL.

EASTERN OFFICE: 48 Warren St., NEW YORK, N. Y.

SALES OFFICES

LOS ANGELES, CALIF., 249 So. Manhattan Place
NORFOLK, VA., 126 E. 39th Street
PITTSBURGH, PA., Oliver Building

DENVER, COLO., 740 Steele Street
DALLAS, TEX., 2000 No. Lamar Street
SEATTLE, WASH., 3006 Western Avenue

BUFFALO, N. Y., 510 Prudential Building
ATLANTA, GA., 103 Walton Street, N. W.
SAN FRANCISCO, CALIF., 486 Eighth Street

PAINE "AIR-CONDITIONED" CLAMPS FOR PIPE, CONDUIT AND CABLE

A most desirable feature of PAINE Clamps is the adequate *air space between pipe, cable or conduit and the surface to which it is anchored*. This eliminates rusting on the side next to the anchoring surface.

Another desirable feature, exclusively PAINE, is the patented bolt slot. It speeds work and saves time. Now, the bolt—with nut already on—is slipped into the slot. Then the nut is tightened and the job is done. It does away with

awkward fumbling and fussing, wasting time trying to squeeze the clamp ends together and starting the nut, all at the same time.

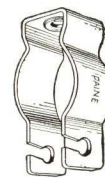


Fig. 445

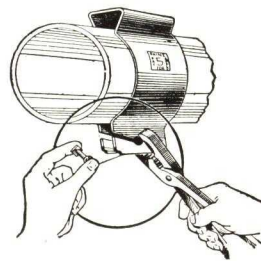


Fig. 465



Fig. 485

SPECIFICATIONS									
With Patented Slot or Bolt Holes—With Correct Size Cadmium Plated Stove Bolts									
Size of Conduit, in.		Fig. 445 Conduit clamp			Fig. 465 Cable clamp, flat base		Fig. 485 Cable clamp, lag screw base		
Rigid	Thin wall	Mfg. No.	Air space, in.	Over-all length, in.	Mfg. No.	Length of Base, in.	Mfg. No.	Lag screw length, in.	
$\frac{3}{8}$ — $\frac{1}{2}$	$\frac{1}{2}$	0	$\frac{1}{2}$	$1\frac{7}{8}$	F0	$1\frac{7}{8}$	C0	$1\frac{7}{8}$	
$\frac{3}{4}$	$\frac{3}{4}$	1	$\frac{1}{2}$	$2\frac{3}{8}$	F1	$2\frac{3}{4}$	C1	$1\frac{7}{8}$	
1	1	2	$\frac{1}{2}$	$2\frac{1}{2}$	F2	$2\frac{3}{4}$	C2	$1\frac{7}{8}$	
$1\frac{1}{4}$	$1\frac{1}{2}$	3	$\frac{9}{16}$	$2\frac{7}{8}$	F3	$3\frac{1}{2}$	C3	$1\frac{7}{8}$	
$1\frac{1}{2}$	.....	4	$\frac{9}{16}$	$3\frac{1}{8}$	F4	$3\frac{1}{2}$	C4	$1\frac{7}{8}$	
2	.....	5	$\frac{9}{16}$	$3\frac{3}{4}$	F5	$4\frac{1}{8}$	C5	$1\frac{7}{8}$	
$2\frac{1}{2}$	.....	6	$\frac{9}{16}$	$4\frac{1}{8}$	F6	$4\frac{1}{8}$	C6	$1\frac{7}{8}$	



Paine Conduit Clamp. Snug, round fit. Air space and patented slot, say users, make it most satisfactory for its purpose. Complete with Cadmium plated bolt and nut. Finish, black or hot galvanized. Bolt holes or bolt slot optional

Flat base cable clamp. Round hole at each end of base. Accurate and snug fitting. Hot galvanized or black enamel finish as specified. Complete with Cadmium plated bolt and nut. Bolt holes or bolt slot optional

Commonly used for work on poles, cross-arms and similar purposes. Splendidly adapted for use with lead shield. Lag screw is gimlet pointed, accurately threaded and riveted to the base and entire unit hot dipped galvanized. Very strong

PAINE PATENTED OUTLET BOX AND FIXTURE HANGER

A secure, easy-to-make anchorage for outlet boxes, fans and other fixtures of many kinds. Very substantial; and may be installed *through an opening only $1\frac{1}{8}$ in. in diameter*. Ideally adapted for work in tile, metal ceiling—and lath and plaster walls and ceilings. Generously meets all Underwriters' requirements.

The PAINE Outlet Box and Fixture Hanger consists of two Cadmium plated wings (spring wing patent) mounted on a $\frac{3}{8}$ -in. Cadmium plated nipple $2\frac{1}{4}$ in. long.

Spread of wings is $11\frac{1}{2}$ in. A key extending through the nipple locks the wings. A lock nut on the nipple holds the fixture to wall or ceiling. To remove, merely insert a screw driver up through the nipple to open locking key.

Approved by Underwriters' Laboratories, U. S. A., and Hydro-Electric Power Commission, Canada. This hanger is the most efficient and easiest to use ever invented for the purpose. Installation is quick and the anchorage is secure.

Patented in the U. S. A. and Canada.

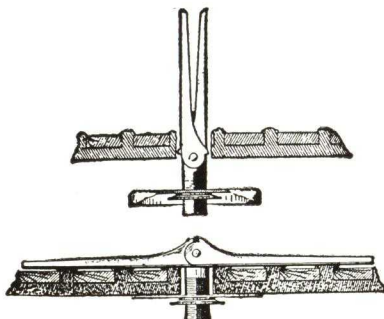
Sudden Depth Rotary Drill

Allow for minimum spoilage when this drill point is used.

Quiet! Used with electric drill or hand brace. Reduces spoilage to a minimum. Makes holes twice as fast as the hammer and drill method—makes every hole exact, clean, and free from chipped, splintered edges. Send for complete details.



Fig. 365



Time and overhead work is saved when fixture is attached to the hanger before inserting

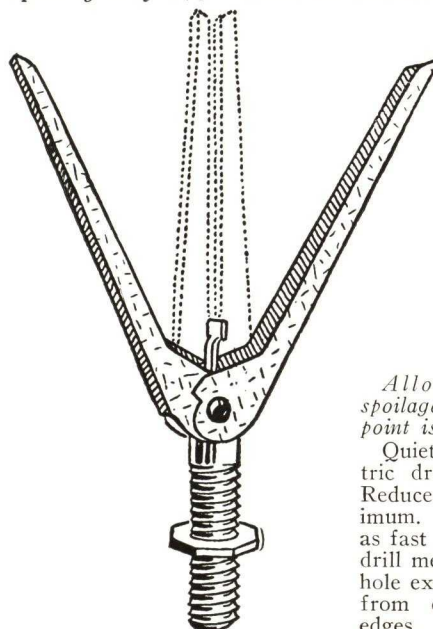
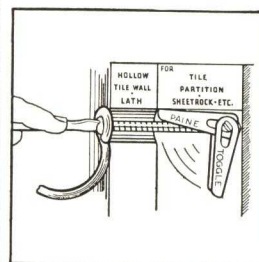
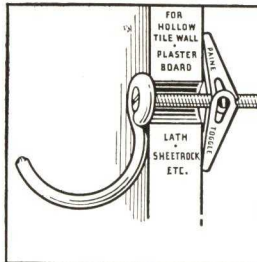
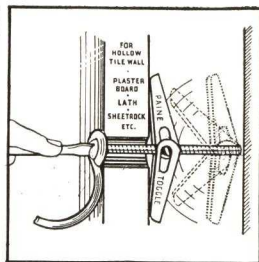
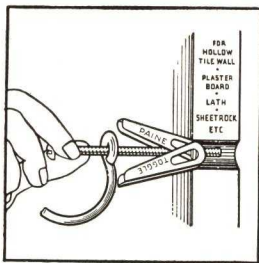


Fig. No. 400

PAINE—THE ORIGINAL SPRING-WING TOGGLE BOLTS



Safe—Secure
Anchorage
for All
Hollow
Places

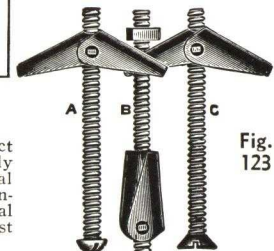


Fig. 123

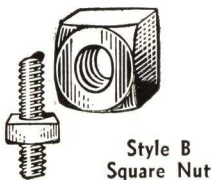
SUPPLIED WITH
ANY STYLE
BOLT HEAD
ANY FINISH

They Work Instantly—In Any Position

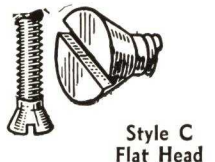
Gentle pressure of the toggle head through the drilled hole compresses the wings by contact with the sides of the hole. . . . As the toggle head clears the hole, the wings instantaneously snap open to anchoring position. Ideal for use in all hollow and hollow backed material including gypsum and machalite. As toggle bolt is tightened, bolt is drawn through a trunnion nut, providing wide working tolerance. Ease of use, great holding power and equal anchorage in both wings makes PAINE's outstanding among toggle bolts. Requires smallest space for clearance by toggle wings. Completely cadmium plated.



Style A
Round Head



Style B
Square Nut



Style C
Flat Head



Style D
Oval Head



Style E
Button Head



Style F
N.P. Fillister
Cap Nut



Style G
N.P. Hexagon
Cap Nut



Style H
Special Eye
Threaded
Bolt with
Loop

SPECIFICATIONS—FIG. No. 123				
Bolt diameter length, in.	Wire gauge threads per inch	Drill hole, inch	Spread of wings, inch	
$\frac{1}{8}$	$\frac{1}{8} \times 1\frac{1}{2}$	$\frac{3}{8}$	$1\frac{5}{16}$	
	$\frac{1}{8} \times 2$			
	$\frac{1}{8} \times 2\frac{1}{2}$			
	$\frac{1}{8} \times 3$			
$\frac{5}{32}$	$\frac{5}{32} \times 4$	$\frac{3}{8}$	$1\frac{5}{16}$	
	$\frac{5}{32} \times 4\frac{1}{2}$			
	$\frac{5}{32} \times 5$			
	$\frac{5}{32} \times 6$			
$\frac{3}{16}$	$\frac{3}{16} \times 2$	$\frac{7}{16}$	$1\frac{7}{16}$	
	$\frac{3}{16} \times 2\frac{1}{2}$			
	$\frac{3}{16} \times 3$			
	$\frac{3}{16} \times 3\frac{1}{2}$			
$\frac{3}{16}$	$\frac{3}{16} \times 4$	$\frac{7}{16}$	$1\frac{7}{16}$	
	$\frac{3}{16} \times 4\frac{1}{2}$			
	$\frac{3}{16} \times 5$			
	$\frac{3}{16} \times 6$			
$\frac{3}{16}$	$\frac{3}{16} \times 2\frac{1}{2}$	$\frac{1}{2}$	$1\frac{15}{16}$	
	$\frac{3}{16} \times 3$			
	$\frac{3}{16} \times 3\frac{1}{2}$			
	$\frac{3}{16} \times 4$			
$\frac{3}{16}$	$\frac{3}{16} \times 4\frac{1}{2}$	$\frac{1}{2}$	$1\frac{15}{16}$	
	$\frac{3}{16} \times 5$			
	$\frac{3}{16} \times 6$			
	$\frac{3}{16} \times 7$			
$\frac{3}{16}$	$\frac{3}{16} \times 8$	$\frac{1}{2}$	$1\frac{15}{16}$	
	$\frac{3}{16} \times 9$			
	$\frac{3}{16} \times 10$			
	$\frac{3}{16} \times 11$			
$\frac{1}{4}$	$\frac{1}{4} \times 2\frac{1}{2}$	$\frac{5}{8}$	2	
	$\frac{1}{4} \times 3$			
	$\frac{1}{4} \times 3\frac{1}{2}$			
	$\frac{1}{4} \times 4$			
$\frac{1}{4}$	$\frac{1}{4} \times 4\frac{1}{2}$	$\frac{5}{8}$	2	
	$\frac{1}{4} \times 5$			
	$\frac{1}{4} \times 6$			
	$\frac{1}{4} \times 7$			
$\frac{1}{4}$	$\frac{1}{4} \times 8$	$\frac{5}{8}$	2	
	$\frac{1}{4} \times 9$			
	$\frac{1}{4} \times 10$			
	$\frac{1}{4} \times 11$			
$\frac{5}{16}$	$\frac{5}{16} \times 3$	$\frac{3}{4}$	$2\frac{3}{8}$	
	$\frac{5}{16} \times 3\frac{1}{2}$			
	$\frac{5}{16} \times 4$			
	$\frac{5}{16} \times 5$			
$\frac{5}{16}$	$\frac{5}{16} \times 6$	$\frac{3}{4}$	$2\frac{3}{8}$	
	$\frac{5}{16} \times 7$			
	$\frac{5}{16} \times 8$			
	$\frac{5}{16} \times 10$			
$\frac{3}{8}$	$\frac{3}{8} \times 3$	$\frac{7}{8}$	$2\frac{3}{4}$	
	$\frac{3}{8} \times 3\frac{1}{2}$			
	$\frac{3}{8} \times 4$			
	$\frac{3}{8} \times 5$			
$\frac{3}{8}$	$\frac{3}{8} \times 6$	$\frac{7}{8}$	$2\frac{3}{4}$	
	$\frac{3}{8} \times 8$			
	$\frac{3}{8} \times 9$			
	$\frac{3}{8} \times 10$			
$\frac{1}{2}$	$\frac{1}{2} \times 4$	$1\frac{1}{4}$	$3\frac{1}{2}$	
	$\frac{1}{2} \times 5$			
	$\frac{1}{2} \times 6$			
	$\frac{1}{2} \times 7$			
$\frac{1}{2}$	$\frac{1}{2} \times 8$	$1\frac{1}{4}$	$3\frac{1}{2}$	
	$\frac{1}{2} \times 9$			
	$\frac{1}{2} \times 10$			
	$\frac{1}{2} \times 11$			

Paine Spring Wing Toggles with Riveted-on Toggle Head

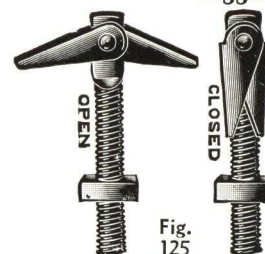


Fig. 125

Specially designed for use where bolt must be permanently affixed to the toggle head. Requires smallest hole of all for entrance of toggle. Toggle is riveted to the flattened end of the bolt, which is threaded clear to the toggle head. Bolt is fitted with a square nut. Completely Cadmium plated.

SPECIFICATIONS FIG. 125—SPRING WING TOGGLE WITH HEAD RIVETED-ON		
Diam. bolt length, in.	Drill hole in.	Spread of wings, in.
$\frac{5}{16} \times 3$	$\frac{5}{16}$	$2\frac{1}{4}$
$\frac{5}{16} \times 4$	$\frac{5}{16}$	$2\frac{1}{4}$
$\frac{5}{16} \times 5$	$\frac{5}{16}$	$2\frac{1}{4}$
$\frac{5}{16} \times 6$	$\frac{5}{16}$	$2\frac{1}{4}$
$\frac{3}{8} \times 3$	$\frac{5}{16}$	$2\frac{1}{4}$
$\frac{3}{8} \times 4$	$\frac{5}{16}$	$2\frac{1}{4}$
$\frac{3}{8} \times 5$	$\frac{5}{16}$	$2\frac{1}{4}$
$\frac{3}{8} \times 6$	$\frac{5}{16}$	$2\frac{1}{4}$

Paine "PB" One-Piece Toggle

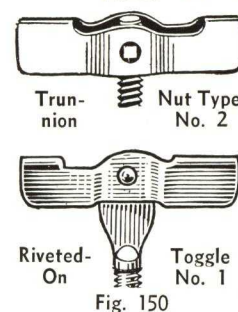


Fig. 150

Has equal holding power on each side of the bolt. One end of the toggle head is slightly heavier than the other. As the toggle head clears the drilled hole, one-half turn causes it instantly to pivot into anchoring position. Type No. 2 has the bolt attached to the toggle head by means of a trunnion nut; and is supplied with any style of bolt head. Type No. 1 has the toggle head riveted to the flattened end of the bolt which is fitted with a square nut. Completely Cadmium plated. Available in all bolt sizes $\frac{1}{8}$ in. and up. Correct wing spread.

SPECIFICATIONS—No. 1 TYPE			
Bolt size, in.	Drill hole, in.	Bolt size, in.	Drill hole, in.
$\frac{3}{16} \times 3$	$\frac{7}{16}$	$\frac{1}{4} \times 3$	$\frac{1}{2}$
$\frac{3}{16} \times 4$	$\frac{7}{16}$	$\frac{1}{4} \times 4$	$\frac{1}{2}$
$\frac{3}{16} \times 5$	$\frac{7}{16}$	$\frac{1}{4} \times 5$	$\frac{1}{2}$
$\frac{3}{16} \times 6$	$\frac{7}{16}$	$\frac{1}{4} \times 6$	$\frac{1}{2}$
NO. 2 TYPE	$\frac{3}{16} \times 3$	$\frac{5}{16} \times 3$	$\frac{3}{4}$
	$\frac{3}{16} \times 4$	$\frac{5}{16} \times 4$	$\frac{3}{4}$
	$\frac{3}{16} \times 5$	$\frac{5}{16} \times 5$	$\frac{3}{4}$
	$\frac{3}{16} \times 6$	$\frac{5}{16} \times 6$	$\frac{3}{4}$
NO. 2 TYPE	$\frac{1}{4} \times 3$	$\frac{3}{8} \times 3$	$\frac{7}{8}$
	$\frac{1}{4} \times 4$	$\frac{3}{8} \times 4$	$\frac{7}{8}$
	$\frac{1}{4} \times 5$	$\frac{3}{8} \times 5$	$\frac{7}{8}$
	$\frac{1}{4} \times 6$	$\frac{3}{8} \times 6$	$\frac{7}{8}$

PAINE NEW MIX LEAD EXPANSION ANCHORS

*The Safest
Strongest,
Rustproof
Anchorage
For Use in
Cement, Stone,
Tile, Brick,
Slate, Marble,
Glass, Mosaic
and Similar
Solid Materials*

The "NEW MIX" of lead alloy (patent applied for) used exclusively in PAINE Lead Anchors, reveals many desirable qualities. "NEW MIX" anchors are immensely stronger, doubly pull proof, and have greater flexibility to make them the safest, strongest and easiest to use in both tough and fragile material.

PAINE "NEW MIX" Lead Anchors require the minimum depth of hole in the material. Fully guaranteed for holding and lasting qualities. Rust proof and vibration resistant. Their thoroughgoing ease of use, requiring no special skill, insure savings in time and labor that more than offset their low cost.

Fig. 900

Consists of a brass or steel cone rust-proofed and a lead expansion sleeve. Cone is countersunk for easy starting of the screw. Has tenacious holding power the entire length and circumference of the sleeve.



Fig. 900



Fig. 910

Fig. 910

Three pieces: a bolt, a nut and a lead expansion sleeve. Nut and bolt Cadmium plated. Head of bolt has two fins which, embedding in the sleeve, while being tightened, prevent turning. Tremendous holding power.

SPECIFICATIONS—MACHINE SCREW TYPE—FIG. 900
Brass Cones

Bolt size, in.	Drill, dia. hole, in.	Minimum depth hole, in.	Average breaking point, lbs.
6-32	1/4	1/2	746
8-32	5/16	3/4	1034
10-24	3/8	3/4	1420
12-24	7/16	7/8	2252
1/4-20	1/2	1	2620
5/16-18	5/8	1 1/4	3854

Steel Cones, Rust Proofed

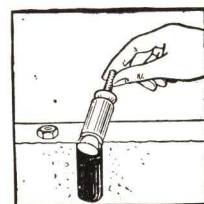
Bolt size, in.	Drill, dia. hole, in.	Minimum depth hole, in.	Average breaking point, lbs.
3/8-16	3/4	1 1/2	4204
1/2-13	7/8	1 5/8	5584
5/8-11	1 1/8	2 1/2	10,398

SPECIFICATIONS

BOLT AND NUT TYPE—FIG. 910

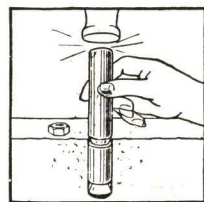
Bolt size, in.	Drill, dia. hole, in.	Minimum depth hole, in.	Average breaking point, lbs.
1/4-20	1/2	1	2579
3/8-16	5/8	1 1/2	4386
1/2-13	7/8	1 5/8	7180

In any material relatively weaker or stronger than concrete, the holding power of anchor is in proportion.



So Easy to Use

1. Place anchor, nut removed, in hole



2. Set anchor with a few taps of the hammer on the setting tool



3. Then, place work in position and tighten down with ordinary wrench

Easy and Safe to Use

The added flexibility together with the greater strength of the PAINE "NEW MIX" make PAINE the easiest and safest anchor to use.

PAINE STEEL EXPANSION ANCHORS

Useful in soft concrete and where air spaces are present, PAINE Steel Expansion Anchors are used extensively in Concrete, Stone, Brick, Tile and similar materials. Require minimum depth of hole; have substantial holding power. Holes in which Anchors are inserted do not have to be in plumb. May be used repeatedly.

SPECIFICATIONS

Type No. 1 (Fig. 925) Cadmium Plated. Complete with Bolt and Nut

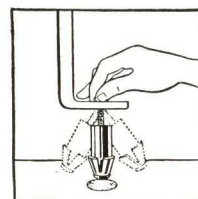
Diameter bolt and length, in.	Drilling, in.	
	Diam.	Depth
3/16x1 3/4 3/16x2 3/16x2 1/4 3/16x2 1/2 3/16x3	9/16	1 5/8
1/4-20x1 3/4 1/4-20x2 1/4-20x2 1/4 1/4-20x2 1/2 1/4-20x3 1/4-20x3 1/2 1/4-20x4	9/16	1 5/8
3/8-16x3 3/8-16x3 1/2 3/8-16x4 3/8-16x5 3/8-16x6	7/8	3
1/2x4 1/2x5 1/2x6	1 1/8	3 1/2
3/4x6	1 5/8	5 1/4

SPECIFICATIONS

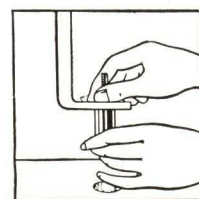
Type No. 2 (Fig. 930) Cadmium Plated. Complete with Screws

Diameter bolt and length, in.	Drilling, in.		Diameter bolt and length, in.	Drilling, in.	
	Diam.	Depth		Diam.	Depth
*6-32x1 1/4 *6-32x1 1/2 *6-32x1 3/4 *6-32x2	5/16	1	1/4x3 1/4x3 1/2 1/4x4	9/16	1 3/4
*8-32x1 *8-32x1 1/4 *8-32x1 1/2 *8-32x1 3/4 *8-32x2	5/16	1	5/16x2 5/16x2 1/2 5/16x3 5/16x3 1/2 5/16x4 5/16x5 5/16x6	5/8	2
3/16x1 1/2 3/16x1 3/4 3/16x2 3/16x2 1/2 3/16x3	3/8	1 1/2	3/8x3 3/8x3 1/2 3/8x4 3/8x5 3/8x6	7/8	3
1/4x1 3/4 1/4x2 1/4x2 1/2	9/16	1 3/4	1/2x4 1/2x5 1/2x6	1 1/8	3 1/2

*Brass only.



1. Attach anchor loosely to object to be anchored



2. Tighten, much as possible, with the fingers

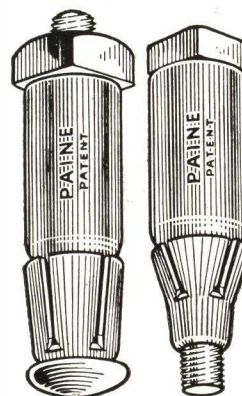
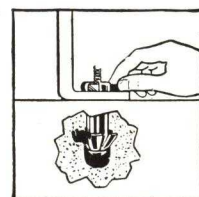


Fig. 925

Fig. 930



3. Finish tightening with ordinary wrench. No setting tool is required

No Setting
Tool Is
Needed

THE RAWLPLUG COMPANY, INC.

95-98 Lafayette Street, NEW YORK, N. Y.

Complete stock carried in the following branches—Albany, Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Des Moines, Detroit, Fort Wayne, Kansas City, Los Angeles, Miami, Milwaukee, Minneapolis, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Seattle, St. Louis, Syracuse and Washington, D. C.

RAWLPLUGS

Fibre Screw Anchors Suitable for Use in Any Material

A screw anchor of unequalled holding power. Rawlplugs hold equally well in any material. Their unique composition makes them especially adaptable for anchoring screws in fragile materials such as glass, hardwood, tile, plaster, marble, etc.

Rawlplugs will not mar handsome interiors, crack marble or other delicate building materials. They cannot work loose, shrink or shear. They are waterproof and will not deteriorate, crumble or pulp.

The diameter of the Rawlplug, hole and screw is virtually the same. The screw entering the

Rawlplug compresses it against all sides and into all irregularities of the hole. The entire Rawlplug becomes an integral part of the material which surrounds it, giving a grip greater than that of any other material.

Rawlplugs do not disfigure or mar the material in which they are used; they can hardly be seen and are completely hidden even by the screw head. Rawlplugs are made for No. 6 to No. 20 wood screws, including all lengths, and lag screws $\frac{1}{4}$ to $\frac{5}{8}$ in. including all lengths.

THEIR HOLDING POWER

Size of Rawlplug	Size of hole	Size of screw	Kind of screw	Length of screw engaged	Pounds pull	
					1:2:4 concrete	Brick masonry
No. 12	$\frac{1}{4}$ "	No. 12	Wood	$1\frac{1}{2}$ "	1525	660
No. 14	$\frac{3}{16}$ "	No. 14	Wood	$1\frac{1}{2}$ "	1590	900
No. 16	$\frac{3}{16}$ "	No. 16	Wood	$1\frac{1}{2}$ "	1175	1400
No. 20	$\frac{3}{8}$ "	No. 20	Wood	2"	2830	1750
No. 3/8	$\frac{7}{16}$ "	$\frac{3}{8}$ "	Lag	$2\frac{1}{2}$ "	3700	2980
No. 7/16	$\frac{1}{2}$ "	$\frac{7}{16}$ "	Lag	2"	6670	2970
No. 1/2	$\frac{5}{8}$ "	$\frac{1}{2}$ "	Lag	$2\frac{1}{2}$ "	8900	3900
No. 5/8	$\frac{3}{4}$ "	$\frac{5}{8}$ "	Lag	3"	12700	6150

RAWL-DRIVES

The Only Expansion Bolt for Masonry Complete in One Piece

The only expansion bolt, for use in masonry, complete in one-piece. Size of drilled hole same as diameter of bolt.

Drives like a nail right through hole in fixture and into masonry.

The tremendous gripping and holding power is the result of a revolutionary process of heat treatment developed by the Republic Steel Corp.

Tensile strength increased 200% over standard commercial bolts, thus allowing twice the usual working loads or one-half the number of bolts per job.

Tremendous holding power permits use of smaller sizes.

Made in 18 different sizes and three styles of heads—Round, Countersunk, and Stud.

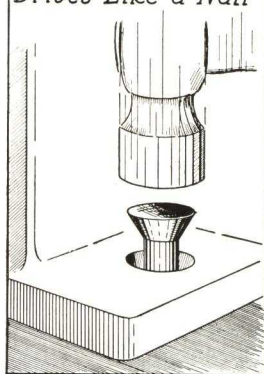


Round Head



Stud Type

"Drives Like a Nail"



Countersunk Type

THEIR HOLDING POWER

Bolt and drill size			Pounds direct pull			
Diam. of Rawl-Drives	Depth of hole	Rawl-drill used	Actual test in 1:2:4 concrete	Safe load concrete 1:4 safety factor	Actual test in common brick	Safe load brick 1:4 safety factor
$\frac{3}{16}$ "	1"	#8	1200	300	634	158
$\frac{1}{4}$ "	$1\frac{1}{2}$ "	#12	2325	581	1183	296
$\frac{5}{16}$ "	2"	#16	4025	1006	1833	458
$\frac{3}{8}$ "	2"	#20	6450	1612	2150	537
$\frac{1}{2}$ "	3"	$\frac{1}{2}$ "	12,525	3151	3700	925
$\frac{5}{8}$ "	4"	$\frac{5}{8}$ "	15,000*	3750	....	....

*Concrete failed.

RAWLS

The Improved Machine Screw Anchor with Patented Features

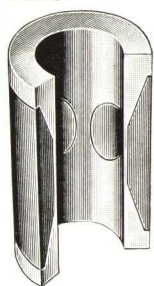
The taper and serrated or grooved lead section permits its use in holes drilled with a new or worn drill, thus making drills last longer. The conical nut has a collar to prevent the nut from being pulled through the lead section when an overload is applied.

General Catalog No. 38-E—Also Data Sheets W-1 for Architects and Engineers. Complete information and prices of any items on this page gladly furnished on request.

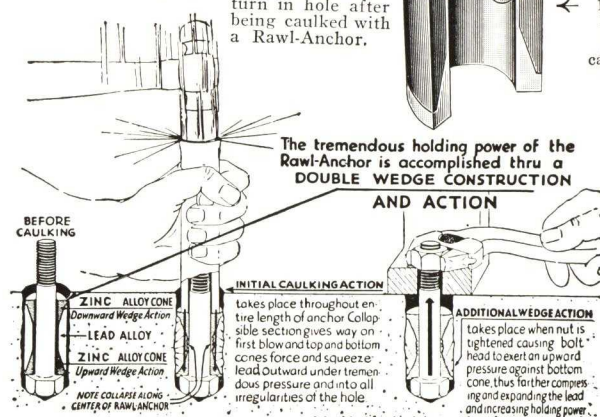
RAWL-ANCHORS

A Foolproof Heavy Duty One Piece Masonry Anchor for Machine Bolts

A one piece, heavy-duty, double-expanding, double-ended masonry anchor for bolts. It is foolproof—cannot be improperly installed. This zinc and lead alloy anchor, with its scientifically designed and patented double cone construction has a holding power in excess of any two-unit anchor. It is easier to handle, and requires but one caulking operation. Bolt cannot turn in hole after being caulked with a Rawl-Anchor.



← Ductile zinc collars and cones
← Extra large lead alloy capacity



THEIR HOLDING POWER

Diameter of bolts.....	$\frac{1}{4}$ "	$\frac{5}{16}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	1"
Actual test (pounds) holding of Rawl-Anchors in 1:2:4 concrete.....	*2300	*2900	*6000	*9000	*12000	*13600	*15000
Safe load (pounds) on bolts, as shown by American Institute of Bolt, Nut and Rivet Manufacturers.....	268	453	678	1257	2018	3020	5510

*Bolt broke in tension.

‡Concrete failed.

RAWLDRILLS

The Original Three-point Drill that Lasts Longer



They are the original three-point masonry drills and can be resharpened on any grinding wheel as easily as a chisel instead of requiring expensive retooling as do ordinary star drills. Rawl-drills are the most economical drills on the market at any price, when their length of life and drilling speed is considered.

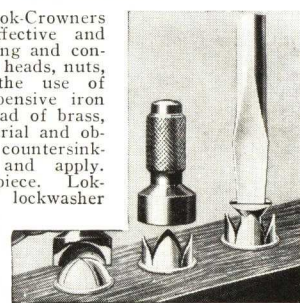
Three-point drills from $\frac{3}{8}$ in. to $1\frac{1}{2}$ in. inclusive (depending on type of drill) for hand or power hammer drilling in masonry.



The Crowner—The LOK-Crowner



Crowners and Lok-Crowners provide a simple, effective and artistic means of sealing and concealing screw and bolt heads, nuts, etc. They permit the use of stronger and less expensive iron screws and bolts instead of brass, bronze or plated material and obviate the necessity of countersinking. Easy to use and apply. Crowner is in one piece. Lok-Crowner consists of lockwasher and cap. Bakelite Lok-Crowners may also be had for electrical insulation. Sizes to fit all standard screws, bolts and nuts.



THE BURROWES CORPORATION

GENERAL OFFICES AND PLANT
PORTLAND, MAINE

WOOD FRAME SCREENS

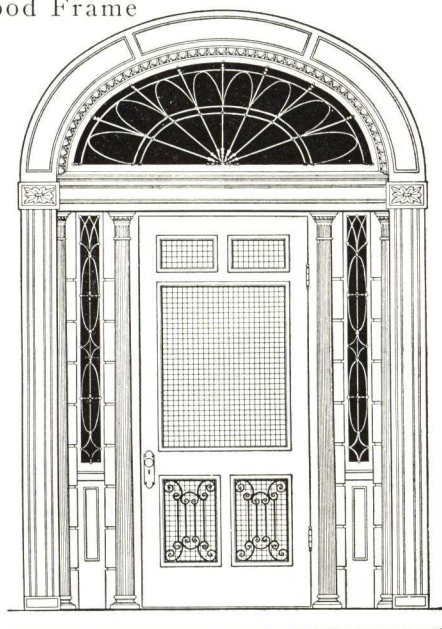
The wood in these frames is of heavy stock with sturdy mortise and tenon corners. Unless otherwise specified, all Burrowes Screens come equipped with our famed "Copbronze" netting. It is the finest netting that can be made and with ordinary care will outlast the house. It is fastened into the frames with a lock strip—a method far superior to the tacked-in arrangement commonly employed.

Burrowes Wood Frame Screens come in the five following styles: Patent Sliding, New Century Sliding, Deep Grooved, Hinged and Stationary.

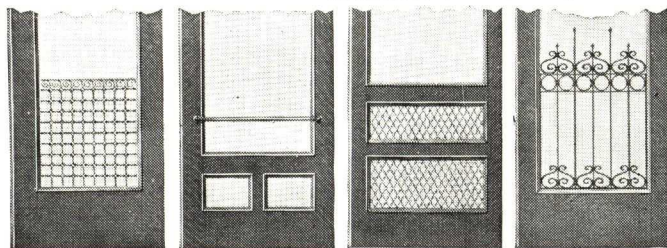
Doors

Specifications—Doors shall be of kiln-dried sugar pine, mortise and tenon joints, $1\frac{1}{8}$ -in. stock, $3\frac{1}{2}$ -in. stiles and top rails, and 6-in. bottom rails; wire drawn and held taut by wood spline and rabbeted moulding. Wired with .0113-in. "Copbronze", 16-mesh wire cloth.

Also furnished in extra heavy stock and hardwood, or to architects' specifications.



Burrowes Screen Door
Properly designed to harmonize with the architecture of the doorway

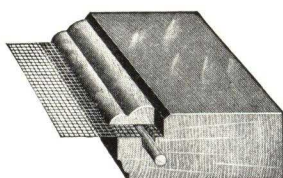


Four of Burrowes Many Other Screen Door Styles

Porch Sections

Specifications—Porch sections shall be of kiln-dried sugar pine, mortise and tenon joints, $1\frac{1}{8}$ -in. stock, $2\frac{3}{8}$ -in. stiles and top rails, 6-in. bottom rails; wire drawn and held taut by wood spline and flush moulding. Wired with .0113 "Copbronze", 16-mesh wire cloth.

The heavy stock, likewise, has the same specifications as door stock, except 3-in. stock is used for stiles.



Section of Burrowes Wood Frame Screen

Showing the lock strip and spline which holds the netting securely in place

METAL SCREENS

These screens are preferred by many customers because the frames are nearly invisible and permit of an increased area for

light and air. Burrowes Metal Screens come in the following styles: Regis, Apexon, Hollow Metal, Rex, Primus. Material—steel, bronze, or aluminum.

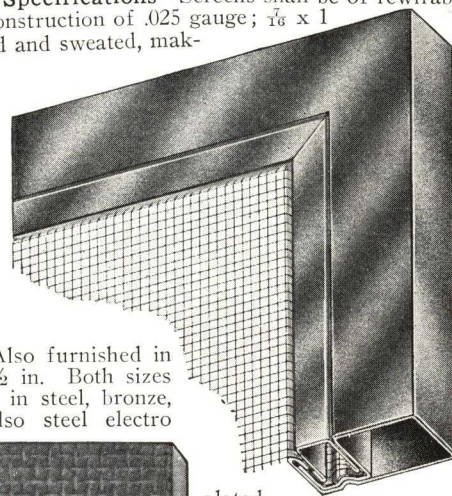
Regis Specifications—Screens shall be rewirable rolled core and rolled casing frame; core joints welded; wire drawn, and held taut by mitered-joint casing riveted in position. Finish size, $\frac{1}{4} \times \frac{7}{8}$ in.

Wired with .0113-in. "Copbronze", 16-mesh wire cloth. Electro galvanized steel with three coats of baked enamel. Furnished in genuine bronze, electro plated steel and buffed aluminum. Also

furnished in large size $\frac{1}{8} \times 1\frac{1}{8}$ in.

Hollow Metal Specifications—Screens shall be of rewirable formed-tubular construction of .025 gauge; $\frac{1}{8} \times 1$ in. Joints mitered and sweated, making an integral one-piece frame;

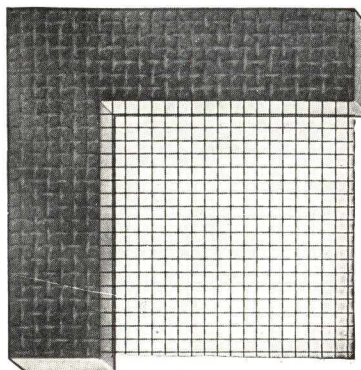
wire drawn and held taut by U-shaped spline. Wired with .0113-in. "Copbronze", 16-mesh wire cloth. Material to be electro galvanized steel with three coats of baked enamel. Also furnished in .032 in.; $\frac{1}{8} \times 1\frac{1}{2}$ in. Both sizes can be furnished in steel, bronze, or aluminum, also steel electro



plated.

Primus Specifications

—Screens shall be of solid frame construction; joints welded. Wire drawn and held taut by tinning and soldering. Wired with .0113 in. "Copbronze", 16-mesh wire cloth. Size $\frac{1}{4} \times \frac{7}{8}$ -in. Material—galvanized steel with baked enamel finish. Also furnished in $\frac{1}{4} \times \frac{1}{2}$ in. and both sizes furnished in bronze or steel.



ROLLING SCREENS

A special Burrowes feature is the netting corrugation (patented) of the screen near the selvage. This overcomes "spiral crawl" when screen is raised or lowered, thus preventing it from jumping out of side guides.

INSIDE STORM SASH

Designed for modern insulation, this all-metal storm sash creates dead air space without marring casements or woodwork. Ideal for air conditioning.

MEMORANDA

CHAMBERLIN METAL WEATHER STRIP COMPANY, INC.

GENERAL OFFICES
1254 Labrosse Street, DETROIT, MICH.

FACTORIES: DETROIT, MICH. AND PERU, ILL.

CHAMBERLIN OFFICES IN ALL PRINCIPAL CITIES

Member of The Producers' Council, Inc.

For Catalog on Weatherstrips, see File Index

Flat Type Window Screens

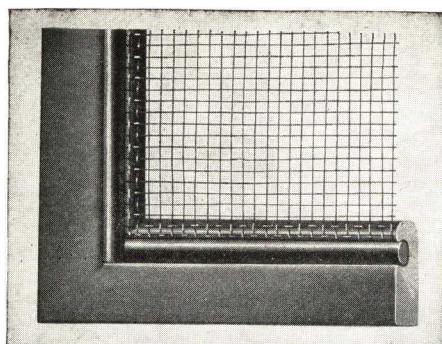
Terrace Screens and Doors
Roller Screens

Porch Screens and Doors

Basement Guard Screens

Industrial, Institutional and Special Screens

CHAMBERLIN
SCREENS FOR
ALL TYPES OF
WINDOWS
DOORS
PORCHES



Actual Size— $\frac{1}{4}$ " x $\frac{9}{16}$ "

CHAMBERLIN NU-STILE SOLID FRAME SCREENS

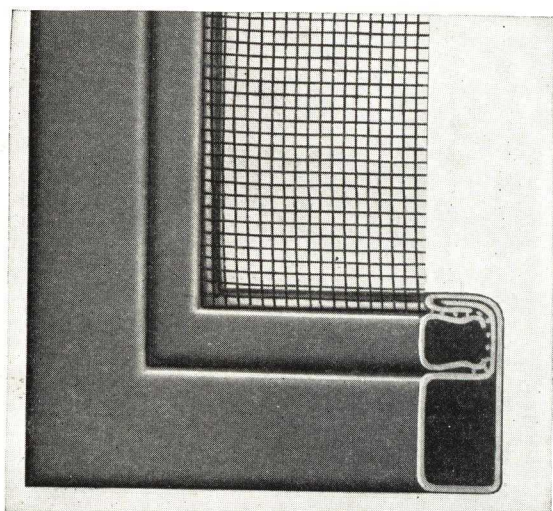
Chamberlin Nu-Stile Solid Frame Screens are adaptable to most residential and industrial sash. The frames are inconspicuous and sturdy, with corners butt-welded to form one continuous piece of metal. The frames are easily rewirable, the wire being securely held in place with a wire spline rolled into the eccentric groove. Wire cloth of various meshes and materials can be furnished.

The frames can be had in hot-rolled, cold-drawn steel, completely Bonderized, or in solid extruded architectural bronze.

CHAMBERLIN TUBULAR FRAME SCREENS

Tubular frame screens are used for larger windows and porch sections (frames are $\frac{7}{16}$ "x1, $\frac{7}{16}$ "x1 $\frac{1}{2}$, $\frac{7}{16}$ "x2 in.). The sheet metal strips for both frames and wiring splines are accurately roll-formed to the sections de-

tailed. Corners are welded or drive fit construction. Splines are removable for rewiring. Note particularly that the edges of the spline groove and the spline are rounded to avoid the possibility of cutting the wire cloth.



Actual Size— $\frac{7}{16}$ " x 1"

FRAME MATERIALS

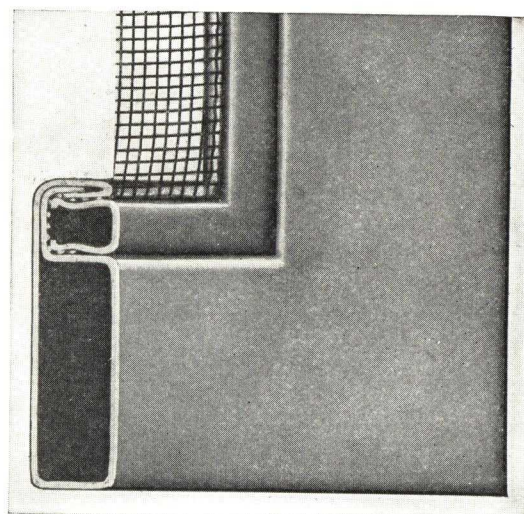
Steel — Zinc-coated, .025 and .032.

Bronze — Cold-rolled, .025 and .032.

Aluminum — 3 S .040.

Stainless Steel — .025.

Monel Metal — .025.



Actual Size— $\frac{7}{16}$ " x 1 $\frac{1}{2}$ "

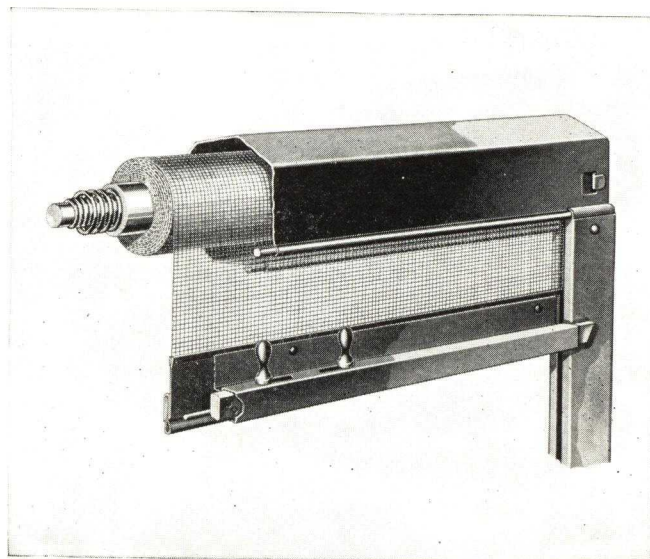
CHAMBERLIN NU-ROLL SCREENS

Nu-Roll Screens are adaptable to steel sash, out-swinging wood casements, and double hung windows. Operating like window shades, they are instantly available, or out of sight if desired. Annual nuisance of installation, removal and storage is eliminated.

The roller is 22 gauge, solid brass tubing, equipped with Doehler die-cast bearings which revolve on a $\frac{1}{4}$ -in. rolled steel shaft. This roller is packed with a special lubricant having a 300 degree melting point. The spring controlling the tension is of specially drawn, oil tempered wire.

Wire cloth is annealed 16 mesh bronze Anaconda, with five extra strands at the sides for selvage. Housings, guides and drawbars can be had in steel or bronze.

Steel screens are furnished in baked enamel or spray lacquer finishes and bronze screens in natural or statuary bronze finishes.



De Luxe Nu-Roll Screen

SCREENS FOR DOUBLE HUNG WINDOWS

Where the upper sash of a double hung window is not used for ventilation, the half sliding screen provides sufficient protection. Obviously it is the most economical method. The screen, installed from the inside, slides in guides running the full height of the opening. This allows for manipulation and easy access to the outside of the window for washing.

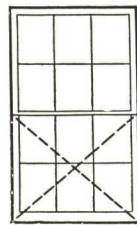
Double sliding screens operate like the window itself, and are easily installed from the inside in double chan-

nel guides, running the full length of the opening.

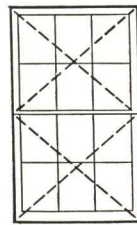
The top hung full length screen covers the full opening, and is installed from the inside in the outside rabbet.

Roll screens remain up the year around and of course are always accessible from the inside. The guides may be used as inside stops.

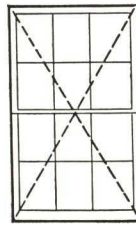
These four methods are standard, but variations and combinations are sometimes used to take care of special conditions.



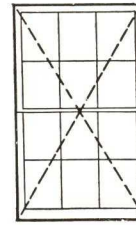
Single Slide



Double Slide



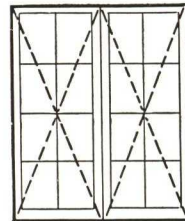
Top Hung Full Length



Roll Screen

SCREENS FOR CASEMENT WINDOWS

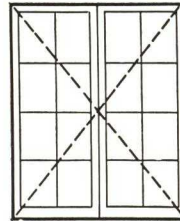
For out-opening double casements, double in-swinging side pivoted screens can be used where draperies or shades do not interfere. If swinging screens are not practical, twin horizontal sliding screens can be used. Where an inside screen rabbet is not provided, or where there are stationary side lights, the roll screen



Double Slide or Pivoted



Side Pivoted or Roll



Outside Top Hung or Pivoted

Out-opening single casements can be screened either with side pivoted screens swinging in, or roll screens.

In-swinging casements may have outside top hung, or side pivoted screens placed in the outside screen rabbet.

SCREENS FOR INDUSTRIAL AND INSTITUTIONAL BUILDINGS

Super-Bar detention sash screens (Fig. 1) are attached to the outside flange of the super-bar by special locking devices which make it impossible to remove the screen from the inside without the use of special key or tool.

Horizontal pivoted sash (Fig. 2) have an outside upper screen and an inside lower screen. Glass-contacting metal baffles operate between the two screens.

Awning Cage screens as illustrated in lower right hand corner of Page 1 can be used on horizontal pivoted or out-projecting sash.

The type of detention sash illustrated by Fig. 3 is

screened with outside screens attached with special locking hardware. Although it is impossible for patients to remove the screens from the inside, the special locking tool permits the screen to open far enough to allow access to the surrounding stationary lights for washing.

Box frame screens are used on out-projected sash (Fig. 4) where window hardware would break through the wire cloth if the screen were installed directly on the sash.

Projected-in sash (Fig. 4) are screened with outside screens attached to the weathering bar. These can be put up from the inside.



Fig. 1

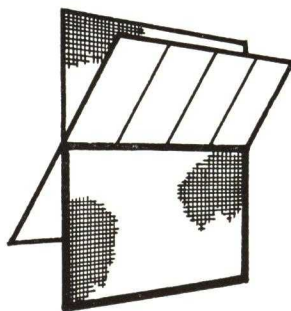


Fig. 2

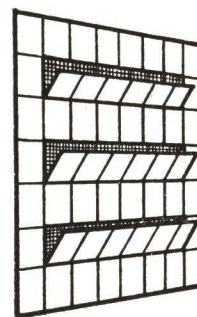


Fig. 3

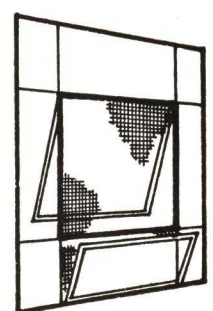
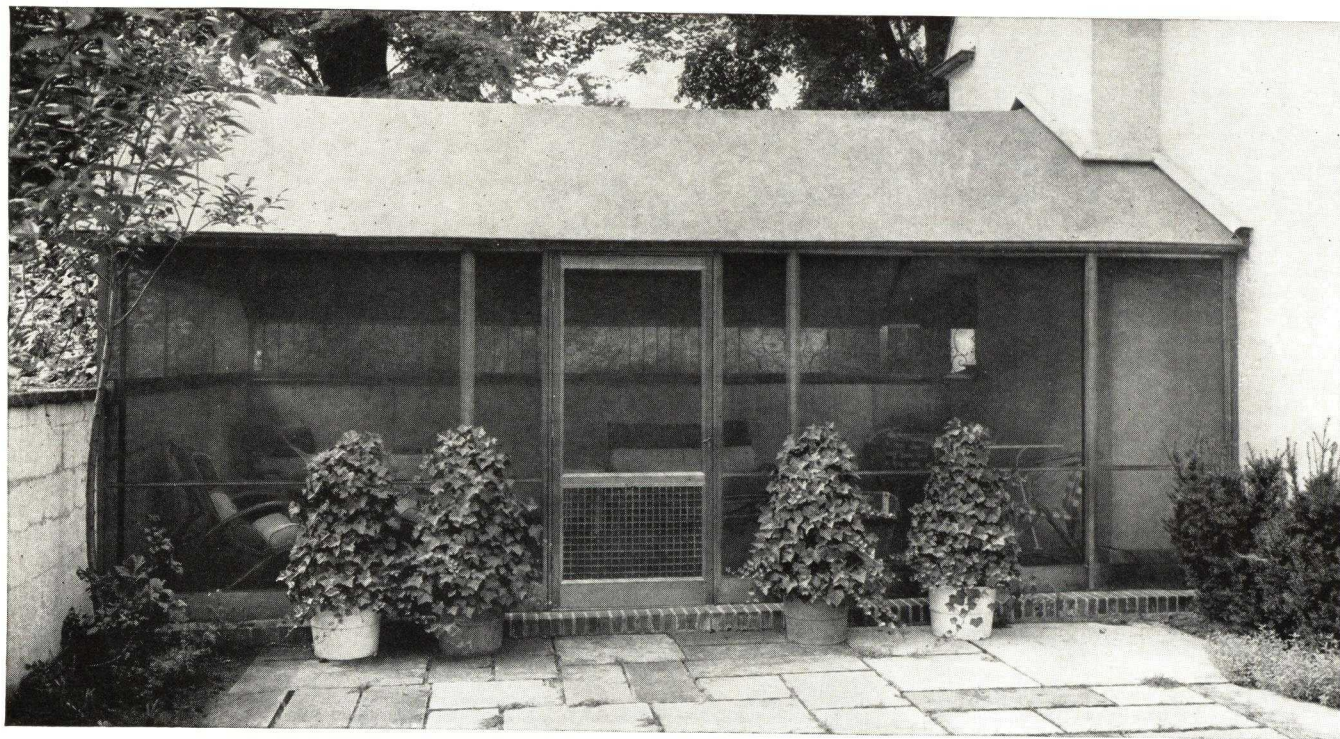


Fig. 4



CHAMBERLIN METAL PORCH SECTIONS AND DOORS

Harmonizing with the architecture of the building, Chamberlin Metal Porch Sections and Doors provide long wear, correct fit year after year, and dignity for the home, whether small or large. Porches or terraces of unusual design have been transformed by Chamberlin into delightful outdoor living rooms. Notched, bowed or arch top screens made to templates preserve architectural lines.

Chamberlin hollow-section $\frac{7}{16}$ -in. thick N.B. type and $\frac{7}{16}$, $\frac{3}{4}$ and $1\frac{1}{8}$ -in. thick spline type doors are made only of steel or bronze; $\frac{3}{4}$ and $1\frac{1}{8}$ -in. thick moulding type doors are made of steel, bronze or aluminum; $\frac{7}{8}$ -in. thick special type door is made only in aluminum. $\frac{7}{16}$ -in. thick N.B. and $\frac{7}{16}$ -in. spline type doors are made of .040 thick metal, $\frac{3}{4}$ and $1\frac{1}{8}$ -in. thick spline and moulding type steel and bronze doors of .050 thick metal. $\frac{7}{8}$ -in. thick special door and $\frac{3}{4}$ and $1\frac{1}{8}$ -in. thick moulding type aluminum doors are made of .093 metal.

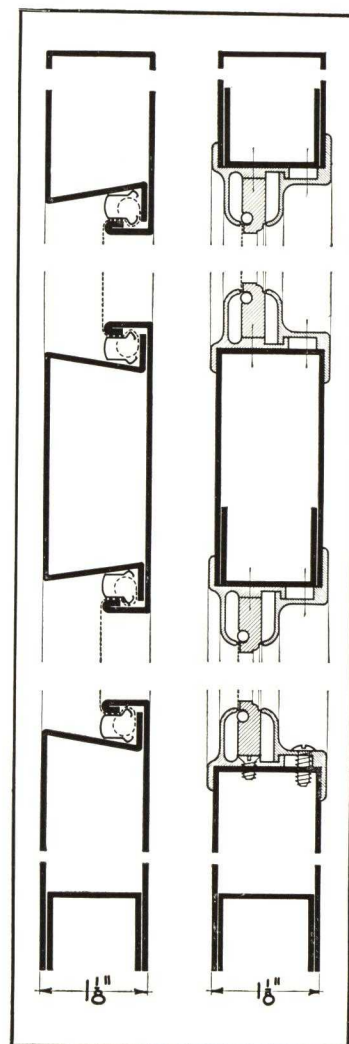
All doors are equipped with door checks. All butts are extruded architectural bronze, except those for N.B. type doors, which are wrought brass. All locks have cast bronze lever handles and escutcheon plates. Lock cases are wrought brass. Standard hardware finish is natural bronze; except on aluminum doors hardware is cadmium plated.

Note that the $\frac{3}{4}$ and $1\frac{1}{8}$ -in. moulding type doors are constructed so that the removable screen panels can be interchanged with glass panels.

For added protection, grilles and guards of various designs can be neatly attached to porch screens and door screens during fabrication.

Chamberlin will be glad to give you the benefit of wide experience in planning, building and installing porch and terrace screens.

Suggestions on layout, choice of materials and finish will help you select the proper screens for the job.



STANDARD SPECIFICATIONS								
Type door	RAIL WIDTHS				BUTTS			Lock
	Side rail	Top rail	Cross rail	Base rail	Quantity	Type	Size	
N.B.	2"	3"	2"	3"	1½ Pr.	½ Surface	3"x3"	Surface
$\frac{7}{16}$ " Spline	2"	3"	2"	6"	1½ Pr.	Mortise	3"x2½"	Mortise
$\frac{3}{4}$ " Spline	3"	3"	3"	6"	1½ Pr.	Mortise	4"x3"	Mortise
$1\frac{1}{8}$ " Spline	3"	3"	3"	6"	1½ Pr.	Mortise	4"x4"	Mortise
$\frac{3}{4}$ " Moulding	2½"	3"	3½"	6"	1½ Pr.	Mortise	4"x3"	Mortise
$1\frac{1}{8}$ " Moulding	3¾"	3¾"	3¾"	6"	1½ Pr.	Mortise	4"x4"	Mortise
$\frac{7}{8}$ " Special	2½"	2½"	2½"	6"	1½ Pr.	Mortise	4"x3"	Mortise

CHASE BRASS & COPPER CO.

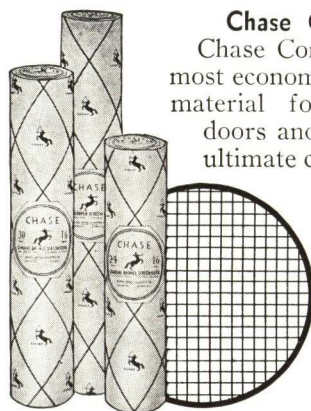
—INCORPORATED—

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

WATERBURY, CONN.

For Other Chase Pages, see File Index

CHASE BRONZE AND COPPER INSECT SCREEN CLOTH



Chase Commercial Bronze

Chase Commercial Bronze is the most economical, corrosion-resistant material for screening windows, doors and porches when quality, ultimate cost and permanence are controlling factors.



Chase Commercial Bronze Insect Screen Cloth is woven from solid bronze wire of 90% copper, the remainder being zinc which is introduced as a hardening agent. Commercial bronze screen cloth is preferred to copper because it

has greater stiffness and strength. Bronze screen cloth when released after having been bent under pressure of the thumb will tend to spring back into its original flat, straight surface, whereas pure copper screen cloth when bent under even moderate pressure remains dented.

Size of Mesh to Use

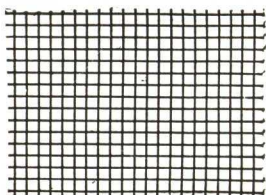
The term mesh is generally understood to mean the number of openings in a linear inch and that is the standard by which our screen cloth is manufactured.

16-Mesh—Used more than any other size because it gives better service in guarding against both mosquitoes and house flies.

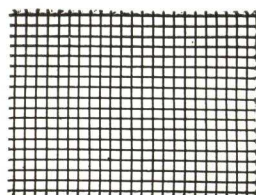
14-Mesh—Protects against flies but will not bar out mosquitoes.

18-Mesh—Required in some tropical climates and close to Southern seashores, in order to protect against the extremely small mosquitoes and gnats that infest those locations.

Available in Two Finishes



16-Mesh Screen Cloth



18-Mesh Screen Cloth

Bright Finish—This has a beautiful golden bronze sheen.

Antique Finish—Where bright finish is undesirable use antique finish which gives the

cloth a dark bronze color that will not reflect glare of sunlight. Antique finish is produced by a special process which adds a permanent dark coating to wire before it is woven into cloth, thus insuring uniform color. This process in no way detracts from the corrosion-resisting qualities of the screen cloth.

Chase Copper Screen Cloth

This cloth is exactly what its name implies: screen cloth woven from 99.9% pure copper wire that is drawn in extremely hard temper. Copper of course is corrosion-resistant and needs no painting. It does not give as good results as bronze where large surfaces are to be covered, owing to its softness and liability to damage and being stretched out of shape after it is installed. Chase Copper Screen Cloth is clearly and unmistakably labeled "copper," or if the wrapping has been removed it can be readily identified by testing with the fingers for resiliency and strength.

Other Uses for Insect Screen Cloth

Chase Insect Screen Cloth is often specified to cover vents, fresh air intakes and ventilator guards to prevent the passage of snow.

Extra fine meshes are usually specified for vision screens and bank window screens. Chase Copper Wire Cloth is available for this purpose in 40, 50 and 60-mesh.

Standard Widths

Chase Commercial Bronze Bright Finish Insect Screen Cloth is available for immediate warehouse shipment in all even widths from 18 to 48 in., i.e., 18, 20, 22, 24, 26, etc. All of these widths are available in either 14, 16, or 18-mesh.

Antique finish bronze cloth is also carried in all even inch widths from 18 to 48 in. in 14, 16, and 18-mesh. Chase Antique Bronze Screen Cloth can also be furnished in 54, 60, 66 and 72-in. widths in 16-mesh only.

Chase Copper Insect Screen Cloth is carried in stock in all even inch widths from 18 to 48 in. in 14, 16 and 18-mesh.

A Feature of Chase Screen Cloth

Deep crimps keep the mesh uniform. This is important as it prevents bulging



Specify Chase Screen Cloth to insure permanent protection against flies and mosquitoes. It cannot rust—never needs painting.

CHASE WAREHOUSES

BALTIMORE, MD.
BOSTON, MASS.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
DETROIT, MICH.

HOUSTON, TEX.
LOS ANGELES, CALIF.
MILWAUKEE, WIS.
MINNEAPOLIS, MINN.
NEW ORLEANS, LA.
NEW YORK, N. Y.
NEWARK, N. J.

PHILADELPHIA, PA.
PITTSBURGH, PA.
PROVIDENCE, R. I.
ST. LOUIS, MO.
SAN FRANCISCO, CALIF.
SEATTLE, WASH.

THE CINCINNATI FLY SCREEN COMPANY

CINCINNATI, OHIO

SALES AGENCIES IN PRINCIPAL CITIES OF THE UNITED STATES

PRODUCTS, SERVICES and FACILITIES

ZIP-IN FRAMELESS ALL-BRONZE FLY SCREENS.

"CINMANCO" ALL-METAL REWIRABLE FLY SCREENS for every type of window and door opening; WOOD and METAL FRAME SCREEN DOORS; FLI-BAC ROLL SCREENS; "E-Z" SLIDE WOOD FRAME SCREENS.

This Company has had over forty years' experience in building fly screens. A highly specialized field organization has been developed to assist architects with their screen problems. The large, modernly equipped plant of THE CINCINNATI FLY SCREEN COMPANY is ideal, central location assures prompt deliveries.

ZIP-IN FRAMELESS ALL-BRONZE SCREENS

Ideal for Housing Projects, Hospitals and Other Institutions

Embody the farthest advance to date in screening technique, in greater simplification, convenience, beauty, economy.

Distinguishing characteristics: *Bronze* top and bottom rails, *bronze* wire cloth; *no side frames*, hence screen may be rolled into compact small bulk for easy storage and handling; *no guides* nor channels required to be installed in the window; top and bottom rails of the screen are slide-locked over the heads of two screws driven into head and two screws into sill of window frame, then screen cloth is drawn down taut against the window stops at the sides by finger pressure on tightening slides in bottom rail.



Obvious advantages: *ease of installation*—4 screws and screw driver only required; install and remove from *inside* of building, all floors; *full length window coverage*, making it practicable to leave both top and bottom sashes open; bottom rail of screen may be unlatched and screen allowed to swing free, for *ease in washing windows*; snug, neat beauty of window covering, with no reduction of area of opening for ingress of light and air; because ALL-BRONZE—*rust-proof, long lived, no maintenance cost* can leave screens in the year 'round. *No more expensive than old-fashioned screens* in first cost and much more *economical* in long run.

Zip-Ins Also Available with Radically New Type Screen Cloth

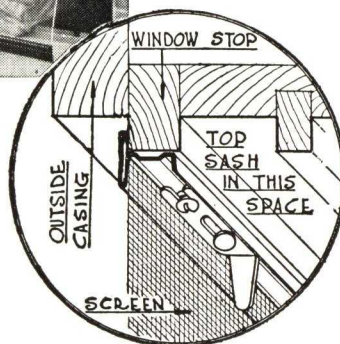
At a moderately higher cost, Zip-in Screens will be furnished with a new type wire cloth in which the horizontal wires are flat instead of round and are set at an angle of 17 degrees. The measurement between horizontal wires is equivalent to 18-mesh, with the vertical round wire strands farther apart. All wire is solid bronze.

The effect of the shade screen cloth is that of a miniature Venetian blind. It breaks up the hot, strong light, reduces the temperatures on the window glass and in the room as much as 15 degrees, definitely saving money in operation of Summer air conditioning; serves as fly screen and awning in one unit; especially desirable for screening south and west windows.

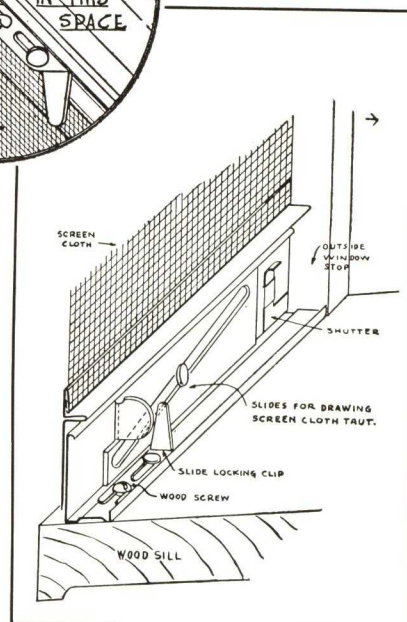
5200 Zip-in Screens Used in One Housing Project



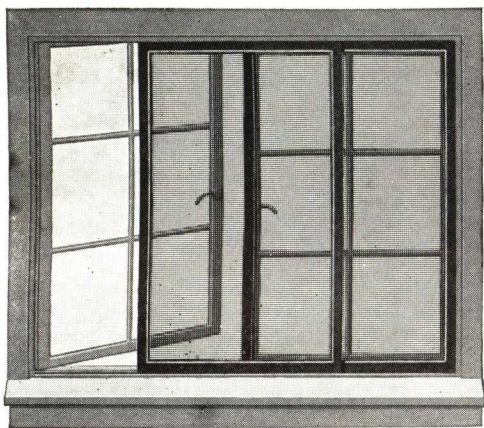
One unit of the extensive low cost housing development of Boulevard Gardens Housing Corp., New York, N. Y. All windows screened with Zip-ins. No replacements in four years.



Above:
Section of the Top Rail Detail



At right:
Section of the Bottom Rail Detail



Horizontal Sliding Screens for Casement Windows

A modern screen development, especially suited to casement openings of wide dimensions having two or more hinged windows. Permits easy operation of windows or awnings. Screens slide smoothly in steel or brass channels, as illustrated.

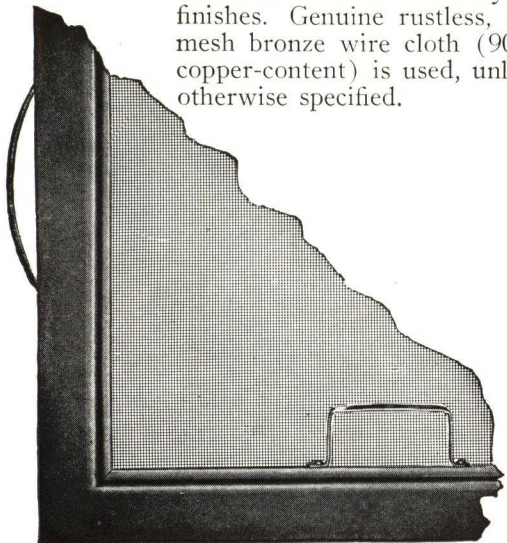
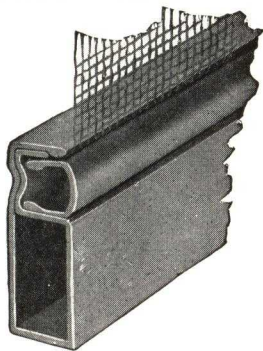
Sectional View of "Cinmanco" All-metal Rewirable Screen

Actual size— $1\frac{1}{16}$ -in. frame. Also available with $1\frac{1}{2}$ -in. frame.

Note the tubular construction, combining unusual strength with light weight. The wire cloth is tightly held in place by round-edge spline that will not cut screen fabric, spline easily removed for rewiring.

The "Cinmanco" All-metal Screen is built to defy time, weather and abuse.

Frames are made of solid bronze, or of galvanized copper-content steel, welded. Also aluminum. Furnished in a variety of finishes. Genuine rustless, 16-mesh bronze wire cloth (90% copper-content) is used, unless otherwise specified.



"CINMANCO" ALL-METAL SCREENS

(.025 and .032-in. Thick Metal)

Made of bronze, aluminum, or galvanized copper-content steel strip. Frames are tubular in construction, assembled on correct mechanical principles, and spot welded. Furnished in a large variety of types and finishes—vertical, horizontal, sliding, hinged, basket, circle, segment top, bow—in any shape desired.

Rewirable—Screen cloth is securely held in the groove by rounded spline that will not cut cloth. Spline can easily be removed for rewiring screen. Frames are sturdily reinforced by inside metal angles. Detachable springs are easily removed and renewed.

Bronze Wire Cloth—"Cinmanco" genuine 90% copper, rustless, bronze wire cloth, 16-mesh is regularly furnished. Other meshes as specified.

Prominent Installations of "Cinmanco" Screens

"Cinmanco" Screens are extensively used in homes, schools, hospitals, hotels, clubs, offices and other buildings throughout the nation. A few typical installations:

Hotels and Clubs—Breezy Point Lodge, Pequot, Minn.; Elks Club, Memphis, Tenn.; East Lake Country Club, Atlanta, Ga.; Boca Raton Club, Boca Raton, Fla.; Cincinnati Club, Cincinnati, Ohio; Atlanta Biltmore Hotel, Atlanta, Ga.

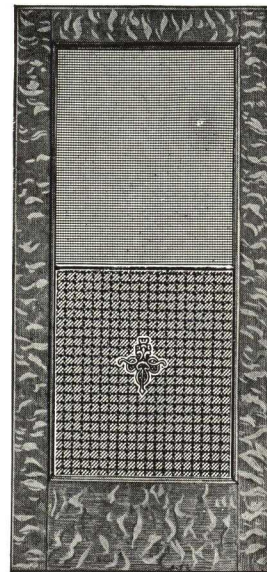
Schools—Cranbrook School, Detroit, Mich.; LaSalle Military Academy, Oakdale, N. Y.; Mt. St. Joseph Academy, Delhi, Ohio; Berry School, Rome, Ga.; University of Illinois, Urbana, Ill.; University of Montana, Missoula, Mont.

Hospitals—U. S. Marine Hospital, Buffalo, N. Y.; Gallinger Hospital, Washington, D. C.; Sawtelle Hospital, Los Angeles, Calif.; St. Francis Hospital, Escanaba, Mich.; Good Samaritan Hospital, Cincinnati, Ohio; Locust Mountain Hospital, Shenandoah, Pa.

Wood Frame Screen Doors

Vertical grain Sitka spruce—non-warping, non-shrinking, best weather-resisting—is used unless otherwise specified. White pine, oak, cherry, mahogany, walnut also available. Doors are $1\frac{1}{8}$ in. thick (unless otherwise ordered), mortised, glued, and wedged. Highest quality paints, stains and varnishes are used, all carefully rubbed down. A wide variety of grilles for selection. Mortise door latch is solid bronze and can be furnished in a variety of finishes. Five knuckle, steel bushed, loose pin bronze butts, or sherardized steel-plated butts can be supplied.

We manufacture screens for every type of door and window, including all makes of steel sash using underscreen operator.



Aerial View of University Housing Project, Atlanta, Ga.
Project is equipped with more than 1,000 "Cinmanco" screen doors

CORRY METAL CORPORATION

Fabricators of Tubular Metal Frame Screens for All Types of Windows

GENERAL OFFICES AND PLANT
CORRY, PENNSYLVANIA

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

CORRY METAL CORPORATION are fabricators of two distinct lines of Tubular Metal Frame Screens, for every type of window, and a light Metal Door Screen.

All are available in either Steel or Bronze.



Facilities

Corry Screens are produced in a modern plant—utilizing the most advanced production facilities for forming and assembly. All finishes are baked-on enamel—assuring enduring protection and beauty. A complete experienced Engineering Staff is available to meet any special screening problem or condition.

Corry Tubular Construction

Corry Tubular Frame Construction assures a maximum of strength and rigidity with a minimum of bulk or weight. This and other structural refinements have made Corry Screens the choice of many leading architects, builders and building managers throughout the country.

Corry Adaptability

Corry Screens are adaptable to almost any type window. They are made in two grades. The "Standard" line which sets a new standard for attractive appearance, strength and rigidity, and the "Comet" line—a moderately priced metal screen substantially built and rewirable, ideal for ordinary windows—either double hung or casement.

Corry "Standard" Metal Screens

1½ In. Wide by ⅞ In. Thick Frames—
This size of framework is most universally used on all types up to 20 sq. ft. Fabricated from .028-in. gauge metal.

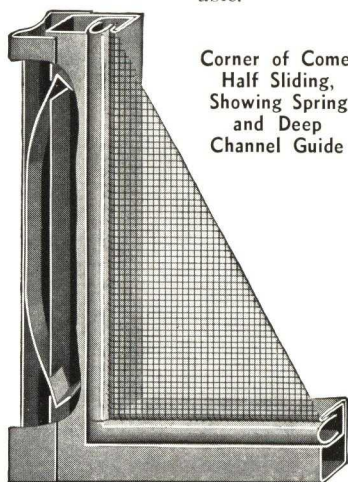
1½ In. Wide by ½ In. Thick Frames—
This size of framework used on exceptionally large openings, such as porch sections, etc. Fabricated from .032-in. gauge metal.

Material—Steel frames, tubular, formed from electro-galvanized stock. Bronze frames from commercial bronze.

Finishes—Finishes for steel frames baked on at high temperature. Standard finishes for bronze frames, natural or dark oxidized. Special finishes available.

Guides—Single or double "Rib" type guides only, used for sliding screens.

Screening—16-mesh bronze wire cloth woven from .0113-in. wire oxidized finish, furnished regularly. Other meshes available.



Corner of Comet
Half Sliding,
Showing Spring
and Deep
Channel Guide

Corry "Comet" Metal Screens

A moderately priced screen substantially built and rewirable. Ideal for ordinary sized windows, either double hung or casement, due to inconspicuous narrow framework.

¾ In. Wide by ⅝ In. Thick Frames—
Fabricated from .028 gauge metal.

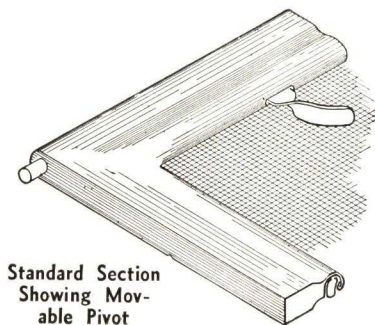
Material—Steel frames, tubular, formed from electro-galvanized stock. Bronze frames from commercial bronze.

Guides—Zinc-alloy, channel type guides only furnished for "Comet" Sliding Screens.

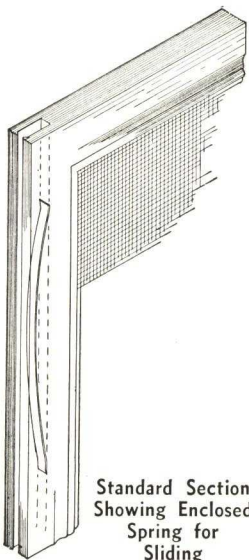
Screening—16-mesh bronze wire cloth woven from .0113-in. wire furnished as standard.

Corry Metal Screen Doors

Corry Screens are also available in a light tubular metal screen door type—adaptable for French Doors or smaller door openings where usage is not severe.

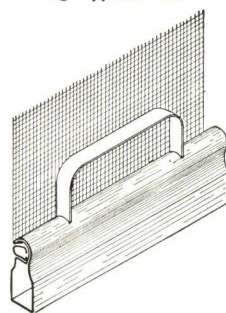


Standard Section
Showing Mov-
able Pivot

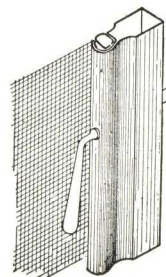


Standard Section
Showing Enclosed
Spring for
Sliding

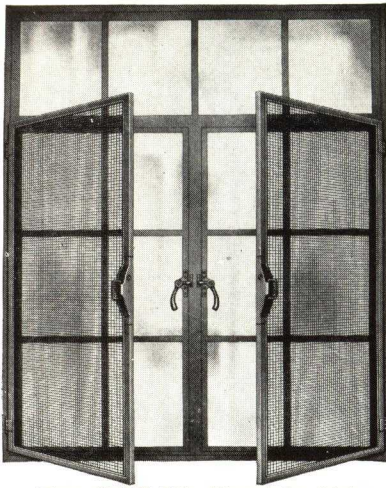
Standard Section Show-
ing Typical Lift



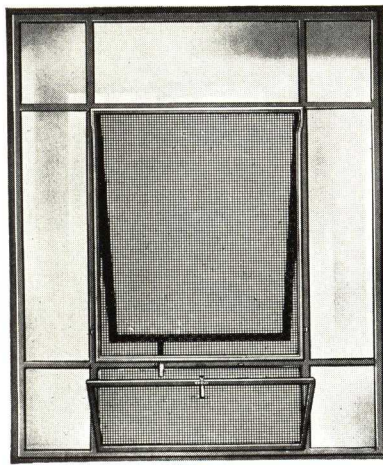
Standard Section
Showing Typical
Spring Bolt



A Few Typical Corry Structural Features



Type CTHX Side Hinged for Light Casements



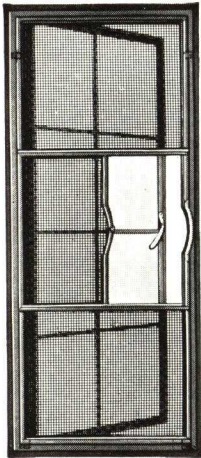
Comet Screens Adapted to Projected Type Sash



Type CTWW—Double Sliding Wicket for Steel Casements

Corry Screens for Metal Casements

Corry offers a standard type screen for almost every metal casement. The narrow tubular frame construction, maximum rigidity and rewirable feature make these screens especially adaptable to all types of public buildings, industrial plants and institutions. Exceptionally durable, light in weight and attractive in appearance, they offer maximum comfort and protection at moderate cost.

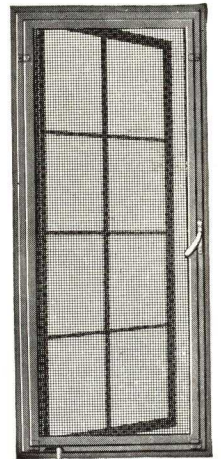


Type CTW—Single Sliding Wicket for Steel Casements

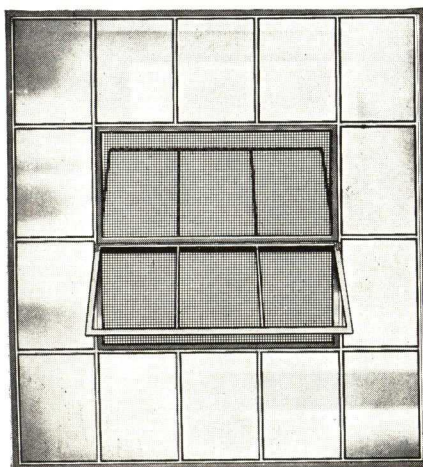
Complete Engineering Service

A complete Engineering Staff is available at the main office in Corry to assist in planning your screen installation. This service is available to help in preparing specifications—detailing installations and furnishing costs, or for advice on any special screening problem. An experienced staff of Field Representatives is also available for suggestions and consultation.

Complete information and detail specifications will be sent on request.



Type CT—Flat Screens for Use with Under Screen Operator



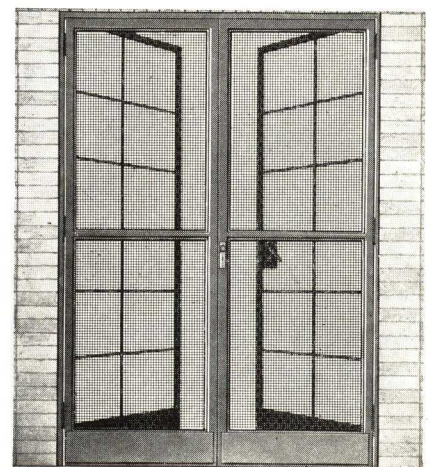
Showing Typical Installation of Two-piece Screens for Factory Type Sash



Type CTBX for Steel Basement Windows

A Few "Corry" Installations

Julia C. Lathrop Homes, Chicago, Ill.
Lauderdale Courts, Memphis, Tenn.
Brant-Whitlock Housing, Toledo, Ohio
Langston Terrace Housing, Washington, D. C.
Parkside Housing, Detroit, Mich.
U. S. Marine Hospital, Memphis, Tenn.
Norristown State Hospital, Norristown, Pa.
Houston Hospital, Houston, Tex.



Light Metal Screen Doors for Steel Casement Doors

THE EVERHARD MANUFACTURING CO.

Metal Frame Screens for All Types of Windows, Casement Storm Sash

OFFICE AND FACTORY
CANTON, OHIO

Products

Everhard Metal Frame Screens for Metal Casements; Everhard Thermosash—Double Glazing for Metal Casements; Screens for Casement, Projected, Pivoted and Wood or Metal Double Hung Windows; "Vinlite" Deflectors for no-draft ventilation; Window Guards.

Also Special Fabric Holding Frames.



Experience

Nearly 30 years in the manufacture of screens and other high-grade metal products. In 12 years we have specialized in correctly designed screens for steel sash and have built an enviable reputation for "Window Screens by Everhard."

EVERHARD SCREEN FRAMES FOR WOOD OR METAL WINDOWS

Types CLX, CG and BFX

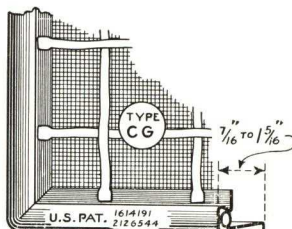
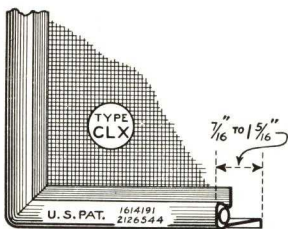
Type CLX—Type CLX frame in $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{4}$, 1 and $1\frac{1}{8}$ -in. depths is rolled from .037-in. steel and is designed for a maximum of strength and simplicity for screens up to 16 sq. ft. in area.

The easily removable solid rod spline which holds the cloth is continuous around the corners, reinforces the corners, and stiffens the frame against whip. Patents issued and pending.

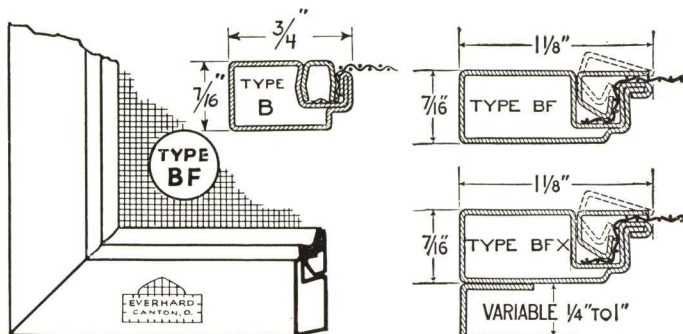
Type CG—Type CG is the CLX insect screen of any depth, with the addition of guard mesh such as $1\frac{1}{2}$ -in. mesh, 9-gauge steel wire cloth, or $\frac{3}{4}$ -in. mesh, 16-gauge flat rolled diamond mesh expanded metal welded to the screen frame at all contacts.

Particularly suitable for basement window guard screens, or for light detention screens on hospital windows, etc.

Type BFX—Type BFX is used principally on projected-in or projected-out metal sash where it is necessary to clear the kick-out of the weather bar.



Types B and BF



Type B—Type B frame, $\frac{1}{8} \times \frac{3}{4}$ in., a neat, narrow tubular frame, is rolled from steel, bronze, stainless steel or aluminum, and is particularly suitable for the usual under-screen operated casement, and may be attached by a number of different methods.

Type BF—Type BF is rolled from .025 or .030-in. electro-galvanized steel, full hard commercial bronze or hard strip aluminum.

The $\frac{1}{8} \times 1\frac{1}{8}$ -in. section, with locked and welded seam makes a stiff, substantial frame where a tubular frame screen up to 25 sq. ft. in area is required. Corners are mitered, ground true and pressed to a close fit over heavy galvanized steel corner reinforcement extending nearly 3 in. into each leg. Inner edges of the corner are electrically welded together.

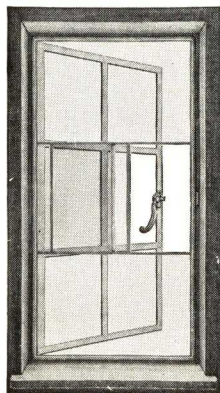
This frame is made in top-hung, vertical or horizontal sliding screens for all kinds of wood or metal windows.

EVERHARD KAY SCREENS

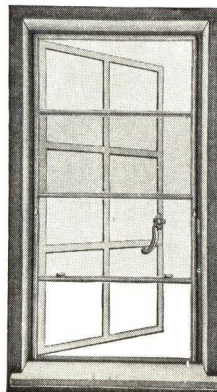
An Economical and Effective Screen for Outward Opening Metal Casement Windows

Pioneered by Everhard over ten years ago, the Everhard "Kay" Screens (patents issued and pending) are the result of long study and experimenting in co-operation with window manufacturers and the actual user.

The outer frames are 1 in. deep CLX type shown above. Narrow panel frames and guides are so designed that when the screen is closed the cloth lies in one plane with the rails appearing as braces at the window muntin lines.



Kay Screen H—(Sometimes called a "wicket" screen) seems to be favored most. A touch of the finger slides the light panel open for access to the window-locking handle without touching drapes or blinds. The whole screen is attached or removed as a unit by simply moving two lever latches.



Kay Screen L—With vertical sliding panel one-half the screen height (shown partly open) is sometimes preferred when the window-locking handle is located below the center of the window height. The construction of the panels and guides is as small and neat as that of Kay Screen H, and the freely sliding panel is held in the open position by a simple latch on the lift handle.

EVERHARD THERMOSASH

Double Glazing for Metal Casements Prevent Condensation, Reduce Fuel Bills, Increase Comfort

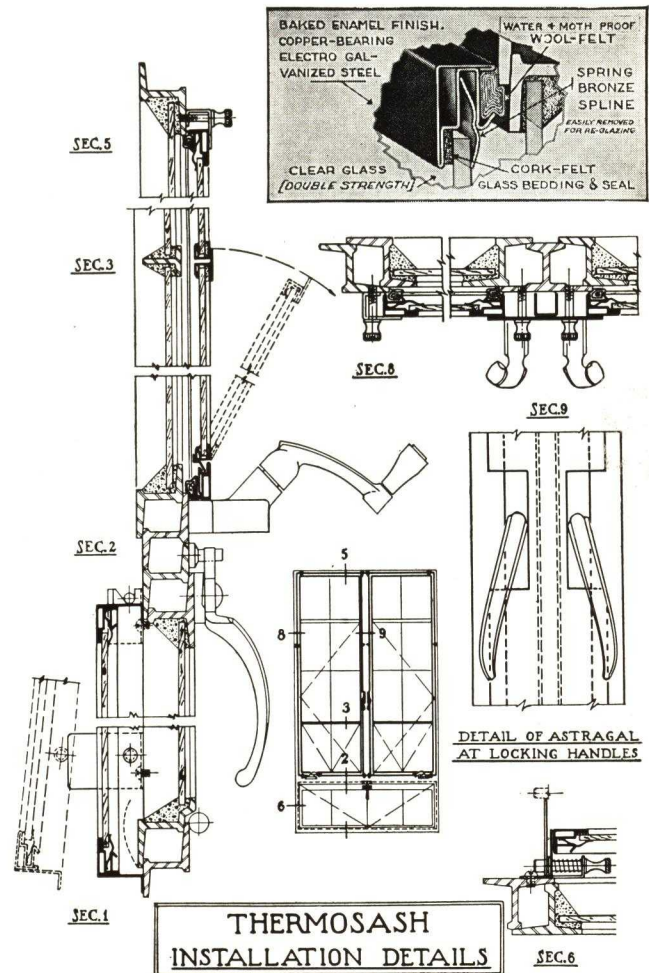
An important contribution to modern air conditioning and insulation is the development of the Everhard Thermosash designed for use with casement windows. The Thermosash is an insulating window attached inside standard make casements. It is a separate frame of electro-galvanized steel, glazed with one piece of clear double strength glass held in place by a removable bronze spline and finished in baked enamel, the whole surrounded by a mothproofed, resilient wool felt sealing strip which seals the dead air space between the casement and the Thermosash.



In air conditioned buildings, the Thermosash may be left in position the year round, reducing the cost of operating the air conditioning system both summer and winter. In buildings without air conditioning, it is installed during the winter, taking the place of Everhard Screens used during the summer. In buildings of this type it effects a large saving in fuel by reducing heat loss through the windows.

The dead air space between the casement and the Thermosash effectively eliminates condensation and frost, cuts down heat loss and prevents drafts.

Where desirable, as in bedrooms, ventilation is provided by one or more Thermosash fitted with glazed tilt-in ventilators



as high as the bottom glass in the window vent, as shown in the illustration. These may be opened, along with the window, to admit a small amount of air directed upward, away from the floor.

A typical installation detail is shown above, including special outside Thermosash over a projected-in ventilator. To get the full insulating benefit all the glass of the opening must be covered, including both ventilator and fixed glass.

Each of the many types of casement windows requires a different arrangement of Thermosash panels in order to obtain maximum efficiency and economy.

Blue print details of various panel arrangements and several methods of attaching will be gladly mailed upon request, but be sure to state the make of sash, if known, also whether screen type (with underscreen operator) or non-screen (with locking handle on the vent leaf).

ENGINEERING SERVICE

Everhard Screens are usually not sold direct by THE EVERHARD MANUFACTURING CO. but should be specified by the architect as a part of his casement installation, and may be ordered as a part of the complete installation, through the window manufacturer.

However, the Everhard Engineering Staff is at all times glad to assist the architect in working out screening problems of a
127JT

special nature in connection with any type of metal window. A large number of special rolled shapes and parts not shown here are on hand for special screens.

A standard Everhard screen is available for almost every make or type of metal window, including hinged-in or hinged-out projected, pivoted or double hung, and in each case has been designed to best meet those conditions.

HIGGIN PRODUCTS, INC.

Steel, Bronze, Aluminum and Wood Frame Screens, Rolling Screens,
Wood and Metal Door and Porch Screens

GENERAL OFFICES AND FACTORY
NEWPORT, KENTUCKY

SALES AGENCIES IN PRINCIPAL CITIES

For Weatherstripping, Access Panels, Lightproof Shades and Venetian Blinds, see our pages in File Index

The Company and Its Organization

Higgin has been nationally known for more than forty years as makers of the finest quality all-metal screens made to order. Thousands of these earlier installations still serve satisfied owners. Having early built up a reputation for quality of product and for integrity it has been and continues to be the aim to maintain these high standards and improve upon them. To further insure complete satisfaction both to architect and owner, the Company's Sales Representatives throughout the country are carefully chosen for their honesty and ability. To

HIGGIN

ALL METAL
SCREENS

properly screen a building, whether modest residence or the largest building, requires intelligent handling both in the field and at the factory. Higgin Sales Representatives will be found to be thoroughly capable. In each territory a competent fitting organization is maintained by the Sales Agent.

Central Location

The factory and the general offices are located at Newport, Kentucky, directly across the Ohio River from Cincinnati, Ohio, one of the country's important and most centrally located transportation terminals.

A HIGGIN SCREEN FOR EVERY PURPOSE

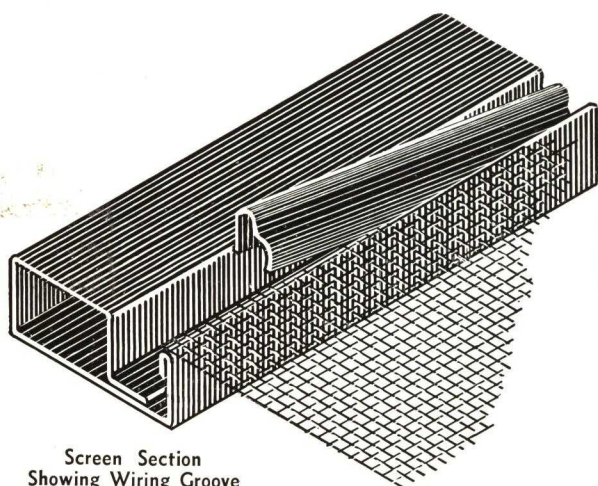
Every style of window, every conceivable shape, every kind of opening can be neatly and perfectly fitted with Higgin Screens. Making all types of screens, wood or metal frame or rolling,

the Company is unbiased in its recommendations. Each screen is accurately measured to fit and is designed to follow architectural lines and to be in harmony with adjacent work.

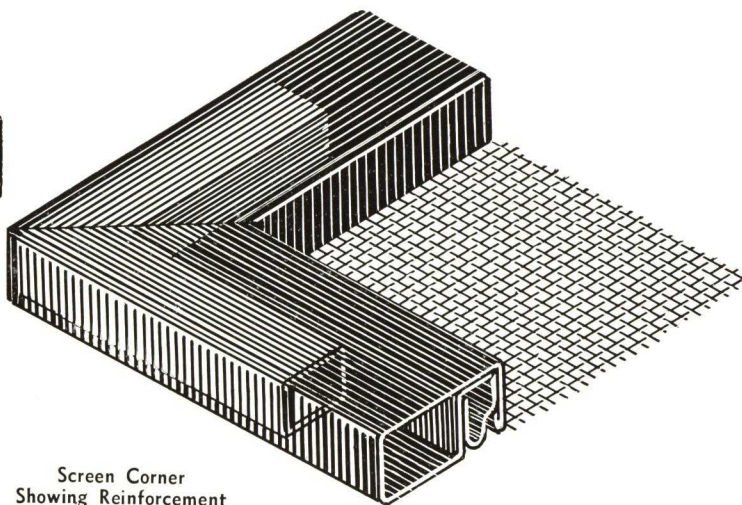
HIGGIN METAL SCREEN FRAME CONSTRUCTION

The Higgin Tubular rewirable screen section has been manufactured in its present design for more than twenty years, so that proof of its merits are plentiful. Frames may be con-

is of particular importance for it adds materially to the life of the screen, for the enamel, which is later baked on, covers both the inside and outside of the tube. It is well known that tubing



Screen Section
Showing Wiring Groove



Screen Corner
Showing Reinforcement

structed of electro-galvanized copper content steel, commercial bronze or aluminum. Steel frame screens, after forming, are spotwelded through the spline groove where metal laps, at frequent intervals and doubly at ends. Bronze frame screens have lapped edges, soldered. Aluminum frame screens are drawn from seamless tubing.

After spotwelding and truing of mitres, the tubular rails of steel frame screens are dipped in special baking enamel after first being cleaned free of dirt and grease. The dipping process

"sweats" and without this inside coating rails may rust from the inside without detection until too late.

The inside coating of tubes is possible due to method of assembling stiles and rails on box-shaped reinforcing corners, with a driving fit. Corners, of course, are neatly mitred and closely fit. Bronze and aluminum screens are similarly assembled. This construction makes an extremely strong screen with definite merits over the welded corners (welded corners can be furnished).

METAL FRAME SCREEN SECTIONS HARDWARE AND ACCESSORIES

The details and descriptions on this and subsequent pages are intended to set forth essential screen parts and accessories most frequently required. Further details may be had for the asking. Sectional Details are full size.

**Steel and Bronze Frame Screens, Tubular Type**

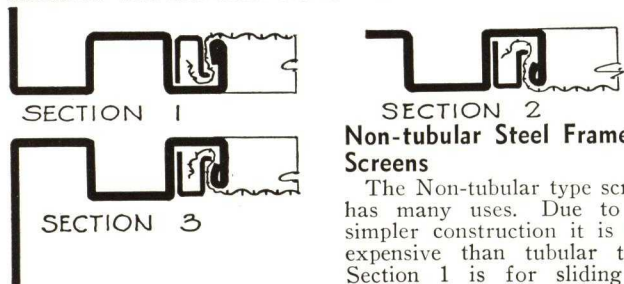
(Left) $1\frac{1}{8} \times \frac{7}{16}$ in. thick rail section. (Right) $1\frac{1}{2} \times \frac{7}{16}$ in. thick rail section. Both are formed from .032 in. thickness electro-galvanized steel or commercial bronze (copper 90%—zinc 10%). Rounded edge sections can also be provided for pivot hung or horizontal sliding screens (with No. 132 sill track).

**Screen Braces**

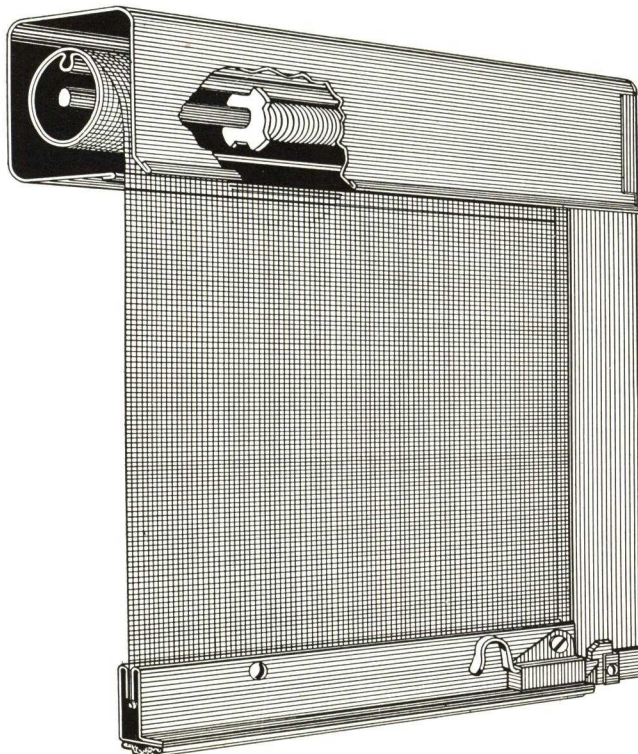
Rewireable braces (left) should be specified where screens exceed 48 in. in least dimension, or where smaller panels of wire cloth are desired. At right is non-rewireable brace. The inside member is of bronze.

**Aluminum Tubular Frame Screen**

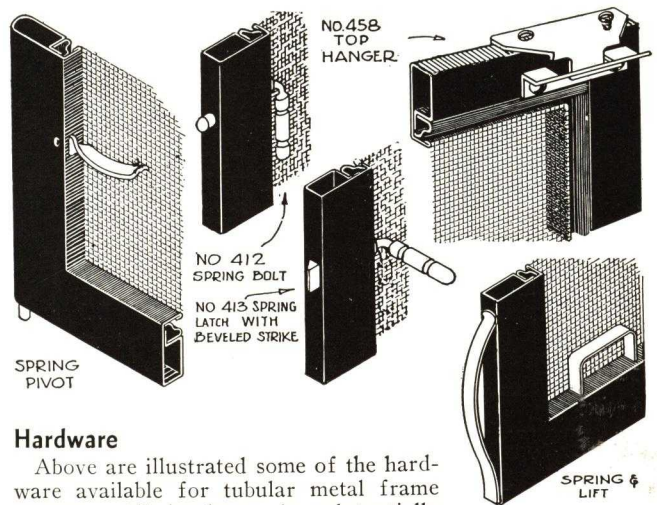
Aluminum frame screens are constructed of .042 in. thickness (wall) seamless drawn tubing. Screen frames are regularly assembled on reinforcing corners (see description page 1) though they may be welded. Aluminum screen cloth is regular furnished with aluminum frame screens.

**Non-tubular Steel Frame Screens**

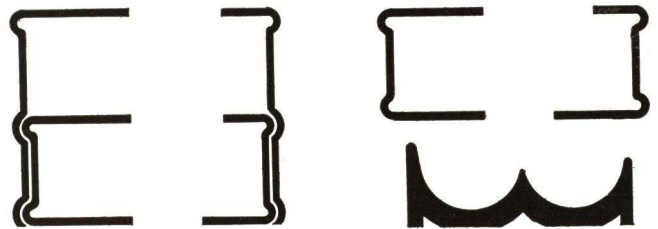
The Non-tubular type screen has many uses. Due to its simpler construction it is less expensive than tubular type. Section 1 is for sliding or



hinged screens. Section 3 is for use with screened type steel casements. Section 2 is ideal for basement projected steel sash.

**Hardware**

Above are illustrated some of the hardware available for tubular metal frame screens. All hardware is substantially constructed and designed for convenience and long life. The spring pivot hinge is trigger operated. The No. 458 top hanger is fastened inside the rebate and screen cannot be forced out without releasing catches and opening screen. The spring bolt (No. 412) and the mortise latch (No. 413) are lever operated (brass).

**Guides**

Above are guides for sliding screens, those at the left being for double vertical or horizontal sliding screens. Guides at top right are for half-height vertical sliding screens. Grooved track is of extruded brass for horizontal sliding screens (No. 132).

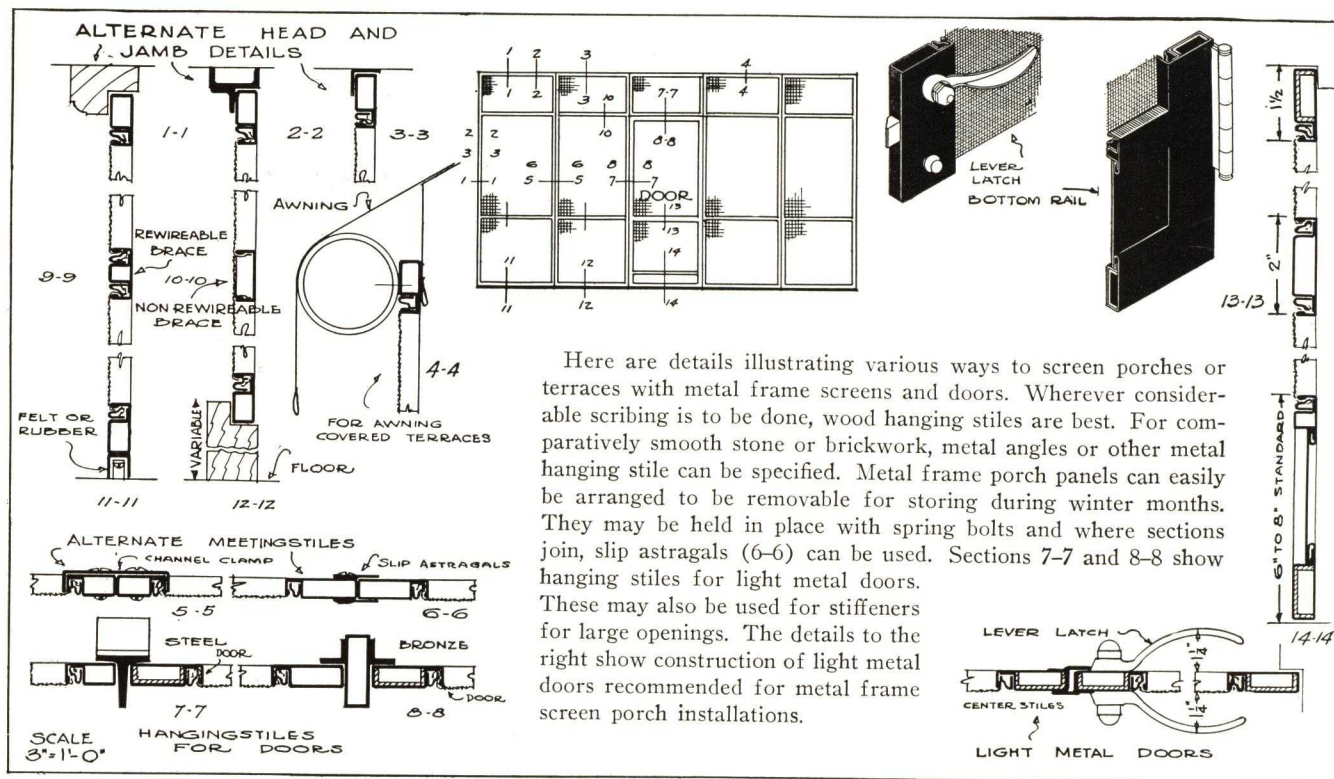
ROLLING SCREENS

Higgin Rolling Screens are built so that any part or parts may be replaced without damage to other members. The equipment consists of a metal assembly box or housing, spring roller, deep side guides, raising bar with felt cushioned bottom and automatic locking latches. Assembly boxes, side guides and raising bars are of electro-galvanized steel (can be had in bronze). The wire cloth is of bronze antique finish, 16 mesh to the inch. The roller is made up of a $1\frac{1}{4}$ in. diameter lock-seam tubing with pear shape groove for holding screen cloth evenly and surely the entire length of the tube, a continuous steel spindle and a coil spring of music wire thoroughly coated in non-running grease. The coil spring is arranged to "float" in that while one end is attached to the spindle, the other is threaded over a washer which is inserted over spindle in such a way that it can move, thus preventing the coil spring from becoming warped or set. (This is a patented feature.)

There are rolling screen equipments to meet almost any condition, for application to jambs or directly to steel casements.



METAL FRAME PORCH SCREEN DETAILS



WOOD SCREEN DOORS

Higgin Wood Frame Screen Doors are of highest quality, made from seasoned wood, with joints mortised, glued and wedged. Higgin Doors are made in many woods; 100% vertical grain Sitka spruce, plain oak, quartered oak, walnut, mahogany, etc. Wire cloth, usually 16-mesh bronze antique finish, is held firm and taut in a groove in frame by means of a rattan spline, no tacks or staples. Cover moulds are neatly mitred and fastened with brass brads.

Higgin Doors may be equipped with ribbon grille, flat or quarter twist, attached directly to door or to channel frame. A full line of screen door hardware is carried.

MEDIUM WEIGHT BRONZE SCREEN DOORS

A medium weight metal screen door in bronze can be furnished. Doors have stiles, cross and top rails 2 or 3 in. wide. Bottom rails 6 to 8 in. wide. Doors are constructed .035 in. commercial bronze with reinforcements at corners and at hardware. Hardware consists of bronze knob and lever mortise latch set, 3 x 2 bronze loose pin butts, top and bottom bolts for double doors. Double doors have double astragals.

LIGHT METAL DOORS

Light metal doors are made in both steel and bronze. Stiles and top rails are 1½ in. wide of .032 in. thick metal reinforced with .050 in. channels. Bottom rails are usually 6 to 8 in. high of paneled type. Doors have bronze mortise latches with lever handles both sides. A thumb set is provided on inside for locking. Hinges are of brass with button tipped pins. Pairs of doors have double astragals and top and bottom bolts.

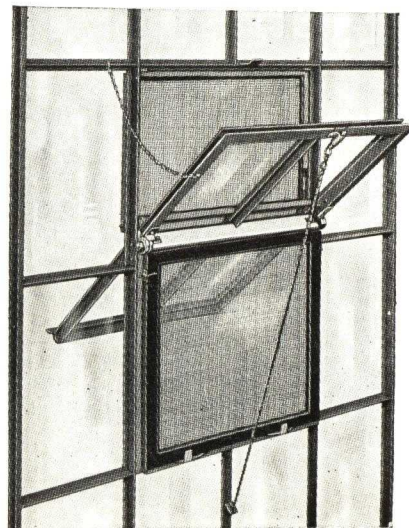
METAL FRAME STORM SASH

See index under Weatherstripping.

HORIZONTALLY PIVOTED STEEL SASH EQUIPMENT

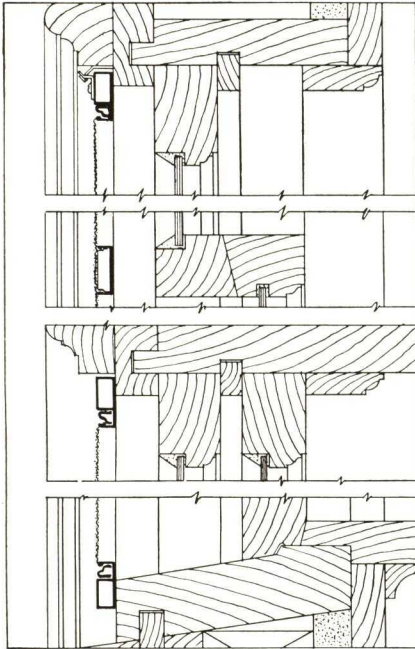
Higgin flat screen equipment for horizontally pivoted steel sash ventilators is simple and strong in design. A straight metal frame screen is placed at the top of the opening on the outside and a like screen at the bottom on the inside. These screens set in angle frames which are permanently attached to the window frame with machine screws. Metal contact rolls are attached to ventilator at the center, closing up the spaces between the ventilator and screens at all times, no matter at what angle the ventilator may be set. Rolls and angles become a permanent part of the window, but screens can easily be removed and replaced. Higgin Equipment is adaptable to any type or make of horizontally pivoted sash.

Metal Frame Screen Equipment is also available for other types of metal sash, casements, projected-in or out, double hung or continuous monitor sash.

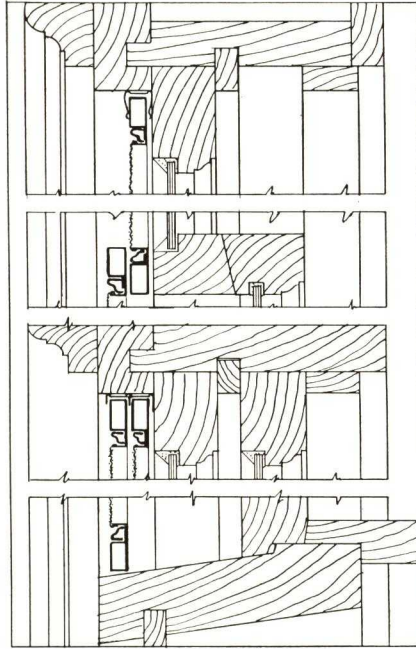


When ordering Pivoted Eash Equipment, state make of sash, number of lights in vents and nominal glass size, i.e. 12 x 18, 14 x 20 in.

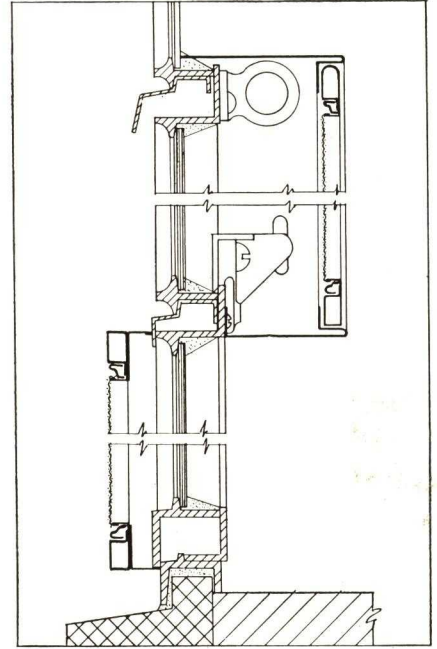
TYPICAL HIGGIN SCREENS AND METHODS OF INSTALLATION

**Top Hung Screens**

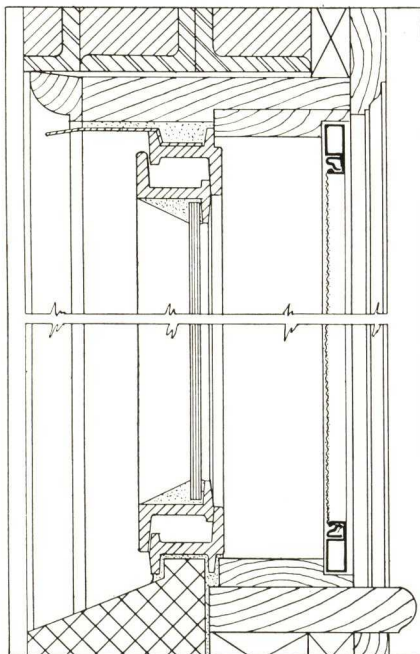
Above: Double hung window with top hung metal frame screens. Higgin Equipment No. 2322. Screen is hung on No. 458 metal hangers. Equipment No. 2320 is similar but has pivots (one operative) instead of hangers. Fasteners at sides may be trigger operated mortise latches or spring bolts (see Page 2), the latter being required for metal windows.

**Vertical Sliding Screens**

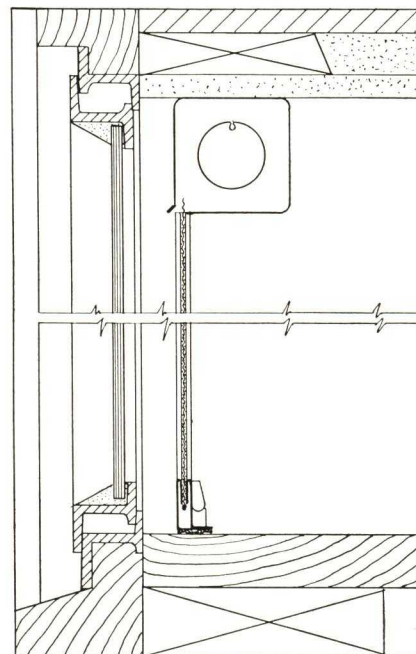
Above: Double vertical sliding screen Equipment No. 2104 used to cover double hung windows. While wood is here indicated, the equipment is adaptable to metal. For institutional work concealed locks may be provided in meeting rails. Single screens to cover lower sash only, can also be furnished. These are half sliding screens (Equipment No. 2101). Guides are full height.

**Screens for Projected Sash**

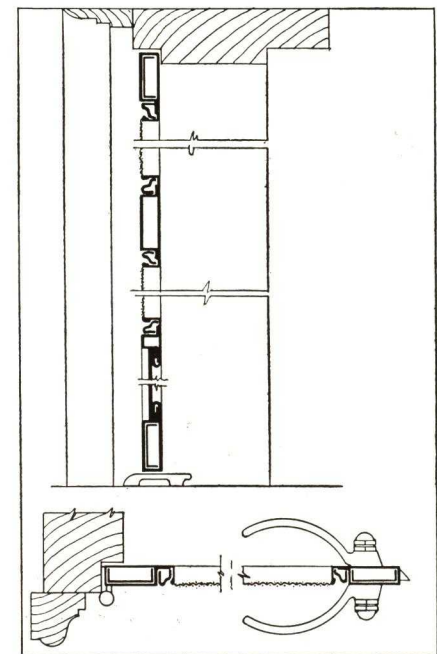
Above: Higgin screen Equipment No. 2516 for projected out and No. 2503 for projected in type steel sash. For projected out sash, metal boxes deep enough to clear sash hardware are furnished to receive screens, which are top pivot hung and held at sides with spring bolts. For Projected In sash a flanged screen is attached to window with spring bolts and special keepers.

**Side Hinged Screens**

Above: Inside side hinged screens. Screens have fixed and operative pivots, latches, astragals, etc. Other equipment for same type of window: Horizontal sliding screens, double side hinged screens, stationary screens for use with underscreen operators.

**Rolling Screens**

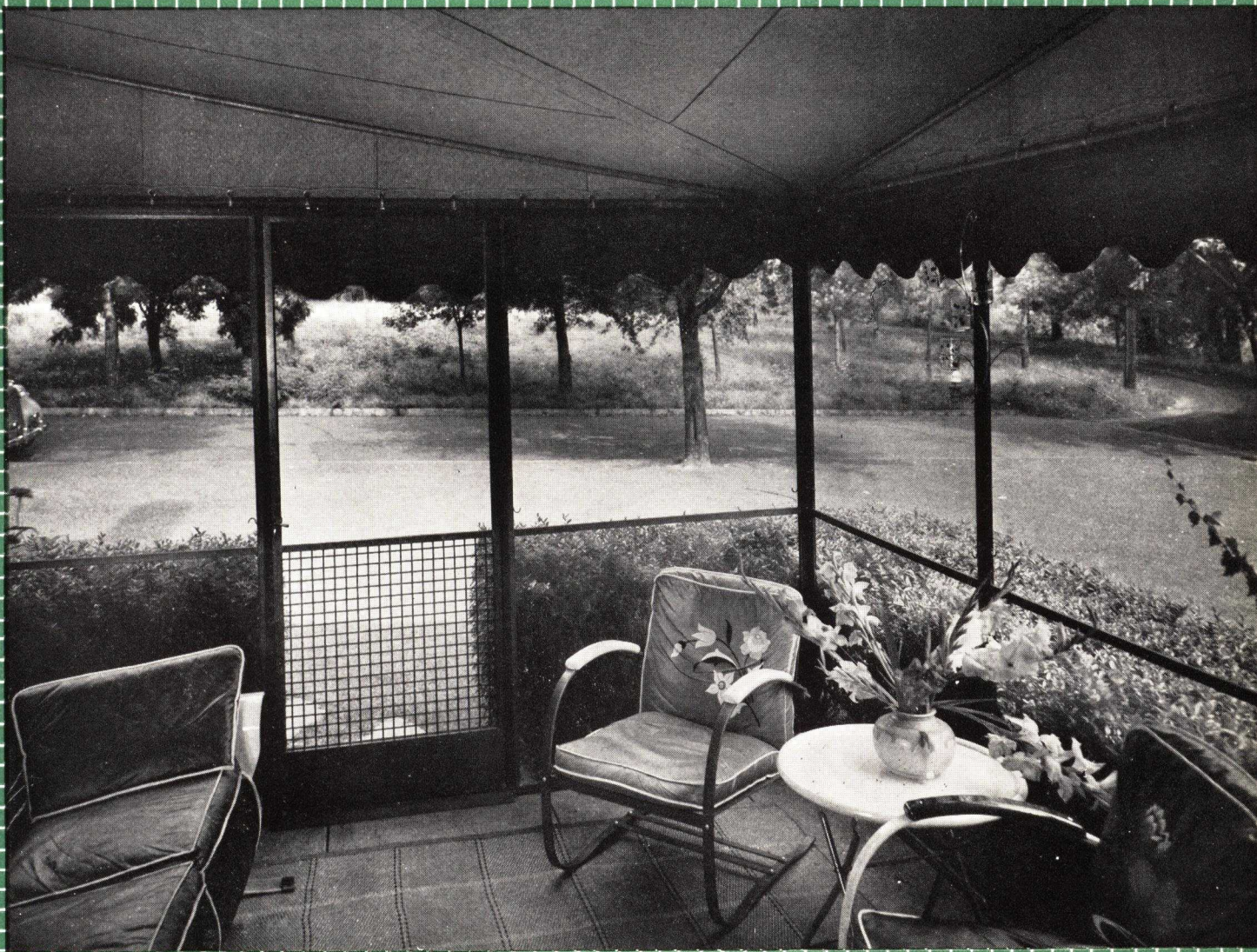
Above: Higgin rolling screens are especially recommended for out swinging casements. The screens are adaptable to almost any head, jamb or sill condition. Mostly, rolling screens fasten to jambs, but Higgin Equipment 5070 is especially designed to fasten directly to steel casements.

**Metal Door Screens**

Above: Section through Higgin Light Section steel or Bronze frame Screen Doors. This door with Paneled bottom rail, bronze hinges and mortise lever latch, reinforced stiles and rails is very attractive in appearance and substantial, but should not be used for openings where traffic is heavy.

MEMORANDA

JOHNSON WINDOW *Screens*



JOHNSON METAL PRODUCTS CO. • ERIE, PENNA.

A JOHNSON SCREEN

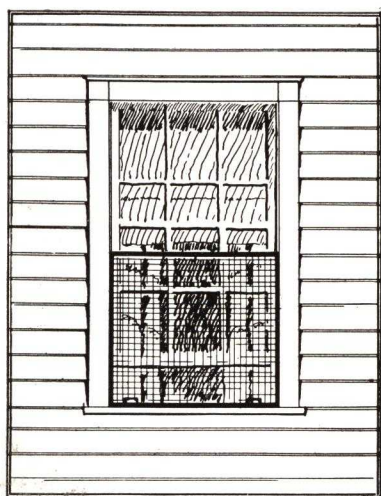
Johnson screens are furnished custom built in a variety of sturdy types to meet the requirements of any window, porch, or door installation. They are fabricated in the most modern of screen factories—by artisans of many years experience who have furnished over a million screens to make insect-tight many of America's finest public buildings as well as thousands of the country's most comfortable homes.

The materials used in the manufacture of Johnson Screens are the best the market affords. The frames may be of bronze, aluminum or bonderized, galvanized or stainless steel. Sixteen mesh .0113 bronze wire cloth is standard but other commercial weaves are supplied when individual taste or special conditions dictate.

The choice of the material for the frames is governed largely by the expense allocated for screens, as well as by the conditions under which they are to be used. Bronze or stainless steel frames are lifetime purchases which will endure without attention more than a generation. When a purchaser will pro-rate their cost over their period of serviceability they are the most economical frames to use. Aluminum screens find favor in some parts of the country but are not recommended for use near the sea coast. Galvanized steel frames are serviceable for many years and particularly if not subject to extreme exposure, with an occasional painting will last indefinitely. Bonderizing of steel is a new process that is rapidly displacing other methods of steel surface protection and frames thus processed may be depended on to require the minimum of attention. The cost of bonderized steel frame screens has been so reduced by production methods that they are frequently an economy over wood frame screens.

There is a large variety of conditions under which screens must be installed. Window screens are dependent for their type and method of application on the style of window in use—whether double hung, pivot or casement, and whether metal or wood. Also, accessories such as drapes, venetian blinds, window boxes, govern screen installation. An outline of the usual methods of application is given below summarizing their advantages and limitations.

For screen conditions out of the ordinary and other than those described below, you are invited to refer specific problems to the Johnson Engineering Department for suggestions.



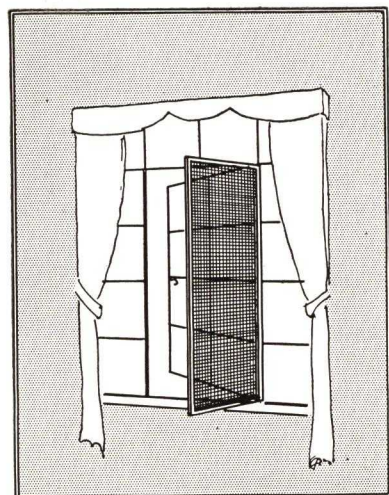
SLIDING SCREENS

The customary method of installing screens on double hung sash is in channel guides so the screens slide vertically. The narrow frames of metal interfere negligibly with an open sash so that a considerable increase of ventilating area is available over screens with wood frames.

No limitations regarding awnings, shutters, Venetian blinds or other accessories to windows are encountered with vertical sliding screens. Economical practice provides a screen for only one-half of a double hung window—the screen placed ordinarily over the lower sash. Full length channel guides allow raising to the upper half for cleaning windows, or when otherwise desired. The screen makes fly-tight contact with the meeting rail—thus allowing its use properly in either position. When full coverage of a double hung window is desired, two screens, sliding in double channel guides, or, for multiple sash, multiple screens and guides, are supplied.

The installation detail of Johnson sliding screens is given on page 8. Guides are rolled channels of steel, bronze or aluminum, and those for one side are shallower than the other, making insertion of the screens and their removal easier. The springs that slide with the screens in the channels are tempered to endure a lifetime of proper service. Handle lifts on the inside of the screens make operation easy.

To cover windows that are low in relation to their width, it is sometimes desirable to use horizontal sliding screens. Suitable guides, placed at head and sill, are provided to hold these screens rigidly in place and to allow easy operation.



TOP AND SIDE HUNG

Screens to swing from the top may be supplied either with pivots or top hangers. These are particularly suited to double hung windows where a single screen is desired.

A Top Hung Screen has the further advantage that it is particularly easy to install and take down. With top hangers, all that is required is to slip two metal loops over their corresponding hooks on the upper part of the window frame, and the screen is in place. Pivot bolts on the top, to fit sockets in the jamb, may be used as alternate supports. These are held in place by compression springs, controlled by small finger levers. Rods may be hinged to the side frames to hold the screen open while washing windows.

Side Hung Screens likewise give full window area coverage and can be used in practically every type of installation except where there are shutters on the windows.

This type is sometimes preferred because, when opened, the entire screen is away from the window. Side Hung Screens are the most satisfactory type for use with crowned top, arched or special pattern windows. On double hung windows, screens open outward. For casement windows that open outward, this type screen is installed on the inside and swings inward. However, where window boxes are used, neither this type, nor the Top Hung Screen may be installed to swing out.

FOR EVERY REQUIREMENT

Johnson Side Hung Screens may be attached by hinges, or by pivot bolts that snap into recesses at the top and bottom of the window frames. This last type is usually preferred for its greater ease of removal and installation.

For unusually wide or double casement windows, the Johnson Double Side Hinged or Side Pivoted Screen is recommended. The extra sturdy Johnson frame construction permits an unusually large screen area, without the necessity of using unsightly external braces to keep the frames from flexing.

As in the case of Single Side Hung these screens can be mounted on inside of casement windows that open outward.

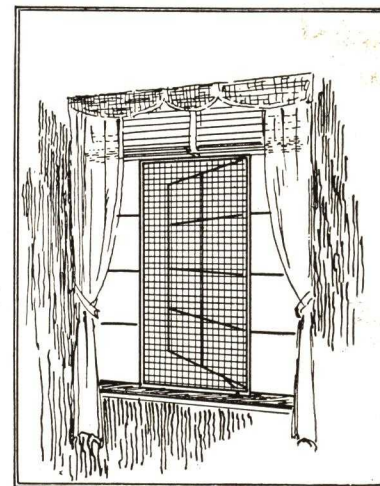
On most windows using this type of installation, the left-hand section is held stationary by a lock bolt. Thus—when the spring bolt locking the two sections together is released, only the right-hand portion swings open. A narrow astragal is incorporated in the free moving section to cover the light line where the two screens meet.

This type of screen can also be attached by hinges instead of spring pivot bolts. As in the case of Single Side Hung Screens that open outward, these screens are especially suitable for use with crowned top, arched or special pattern windows not obstructed by shutters or window boxes.

STATIONARY SCREENS

The most satisfactory method of making insect-tight inswinging casements is by stationary screens. Regardless of the type of opening—circular, triangular, bowed, arched or crowned—it can be fitted exactly with a Johnson Stationary Screen. As every Johnson Screen is custom-made to your exact specifications, special designs present no particular problems.

Johnson Stationary Screens are held in place by spring bolts, that will not rust or stick—even after being exposed to the weather all year. On some installations, such as basement windows, or ventilation ducts with metal frames, where permanent all-year installation is desired, the screens can be screwed to the window frames. Special wire guards are often used in addition to standard wire cloth on installations of this type.



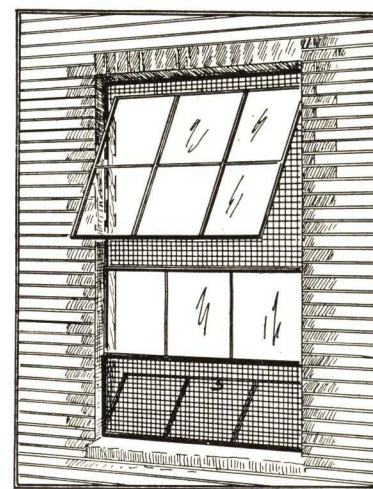
SCREENS FOR INDUSTRIAL WINDOWS

Installation of screens is frequently desired in offices, restaurants, factories, auditoriums, dairies and other places where sash other than the ordinary residential types are found.

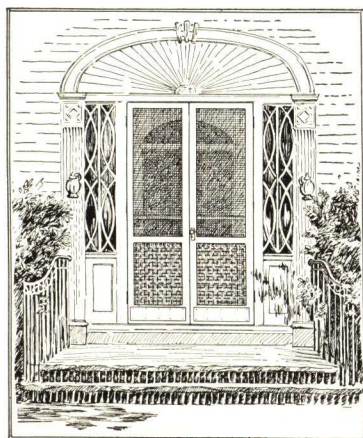
The Johnson Company has developed practical methods of screening all the standardized makes of steel and wood sash—whether center pivoted, transom type, extension type or projected.

The illustration at the right indicates one such application to a projected sash. Another typical installation is with horizontal center pivoted sash.

A floating baffle at the axis maintains contact at all degrees of opening of the leaf, keeping the vent fly tight under all circumstances. Special clips, easily attached to hold the screen in position, do not interfere with quick and convenient removal of the screens when so desired.



SCREENED PORCHES AND DOORS



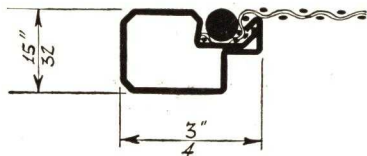
Metal frame screen porch enclosures are almost universally preferable to those of wooden structure because of their minimum interference with light and ventilation. While strength and permanency are not sacrificed, artistic design and harmony can be achieved through the use of the frames that are included in the wide Johnson Line.

Whatever the designs of the porch openings, they may be rendered insect-tight with Johnson Custom-Built Screens. Because of the ruggedness inherent in Johnson Frames, the braces which exaggerate the "shut-in" feeling on a porch are seldom needed. Details of construction may be had on reference to the factory.

Johnson manufactures metal screen doors in two styles. Materials are either steel or bronze. The lighter size has the same frame as a 1½-in. cap frame screen illustrated on page 4. The heavier and more serviceable type where constant use is demanded is illustrated on page 11. Because of their sturdiness, they require a minimum of bracing and are noted for the continuous wear and punishment they will endure.

TYPES OF JOHNSON SCREEN FRAMES

DUREVER



Full Size Section Durever Screen

Materials: .023 Bronze; .020 Stainless Steel; .023 Bonderized or Galvanized steel

Finishes: Bronze-Natural; Stainless-Satin Finish; Bonderized or Galvanized-Enameled in Electric Ovens

Sizes: Without braces up to 36 in. x 48 in.; with braces up to 48 in. x 72 in.

Rewireable: By removal of solid spline and replacing with new wire cloth

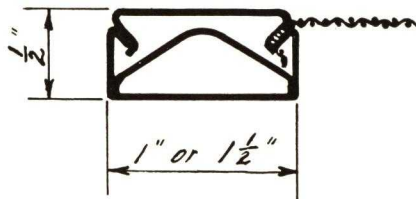
Hardware: To adapt screen to any type of opening

FOR low cost general housing, no other metal frame screen gives more satisfaction than the Johnson Durever line. Every inch and a quarter of the narrow tubular frame is spot welded—thus giving it the benefit of a closed cross section. The narrowness of the frame adds as much as 10% to the ventilating area in many cases.

The Stainless Steel Durever is rapidly displacing larger frame screens of other materials. Though low in cost, because of the minimum material requirement of this type frame, yet, because of the inherent greater strength of stainless steel, this type will endure a lifetime of all year round service without painting or reconditioning.

Construction details on page 6.

CAP OR "C" TYPE



Full Size Section Type "C" Screen

Materials: .020—18&8 Stainless Steel; .026 or .032 Bonderized or Galvanized Steel; .026 or .032 Bronze; .032 or .040 Aluminum

Finishes: As Durever type in steel; Bronze, natural or oxidized. Aluminum, brush finish

Rewireable: Most easily accomplished of any rewireable screen, by resnapping cap over wire cloth

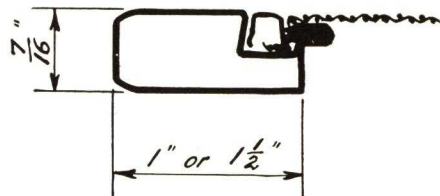
Hardware: All types for any installation

THIS type is the highest quality manufactured. The frame consists of a ruggedly braced frame member, and a top cap which snaps into the frame body—holding the screen cloth in position. The patented Johnson internal truss brace, which runs the full length of the frame and is locked by spot welding every inch or by continuous soldering, makes this type the most substantial and the strongest tubular window screen available.

All corners are reinforced by metal inserts, welded or soldered into the frame. Two-tone finishes may be obtained by caps of one color and frame members of another.

For construction details see page 7.

SPLINE OR "S" TYPE



Full Size Section Type "S" Screen

Materials: .026 or .032 Galvanized Steel; .026 or .032 Bronze; .032 or .040 Aluminum

Finishes: Same as Cap Type

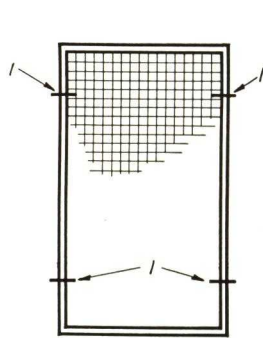
Rewireable: By removal and replacing of spline

Hardware: All types for any installation

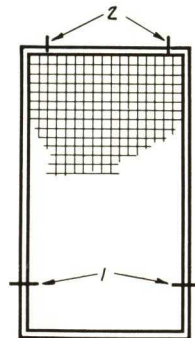
THIS type is manufactured with the same precision and craftsmanship as the Cap Type. Because this type is not internally braced it is somewhat lighter in weight. The tubular construction, locked its entire length, imparts unusual rigidity to the frame. Johnson Spline Screens positively will not flex or bend out of shape when in use. Corners are made unbreakable by internal braces which are welded or soldered in place. This type lends itself particularly to Aluminum frames when atmospheric conditions justify.

Construction details on page 7.

STANDARD TYPES OF JOHNSON SCREENS



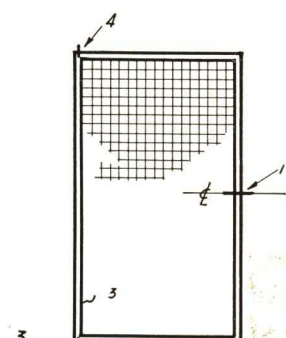
STATIONARY



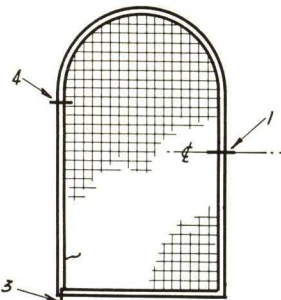
TOP HUNG



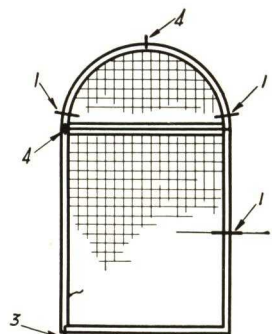
TOP PIVOTED



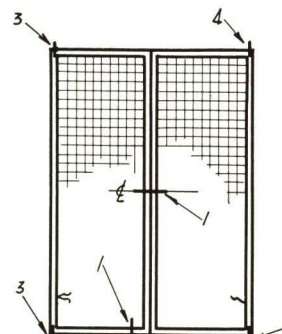
SINGLE SIDE PIVOTED



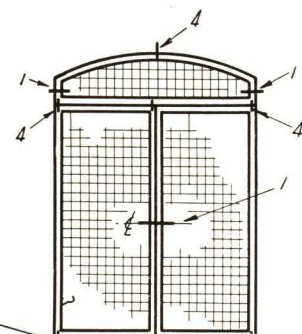
CIRCULAR HEAD
SIDE PIVOTED



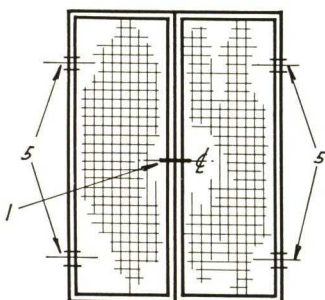
SIDE PIVOTED WITH
CIRCULAR HEAD
FIXED TRANSOM



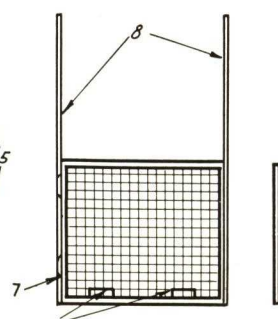
DOUBLE SCREEN
LEFT HAND STATIONARY
RIGHT HAND PIVOTED
ASTRAGAL ON L.H. SCREEN



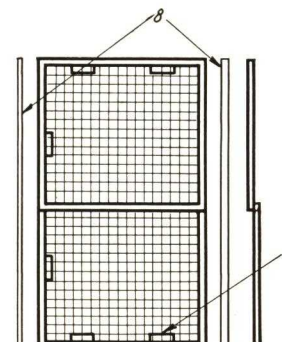
DOUBLE SIDE PIVOTED
WITH SEGMENTAL HEAD
- FIXED TRANSOM
ASTRAGAL ON L.H. SCREEN



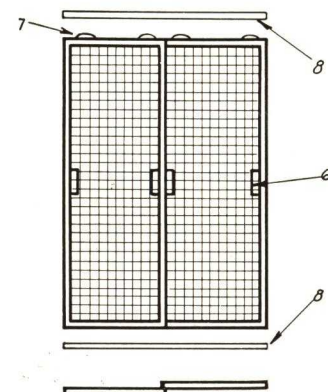
DOUBLE SIDE HINGED
ASTRAGAL ON L.H. SCREEN



SINGLE
VERTICAL SLIDING



TWIN
VERTICAL SLIDING



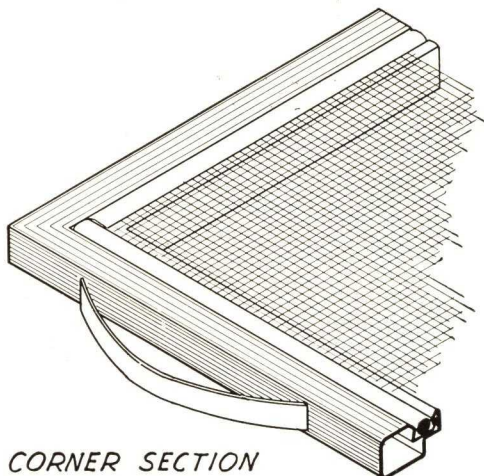
DOUBLE
HORIZONTAL SLIDING

- 1 SPRING BOLTS
- 2 TOP HANGERS
- 3 MOVABLE PIVOTS
- 4 FIXED PIVOTS
- 5 HINGES
- 6 HANDLES
- 7 SPRINGS
- 8 GUIDES

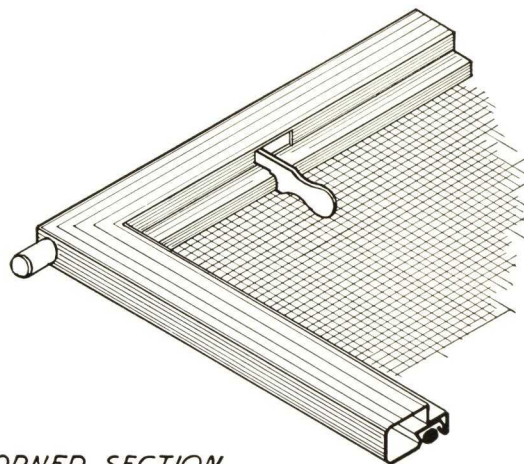
CARD #1378

JOHNSON "DUREVER" SCREENS

CONSTRUCTION DETAILS

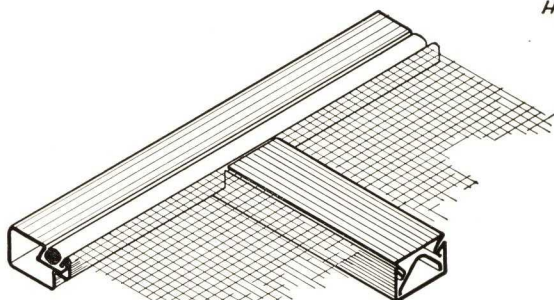


CORNER SECTION
SHOWING SPRING

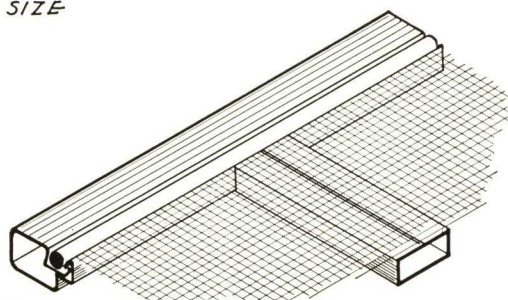


CORNER SECTION
SHOWING MOVABLE PIVOT

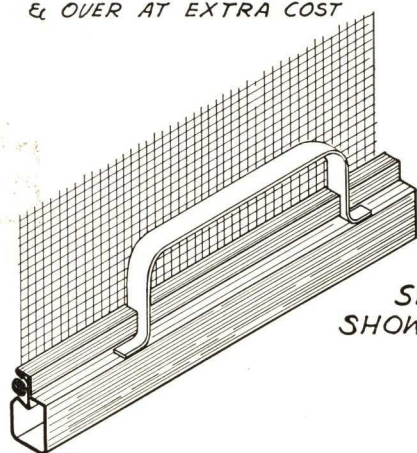
NOTE
ILLUSTRATIONS ARE
HALF ACTUAL SIZE



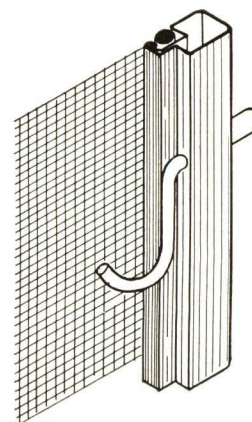
$\frac{5}{8}$ " REWIREABLE BRACE
FURNISHED ON SCREENS 48"
& OVER AT EXTRA COST



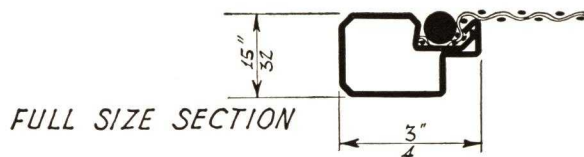
$\frac{5}{8}$ " TUBULAR BRACE
FURNISHED ON SCREENS 48"
& OVER AT NO EXTRA COST



SECTION
SHOWING HANDLE



SECTION
SHOWING
SPRING
BOLT

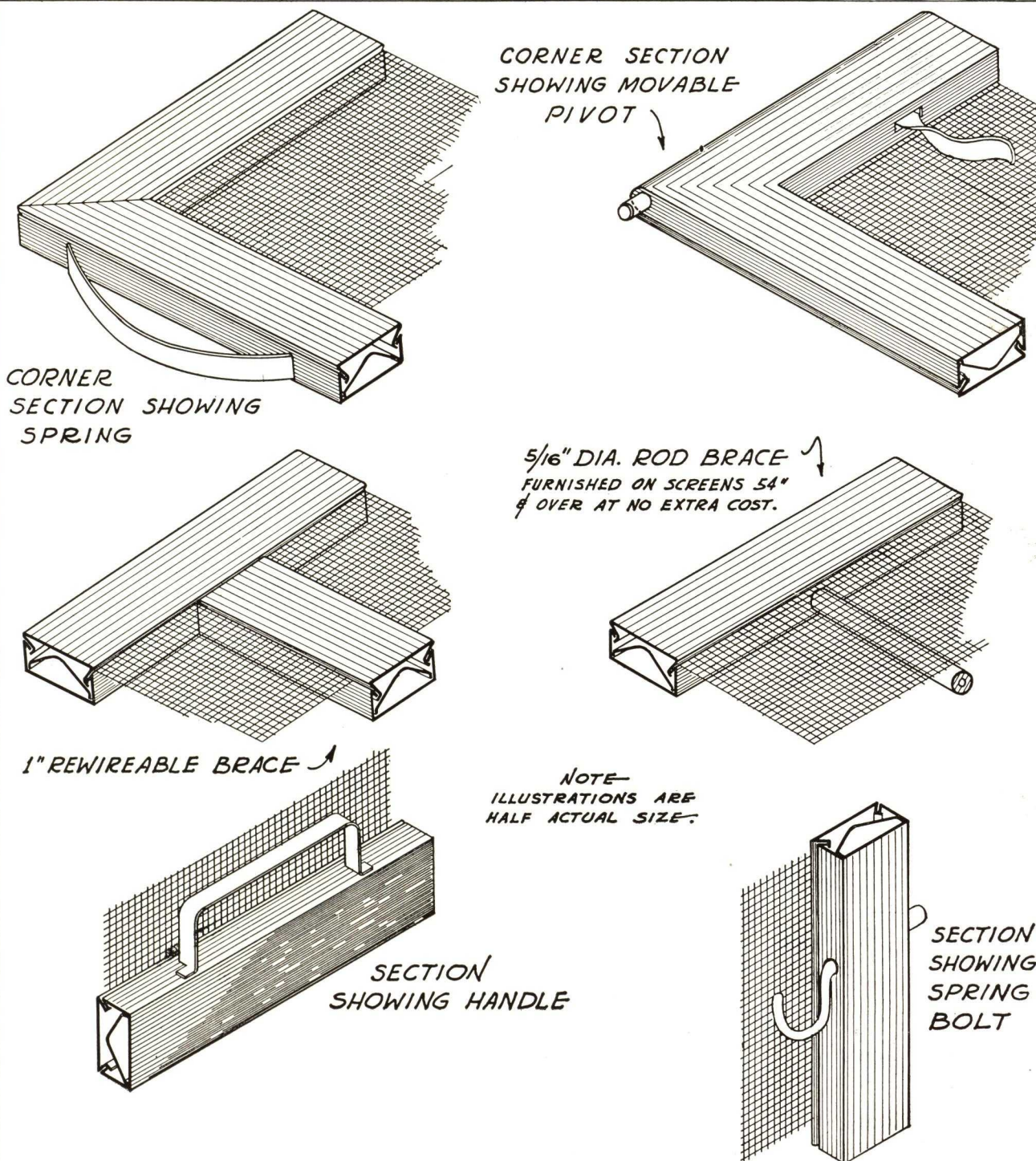


FULL SIZE SECTION

"DUREVER" FRAME
AND ACCESSORIES

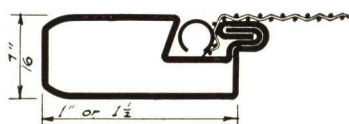
JOHNSON TYPES "C" AND "S" SCREENS

CONSTRUCTION DETAILS

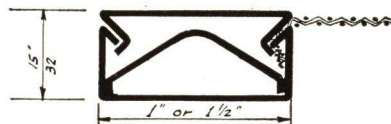


ABOVE ILLUSTRATIONS APPLY TO FRAMES SHOWN BELOW

F. S. "S" TYPE



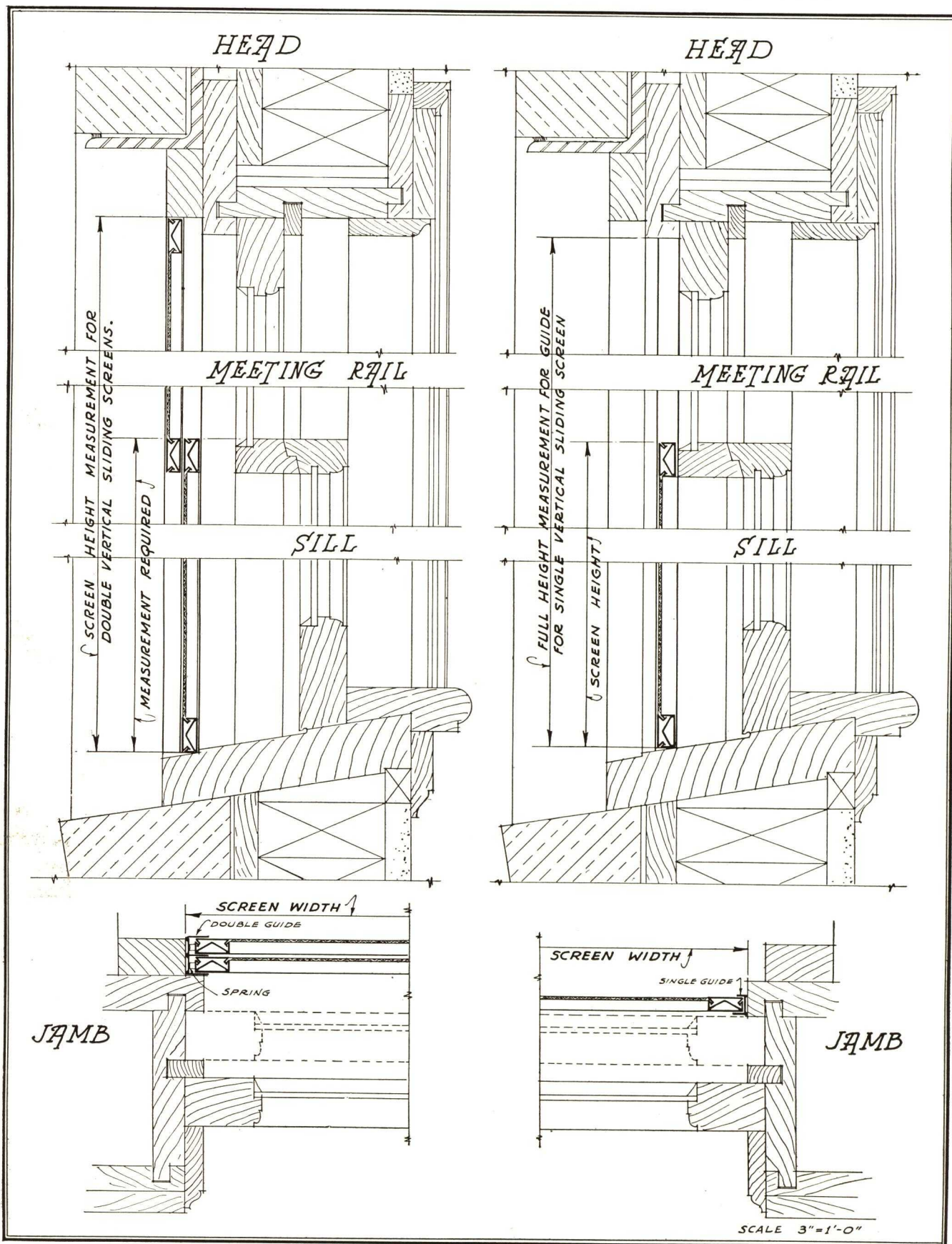
F. S. "C" TYPE



INSTALLATION DETAILS OF JOHNSON SCREENS

DOUBLE VERTICAL SLIDING

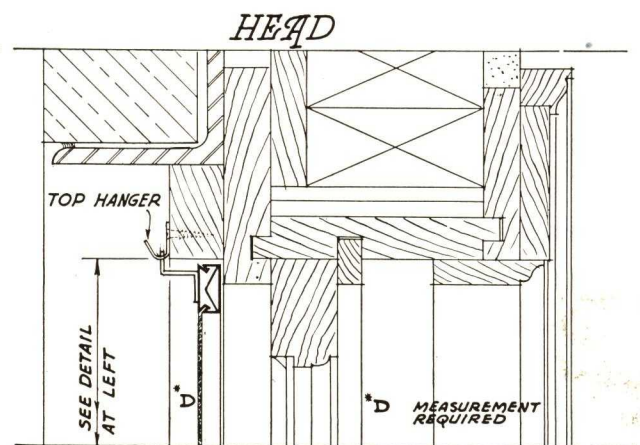
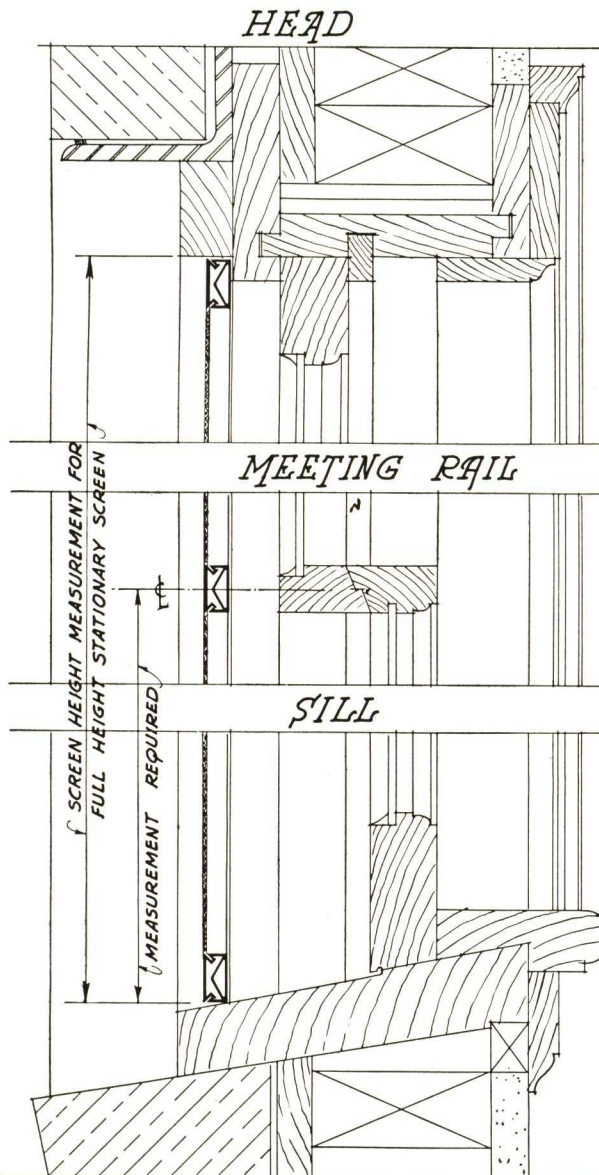
SINGLE VERTICAL SLIDING



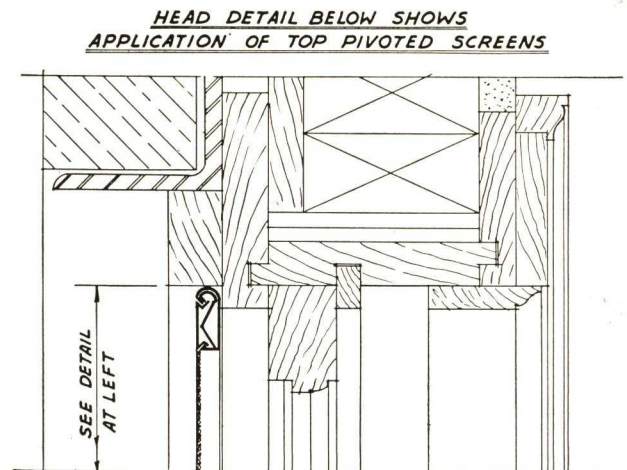
INSTALLATION DETAILS OF JOHNSON SCREENS

FULL HEIGHT—STATIONARY

TOP HUNG—PIVOTED



HEAD DETAIL ABOVE SHOWS APPLICATION OF TOP HUNG SCREENS. THERE ARE VARIOUS METHODS TO SUIT THE VARIOUS HEAD CONDITIONS. WRITE FOR INFORMATION.

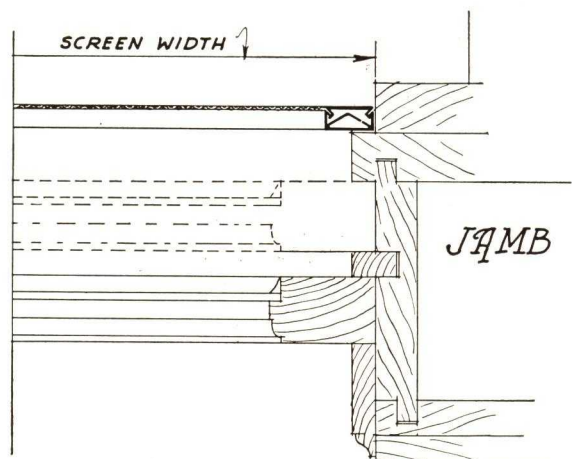


HEAD DETAIL BELOW SHOWS APPLICATION OF TOP PIVOTED SCREENS

VERTICAL SECTION SHOWN ABOVE SHOWS A FULL HEIGHT STATIONARY SCREEN. (WHILE TYPE "C" FRAME IS SHOWN, THE APPLICATION OF OTHER JOHNSON SCREENS IS SIMILAR.)

THE TOP HUNG AND TOP PIVOTED SCREENS SHOWN ABOVE AT RIGHT ARE BOTH — SIZE SCREENS AND DIFFER ONLY AT THE HEAD.

THE REWIREABLE BRACE AT MEETING RAILS OF SAME CONSTRUCTION AS SCREEN FRAME. FURNISH ON SCREENS OVER 54" AT ADDITIONAL COST. ROD BRACE MAY BE SUBSTITUTED.



SCALE 3" = 1'-0"

INSTALLATION DETAILS OF JOHNSON SCREENS

HEAD

DOUBLE GUIDES

WHEN VENT IS CONTINUOUS TO HEAD AND REVEAL, DEEP, AS SHOWN ABOVE FITTING PIECE IS NOT REQUIRED.

FIXED LIGHT

METAL FITTING PIECE

DOUBLE GUIDES

HARDWARE CLEARANCE

SILL

IF SILL DEPTH NOT SUFFICIENT A FITTING PIECE AS SHOWN ABOVE, MAY BE USED TO RECEIVE GUIDES AND SCREENS.

VERTICAL SECTION

SUGGESTED METHODS FOR SCREENING NON SCREEN TYPE CASEMENTS

ILLUSTRATION SHOWING DOUBLE SCREENS AND BOX (AS DETAILED) APPLIED TO NON SCREEN TYPE CASEMENT WINDOWS

LOWER SCREEN VERTICAL SLIDING

HARDWARE CLEARANCE

UPPER SCREEN MAY BE STATIONARY OR SLIDING

HORIZONTAL SECTION (VIEWED OUTSIDE LOOKING IN)

STATIONARY OR SIDE HUNG SCREEN APPLIED TO "HOUSING TYPE" CASEMENT WINDOW

THE SCREEN HAS A SLIDING ACCESS DOOR WHICH PERMITS OPERATION OF VENTS WITHOUT THE DISTURBING OF SHADES, CURTAINS, ETC.

SWING OF VENTS

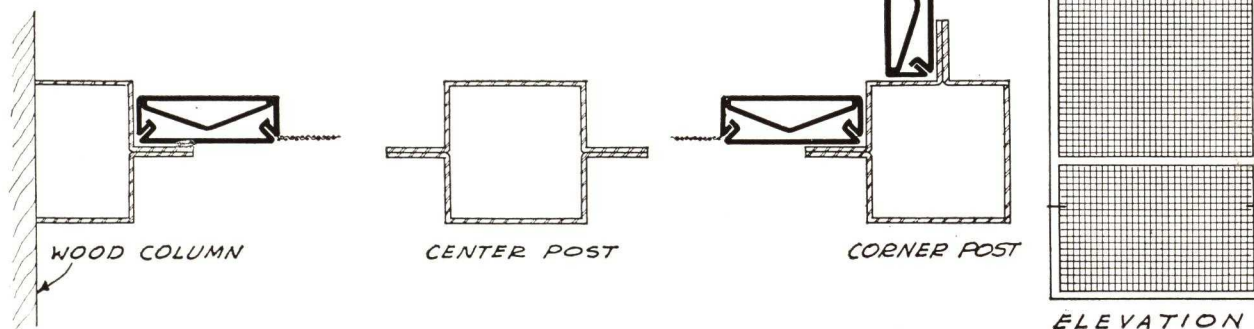
SCREEN PLACED ON INSIDE

ILLUSTRATION SHOWING SCREEN APPLICATION

JOHNSON'S PORCH AND DOOR SCREENS

SUGGESTED METHOD OF SCREENING THE PORCH

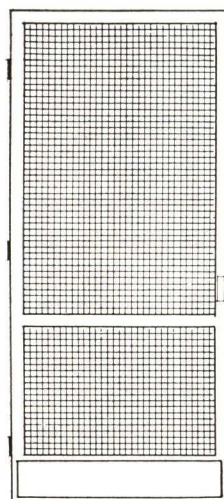
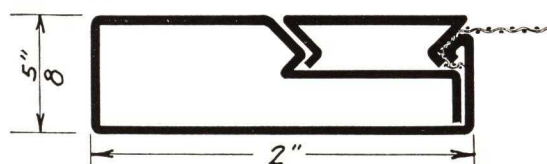
THE $\frac{1}{2}$ " x $\frac{1}{2}$ " TYPE "C" FRAME IS BUILT UP INTO PANELS. NOTE ELEVATION AT RIGHT. STANDARD SPECIFICATIONS APPLY. REGARDING THE STANDARD POST SECTIONS SHOWN BELOW, GAUGES ARE DETERMINED BY SIZES.



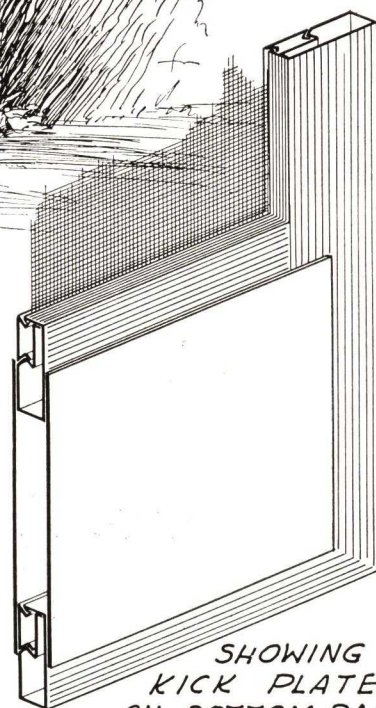
SPECIFICATION

STANDARD $\frac{5}{8}$ " x 2" DOOR FRAMES ARE FURNISHED IN .032" STEEL OR .032" BRONZE MATERIAL. STEEL FRAME TO RECEIVE ONE COAT BAKED ENAMEL AND ONE COAT FINISH ENAMEL. THE BRONZE TO BE NATURAL FINISH AS STANDARD. WIRE CLOTH TO BE 16 MESH, .011" DIAMETER BRONZE. OTHER MESHES AND GAUGES AVAILABLE AT EXTRA COST. $\frac{1}{16}$ " THICK, KICK PLATE TO BE STEEL OR BRONZE AS REQUIRED. ALL HARDWARE TO BE BUILT IN BRASS OR BRONZE AS REQ'D. VARIOUS WIRE GUARDS ARE AVAILABLE

FULL SIZE SECTION OF DOOR FRAME



ELEVATION



SHOWING
KICK PLATE
ON BOTTOM RAIL
ONE QUARTER ACTUAL SIZE.

TYPICAL JOHNSON INSTALLATIONS

New York Hospital, Cornell Medical Center, New York City
Amelia Earhart Putnam, Residence, Rye, N. Y.
West Point Academy, West Point, N. Y.
Elbert Hubbard II, Residence, Aurora, N. Y.
Washington Hotel, Washington, D. C.
Hillside Housing Project, New York City.
Lakeside Hospital, Cleveland, O.
Andrew Mellon, Residence, Washington, D. C.
Shrine of the Little Flower, Detroit, Mich.
Cornell University, Ithaca, N. Y.
Campbell Soup Co., Camden, N. J.
Duke University, Durham, N. C.
Ford Motor Co., Detroit, Mich.
Jeremiah Millbank, Residence, Port Chester, N. Y.
French Market, New Orleans, La.
Welfare Island Hospital Group, New York, N. Y.
Eleanor Ryan, Residence, Washington, D. C.
Dixie Homes Housing Project, Memphis, Tenn.
U. S. Post Office, St. Thomas, Virgin Islands
Frederick W. Turner, Jr., Residence, Midland, Tex.
Albrook Field, Canal Zone

Representatives in Leading Cities

JOHNSON METAL PRODUCTS COMPANY

MAIN OFFICE AND FACTORY

ERIE, PENNSYLVANIA

New York Office, 101 Park Avenue

KANE MANUFACTURING CORPORATION

Manufacturers of "Kane Quality" Insect Screens, Venetian Blinds, Lightproof Shades, Weather Strips

MAIN OFFICE AND FACTORY
KANE, PA.

SALES OFFICES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

What "Kane Quality" Means

"Kane Quality" Products are the result of more than 45 years' experience in building strong, time resisting window and door apertures. These products are distributed



throughout the country by competent representatives who are well able to advise intelligently about their uses and suitability under various conditions. These representatives will be glad to estimate any job without obligation.

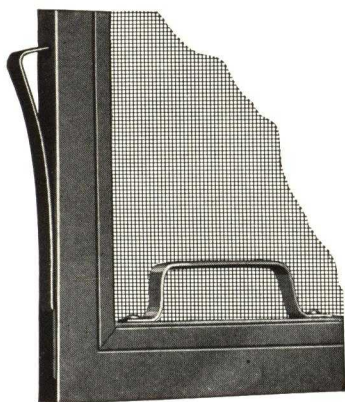
"KANE QUALITY" RUSTLESS INSECT SCREENS AND SCREEN DOORS

A Type for Every Purpose

"Kane Quality" Screens are made to fit perfectly—thereby assuring absolute protection. They are unusually durable, reliable and, above all, economical. Surprisingly easy to operate under all conditions. Light, yet substantial, they are readily removed and replaced.

Screen cloth is woven of bronze, aluminum or copper in various meshes and gauges, as required. The standard, and most used, is bronze in 16-mesh .0113-in. thick wire, which is impervious to corrosion and unusually strong.

Metal Frame Window Screens and Screen Doors



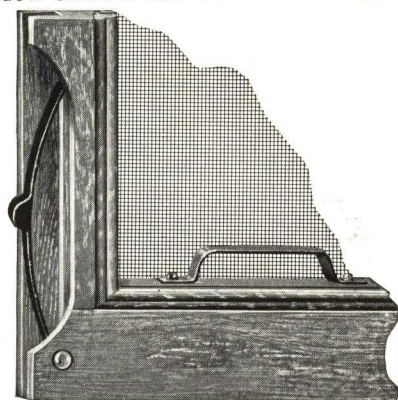
Frames are rolled from the best grade of galvanized cold rolled steel, bronze or aluminum. Rigidity and resistance to torsion stresses are assured by the use of tubular frames, neatly mitered and well reinforced at the corners when required. Steel screens are finished in baked enamels, of color as selected.



"Kane Quality" Screens can also be furnished in extruded aluminum.

Wood Frame Window Screens and Screen Doors

Frames are made from properly seasoned and kiln dried Eastern White Pine (*Pinus Strobus*). The standard thickness for window screens is $\frac{1}{8}$ in. and for doors $1\frac{1}{8}$ in. They have full mortised and tenon joints, held securely with waterproof glue. They are, also, made from selected domestic or imported woods, designed and finished to meet architect's details. Only the highest type of pure white lead or zinc and pure linseed oil is used in the finishing of wood screens.



Roll Screens

Ruggedly built for long, trouble-free service. As easy to operate as a window shade. The screen fabric is heavy lacquered 16-mesh Anaconda bronze wire and withstands the rolling action without breaking. Readily installed in homes already built. In new buildings, the roller box can be completely hidden.

"KANE QUALITY" VENETIAN BLINDS

Precise and easy mechanical operation, carefully built and installed by skilled workmen. Slats are made of genuine Port Orford Cedar or Magnolia. Head, tilting and bottom bars are neatly moulded and made from straight-grained White Pine, free from any defects.

They are furnished in any desired color, as selected, or in natural or varnished finish. "Kane Quality" Venetian Blinds are operated by a combined tiltor and automatic cord stop. They can be furnished with channel guides of steel, bronze or aluminum.

Members of the National Venetian Blind Guild

"KANE QUALITY" SKYLIGHT BLINDS

For controlling light and the hot rays of the sun in skylight and light wells in offices, factories, schools, etc. Slats are thoroughly dried White Pine $2\frac{1}{8}$ in. wide, smoothly finished and with end slots for quick assembly. Operated easily and positively by our new worm and gear tilting device with steel sprocket.

"KANE QUALITY" LIGHTPROOF SHADES

For X-ray, projection and photographic development rooms and wherever a complete obstruction of light is required.

Shade material is Pantasote, a treated fabric, surfaced both sides. Absolutely opaque, non-inflammable, always soft and pliable. Securely fastened in bar groove by a metal spline. Roller has extra heavy, oil tempered coiled spring.



"KANE QUALITY" WEATHER STRIPS

"Kane Quality" Metal Weather Strips are made in zinc or bronze and all the various types, such as plain ribbed, corrugated rib and interlocking. For doors they include extruded

sills with hook strips as required.

"Kane Quality" Weather Strips effectively keep out air and dust. They are sold, installed and served by accredited distributors and representatives.



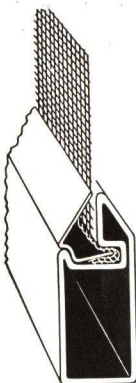
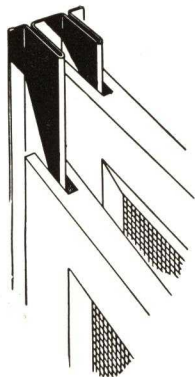
NORQUIST PRODUCTS, INC.

FORMERLY JAMESTOWN SCREEN & MFG. CO.

JAMESTOWN, NEW YORK

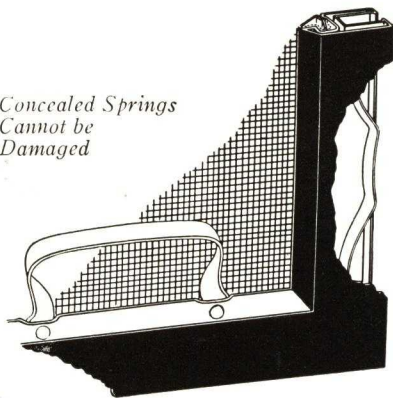
REPRESENTATIVES IN ALL PRINCIPAL CITIES

*Sentinel Screens
slide smoothly on
ribbed track*



*Distinctive
and Sturdy
Construction*

*Concealed Springs
Cannot be
Damaged*



We believe the Jamestown Sentinel line embodies the most complete range of metal and wood frame screens and doors and metal storm sash offered by any one manufacturer. This line has been constantly developed and enlarged to keep abreast with the changes in custom requirements and standard steel window design. Proper and unbiased treatment of each problem is insured by our many types of frame construction, of which only part is shown here.

SENTINEL METAL FRAME SCREENS

Custom Types—At the left is shown the standard construction used for most general applications. It is of rolled tubular construction $7/16 \times 1\frac{1}{8}$ in. in section. The truss design gives extreme stiffness and presents a symmetrical moulded exterior, outstandingly attractive in appearance. In bronze or electro-galvanized steel, it is designed for sliding, pivoted, top hung or stationary types of screens. Note that sliding screens employ rib track for strength, smoother operation and freedom from marring. Compression springs are concealed within the frame at all times.

For very large openings $7/16 \times 1\frac{1}{2}$ in. framing is used. Even larger sections are supplied when desired. Curved screens and those requiring special shapes or frame construction are available.

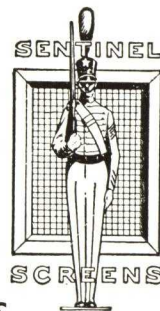
For Steel Casements—A sturdy tubular frame, only $\frac{5}{8}$ in. wide by $7/16$ in. thick, is designed especially for standard screen type casements. It is neat and so slender as to be scarcely noticed on the window.

For casements without underscreen operators, a variety of flange and flat screens are offered. They may be hinged or mounted stationary with sliding wicket panels to give access to sash hardware.

Commercial Sash—Out-projected vents are covered on the inside with flanged screens or with pivoted screens mounted in extension boxes—either arrangement giving full clearance for sash hardware. Top hung outside screens with small flanges are used on in-projected vents.

Center-pivoted sash are equipped with flat inside and outside screens with pressed metal contact strips at the pivot point.

For every type of sash there is a Jamestown Screen designed to best suit the purpose. All finishes are baked. 16-mesh .0113 antique bronze wire cloth is standard.



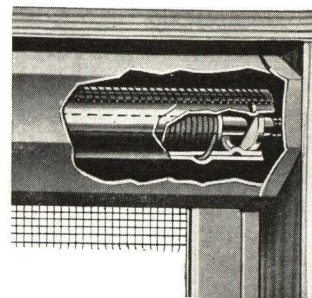
SENTINEL ROLL SCREENS

There are two types of Sentinel Roll Screens to meet two distinct types of service. Both are made to the same high standard of quality and embody the same features of construction. They are designed for attractiveness, simplicity of parts, ease and quietness of operation, and long life.

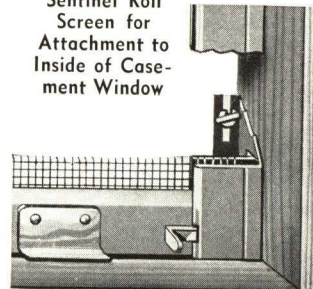
Sentinel Roll Screens are completely rewirable. Spring tension is adjustable from the outside. They are of all-bronze or electro-galvanized steel construction and have 16-mesh bronze (rustproof) wire cloth. The tubular lift rail maintains felted contact with the sill. It does not fly to the top when released but runs easily in smoothly shaped guides into which the wire extends approximately $\frac{3}{4}$ in. at each side. The roller runs on bronze bushings.

Standard Type—Used for most general purposes. Has $2\frac{5}{16}$ in. square roll case suitable for exposed or concealed installation. If window jambs are not suited for attaching guides, the guides may be mounted on pressed metal jamb strips made full depth of box.

Casement Type (Illustrated)—Especially intended for attaching direct to inside of steel sash covering the operating portion only. The roll case has a hexagonal shaped front, the guides being mounted on narrow jamb strips to provide $\frac{5}{8}$ -in. clearance space between the wire cloth and the sash.



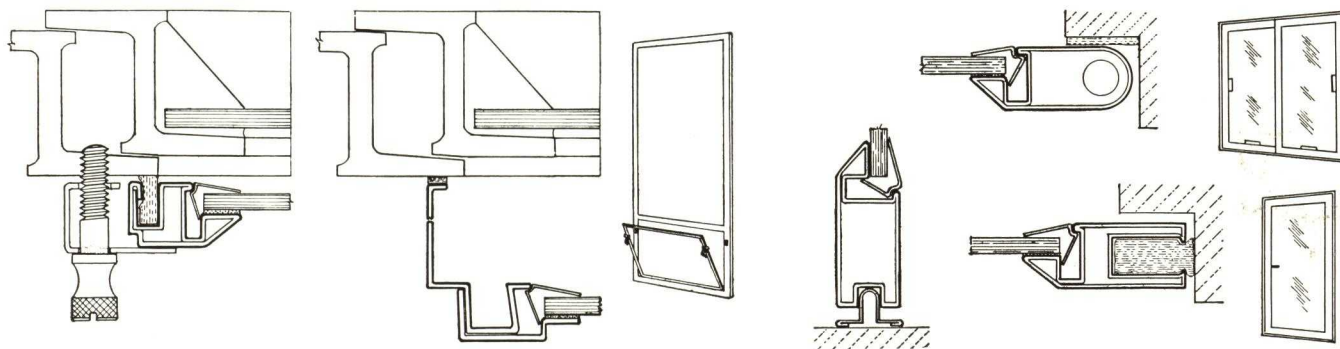
**Sentinel Roll
Screen for
Attachment to
Inside of Case-
ment Window**



WINTER WINDOWS

For Steel Sash—Important for air-conditioning and a necessity for comfort, these double glazing panels stop drafts and eliminate practically all condensation. They are applied over the inside of the sash, creating a dead air space insulation. The 7/16 x 3/4-in. flat type frame is used on screen-type casements and stationary windows. The flanged type provides clearance for the locking handle of the non-screen casement. Either type may be supplied with tilt-in ventilators.

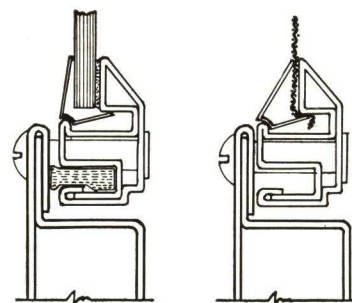
Sentinel Custom Type—For wood sash or for certain types of metal windows. Winter windows may be supplied as stationary, pivoted, top hung or sliding units, or in any way metal screens are commonly used. Construction is the same as for Sentinel Screens since that frame can be glazed as well as wired and the same outstanding features apply. They are therefore interchangeable with screens. Felt contact strips provide effective seals.



INTERCHANGEABLE PANEL DOORS

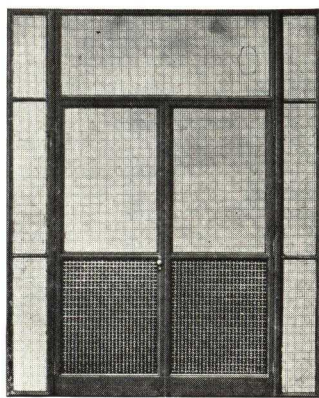
With Screen and Glazed Panels

All-year-round usefulness is added to any metal screen door (5/8 in. or thicker) when made with panels which can be interchanged with glazed storm panels. They have separate duplicate tubular frames only 3/4 in. wide, as shown, one equipped with wire mesh, the other with glass and felt weather seal. These doors are particularly suited for use in air-conditioned homes and in conjunction with the winter windows above.



METAL FRAME SCREEN DOORS AND PORCH SCREENS

It is important that metal screen doors be constructed to meet the service requirements under which they are to be used. For that reason, the Jamestown line offers five different weights and types. Each is of rigid tubular construction in bronze or galvanized steel in selected finish with bronze mortise hardware and 16-mesh bronze wire cloth. They may be equipped with a choice of ornamental guard grilles.



Metal Screen Porch Enclosure
Completely custom made

Special Light—For balcony doors and large casement openings. Stiles and rails 7/16 x 1 1/2 in. of 22-gauge (.032) stock.

Light—For casement doors and occasional entrances. 1/2 x 2-in. stiles and cross rails, 3-in. top rail, 6-in. bottom rail—all of 22-gauge (.032) stock with 18-gauge (.050) reinforcements.

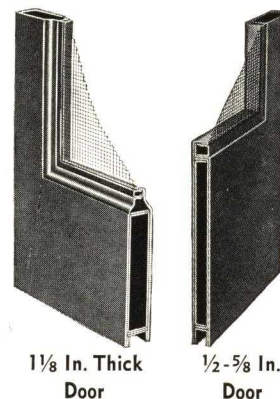
Medium—For casement doors and average residential use. 5/8 x 2-in. stiles and cross rails, 3-in. top rail, 6-in. bottom rail—all of 22-gauge (.032) stock with 18-gauge (.050) reinforcements.

Heavy—Residence main and service entrances. 5/8 x 2-in. stiles and cross rails, 3-in. top rail, 6-in. bottom rail—all of 18-gauge (.050) stock with 16-gauge (.062) reinforcements.

Extra Heavy—For public buildings. 1 1/8 x 3 3/4-in. stiles, cross and top rails, 6-in. bottom rail—all of 18-gauge (.050) stock with 16-gauge (.062) reinforcements.

For single panel doors, bottom rails are made 12-in. high or as specified. Construction is not restricted to the above standard types.

Porches—Screens for porches are furnished in any of the constructions shown above for doors. Pressed metal hanging stiles and mullions as required.



VENETIAN BLINDS

NORQUIST PRODUCTS, INC., also manufacture high quality Venetian Blinds embodying exclusive features of simplified head construction and operating hardware designed

and made by themselves. Slats are of basswood beautifully finished in a variety of colors.

Further details upon request.

MEMORANDA

ORANGE SCREEN COMPANY • MAPLEWOOD, N. J.

DETAILS AND DATA
for **SCREEN**
INSTALLATIONS



ORANGE SCREEN COMPANY



Designers and Manufacturers

of a Complete Line of All Types of

WOOD and METAL SCREENS

For over 28 years, the Orange Screen Company has manufactured screens. It is equipped to produce screens of the highest quality to meet any screening requirement — in Extruded Bronze, Bronze Seamless Tubing, Steel Tubing, or Wood.

For the efficient erection of Orange Screens, authorized agents are established in all prominent localities throughout the United States. See back cover for the Orange Screen representative in your locality.

**THE SELECTION OF THE
PROPER SCREEN MATERIAL
SHOULD BE GOVERNED BY
ATMOSPHERIC CONDITIONS**

In selecting screen materials best suited for any building, consideration should be given to the atmospheric conditions to which the screen will be subjected. In order to assure our customers of materials correct in every detail, the Orange Screen Company has, for many years, observed and studied the reactions of screening materials under varying climatic changes and atmospheric pollution. For over 25 years records of reactions in various sections of the country as well as laboratory test records have been kept. Results indicate that conditions in neighboring localities often vary to a surprising extent.

All this information and research is available to Architects, Building Contractors and Home Owners.

**IN PREPARING WORKING
DRAWINGS . . . SCREENS
SHOULD BE CONSIDERED**

No longer are screens regarded as additional equipment which may be installed at a later date. Modern building construction demands that suitable provision be made in the window detail—so that the screens may operate free of interference from sash hardware, Venetian blinds, shades or other window equipment.



CO-OPERATION WITH THE ARCHITECT

In order to assist the Architect in planning the correct screening equipment, this catalog is designed. On the following pages are shown comprehensive detail plates which cover the majority of screening problems encountered in residences and commercial and industrial buildings.

For projects and requirements beyond the scope of these details, the Orange Screen Company is prepared to detail specific recommendations.

CO-OPERATION WITH WINDOW MANUFACTURERS

When specified by the Architect, we co-operate with metal window manufacturers to provide suitable and economic methods of screening practically every type of window. It is therefore possible to obtain Orange Screens regardless of make of sash.

Relative Advantages of

ALUMINUM • BRONZE • STEEL • WOOD

—as Screening Materials

EXTRUDED ALUMINUM (Hard Aluminum Alloy) FRAMES

Aluminum Frames offer the advantages of light weight, freedom from stain—and reduced section dimensions to permit the narrowest sight line. As they are solidly welded at the joints, they also afford the greatest rigidity, strength and durability. They blend well with light colored finishes and require no painting. These Aluminum Frames are available in a variety of extruded shapes to meet practically any requirement — and are wired with aluminum alloy, bronze or stainless steel wire cloth.

SEAMLESS BRONZE TUBING FRAMES

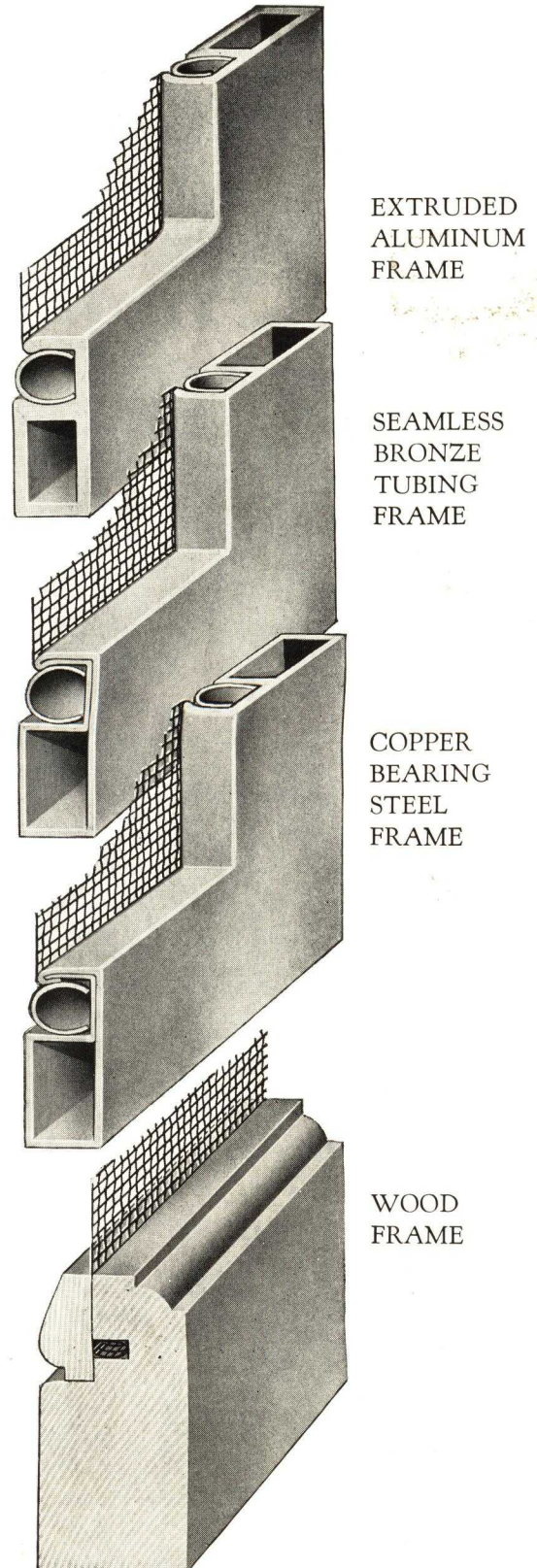
Although not as rigid as the aluminum frames, Orange Bronze Tubing Frames are stronger and more durable than the conventional rolled bronze frames. They require no painting and blend with dark trim finishes. (They do, however, have a tendency to stain light colored sills and trim.) They are made in relatively small sections and wired with bronze wire cloth.

COPPER BEARING STEEL FRAMES

Steel Frames, while not as rigid as the aluminum frames, are sufficiently strong when built in small sections. They can be painted or enameled to match any color. They require periodic refinishing to prevent rust. Wired with bronze, aluminum or stainless steel wire cloth.

WOOD FRAMES

Wood Frames are the lowest in first cost. They do not have the strength and durability of metal frames and require much larger frame sections. They may be painted to match any color but require periodic repainting; this must be considered as a continual cost. Wired with bronze, aluminum or stainless steel wire cloth.



Screen Wire

The selection of the wire which insures most satisfactory results depends greatly on local conditions. We will be glad to recommend a type which is most economical for any particular locality. This recommendation service is based on our 25 years' study of reaction of screening materials to climatic conditions.

16-mesh wire cloth is supplied as standard. However, 18-mesh or finer can be supplied when specified.

Aluminum (Special Alloy) Gunmetal Finish Screen Wire—Available in any width up to 48". Supplied in .0126" standard, and .015" heavy gauge. Standard on Orange Aluminum Screens. Can also be supplied on other types of Orange Screens. As aluminum alloy does not form colored salts of oxidation, it will not stain white paint, stucco, limestone or other light-colored materials.

Bronze (Antique Finish) Screen Wire — Available in any width up to 72". Supplied in .011" standard, and .015" heavy gauge. Although bronze has been the standard wire cloth for many years, its natural oxidation eventually causes discoloration of light-colored sills and trim.

Stainless Steel Screen Wire—Available in any width up to 48". Supplied in .009" standard, .011" heavy, and .015" extra heavy gauge. Although this is the most expensive wire cloth, it is the most durable. It resists corrosion better than aluminum or bronze wire—even under the most severe atmospheric conditions. Under ordinary conditions, however, its extra cost is not warranted.

Extruded ALUMINUM HARD ALUMINUM ALLOY SCREENS

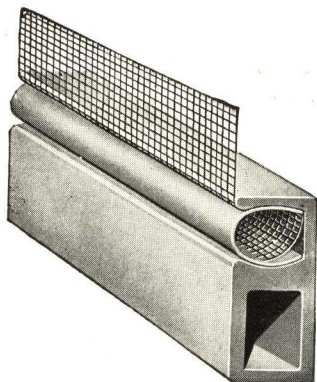


FIG. 1. WIRE LOCKING DETAIL

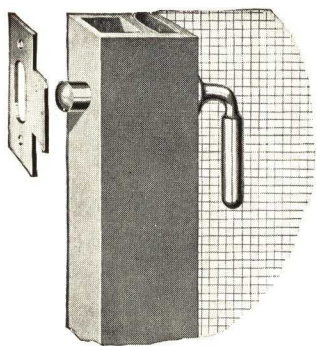


FIG. 2. SPRING BOLT DETAIL

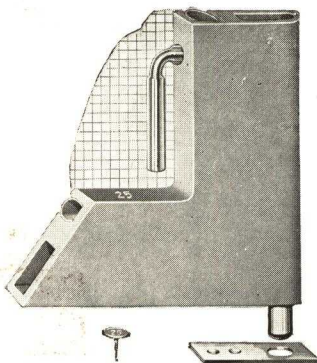


FIG. 3. MOVABLE PIVOT DETAIL

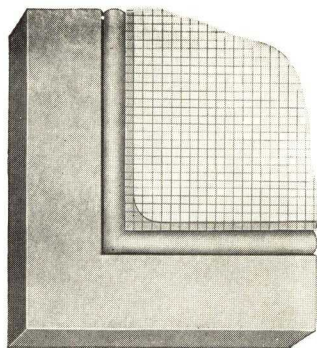


FIG. 4. WELDED CORNER DETAIL

THIS COMPANY HOLDS BASIC PATENTS FOR THE MANUFACTURE OF EXTRUDED ALUMINUM SCREENS

The Orange Screen Company pioneered the Extruded Aluminum Frame Screen and holds many basic patents for this purpose. The aluminum alloy used is 53ST5, developed by the Aluminum Company of America. It is one of the strong non-ferrous alloys and possesses great tensile strength, extreme elasticity and a rigidity that makes it unsurpassed for metal frame screen construction.

ADVANTAGES OF ORANGE EXTRUDED ALUMINUM SCREENS

Extruded Sections

Extruded aluminum allows the making of long, extremely accurate seamless sections—in practically any shape desired—to meet varying conditions and at comparatively low cost. These sections may be used for the smallest window screen to the largest porch screen.

Great Strength Due to Increased Sectional Thickness and Welded Corners

The increased wall thickness (.064) — obtained by extruding the aluminum — gives a greater inherent strength to the frames. In addition, all corners are welded—and consequently are as strong as the wall section itself. Extruded Aluminum Frames, therefore, guarantee a strength greater than bronze or steel frames of equal size.

Extreme Lightness

Aluminum Frame Screens are approximately one-half the weight of other metal screens. This insures ease in handling and storing.

Larger Daylight Opening

Due to the narrowed dimensions, Extruded Aluminum Frames afford greater visibility. A recent test showed that Orange Aluminum Frames permit as much as 22% more air and light.

Not Affected by Abrasion

Extruded Aluminum Frames require no coatings—but have a permanent wire-brush finish. *They are, therefore, unaffected by scratching or abrasion.*

Do Not Discolor Stone, Stucco or Wood

Orange Aluminum Alloy Frames and Screen Wire are rust-proof. Exposure to the weather does not cause any green staining from salts of oxidization which soil adjacent walls and trim; this is a most important consideration to the Architect as well as the owner of the building.

ORANGE EXTRUDED ALUMINUM PORCH SCREENS AND SCREEN DOORS

In addition to window screens of extruded aluminum, Orange Screen Company also builds Porch Screens and Screen Doors of this durable metal. On account of the greater rigidity of extruded aluminum, Orange Porch Screens can be built with narrowed dimensions—and consequently permit larger sections without obstructing braces. (See pages 14-15.) Orange Doors, likewise, offer new advantages in light weight construction and narrower stiled frames.

STANDARD SPECIFICATIONS FOR EXTRUDED ALUMINUM FRAME SCREENS

For Windows, Doors and Porches

1. GENERAL

Screen frames for window and door screens shall be of rewireable type constructed of extruded aluminum sections as manufactured by Orange Screen Company, Maplewood, N. J.

2. SCOPE OF WORK

Contractor shall furnish all labor and material required for the furnishing and installation of insect screens as indicated on the drawing or herein specified. Screens shall be required at all exterior doors and windows and shall cover the ventilating portion of the window only, unless otherwise specified.

3. SAMPLES AND SHOP DRAWINGS

Before work has begun contractor shall submit for approval finished sample corner for each type of screen, including hardware, also sample of wire mesh, guide strip, etc., with drawing showing any special conditions.

4. ARRANGEMENT

Unless otherwise specified screens shall be installed in the following manner.

(a) Double hung windows shall be screened with outside full length screens with cross brace opposite the meeting rail of the window. Each screen shall be top pivoted with fixed and movable pivots built in top rail of screen, and held in place with one spring catch in each stile.

(b) Double hung windows shall be screened with twin vertical sliding screens placed on the outside (or inside) of windows. Screens shall operate in zinc (or extruded aluminum) guides attached to window jamb with (wood or machine) screws, spaced approximately 12" on centers. Each guide shall be one piece extending the full height of the jamb. Each screen shall be equipped with two compression springs of an approved type placed on one side of the screen. Lower screen shall have two stainless steel pulls on the bottom rail. Top screens shall have two stainless steel pulls placed on the bottom edge of the bottom rail, shall have two spring bolts sliding in the thickness of the screen and operated by levers or finger latch.

(c) Casement windows, side-hung opening out, equipped with "screen-type hardware" shall be screened with inside flat screens secured to sash frame by means of suitable clips.

(d) Projected or bottom hung ventilators, opening in at the top shall be screened with outside screen secured to sash frame by means of spring bolts and top pivots, so that screen can be readily removed or replaced. Screen frame shall have a flange extruded as an integral part of the section or fitted with subframes to allow for proper clearance for operation of ventilators.

(e) Projected or top hung ventilators, opening out at the bottom equipped with "screen-type hardware" shall be furnished with same type of screen as specified in paragraph "d", above.

(f) Projected or top hung ventilators, opening out at the bottom equipped with standard sash manufacturer's hardware shall be furnished with top hung screen mounted in steel extension box frame to clear sash hardware.

(g) In-opening casements shall be furnished with outside full length screens, held in place with spring bolts.

(h) Exterior doors shall be screened with metal screen door complete with hardware fittings. Hanging stiles to be provided for all doors for which no rabbet is prepared at the building. Hanging stiles shall be of sufficient size, weight and strength to adequately support and carry the screen doors. Hanging stiles to be of the same material as the existing door frame and to be finished to correspond.

(i) Screens at openings not particularly mentioned or described, shall be of approved type most suitable for location, use and design of the opening.

5. MATERIAL AND CONSTRUCTION

Frames for window and door screens shall be the rewireable type constructed of specially extruded solid one piece aluminum sections 53ST5 alloy.

All corners and braces shall be integrally welded with 3/16" reinforcing fillets and surfaces finished smooth in natural aluminum wire brush finish. Wire cloth shall be drawn and held taut in place with aluminum moulding rolled into the channel of the frame.

6. WINDOW SCREENS

Frames for window screens shall be extruded aluminum with minimum wall thickness not less than 1/16". Screens up to 3'-0" x 6'-0" shall have 7/16" x 5/8" frames; up to 3'-6" x 7'-0" shall have 7/16" x 3/4" frames; up to 4'-6" x 8'-0" shall have 7/16" x 1" frames; up to 5'-6" x 9'-0" shall have 7/16" x 1 1/2" frames.

Screens over 4'-2" in width or height shall have a brace. Braces shall also be furnished in 7/16" x 5/8" screens containing over 10 square feet, 7/16" x 3/4" screens containing over 14 square feet, 7/16" x 1" containing over 16 square feet, 7/16" x 1 1/2" screens containing over 24 square feet.

7. SCREEN DOORS

Refer to detail and specifications on page 17.

8. PORCH SCREENS

For details and specifications see page 15.

9. WIRE CLOTH

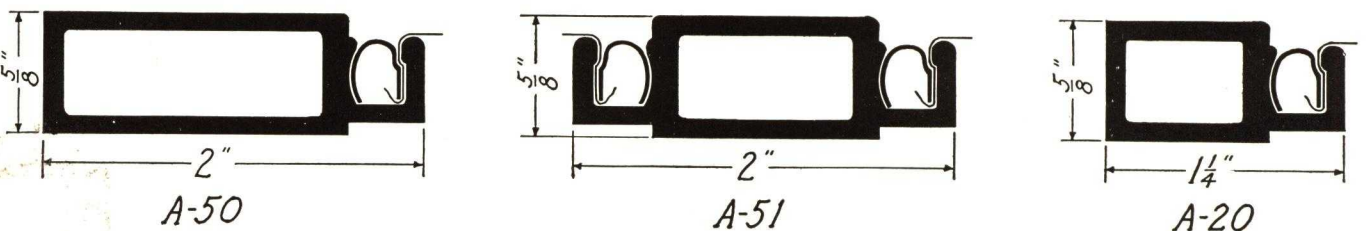
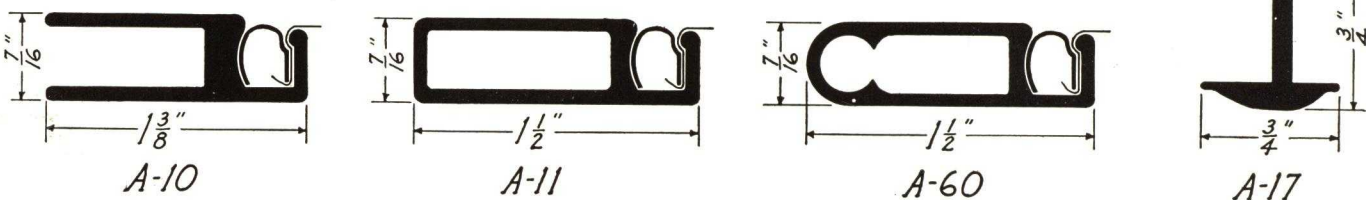
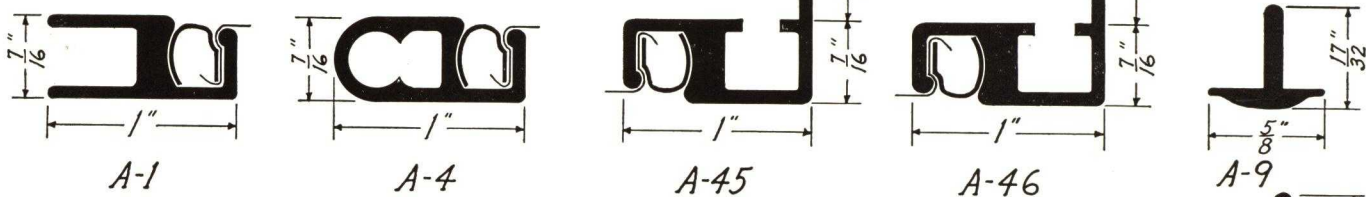
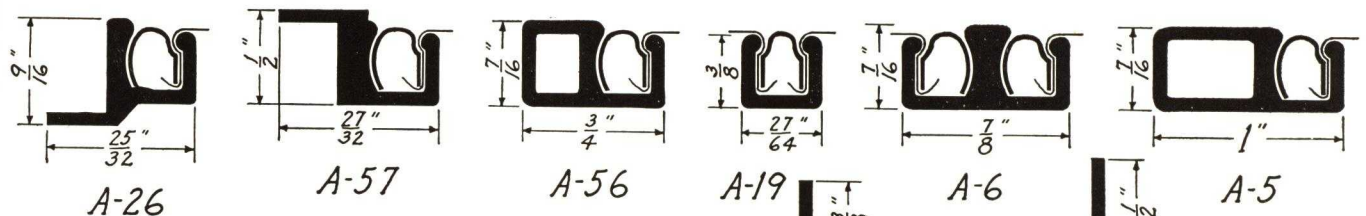
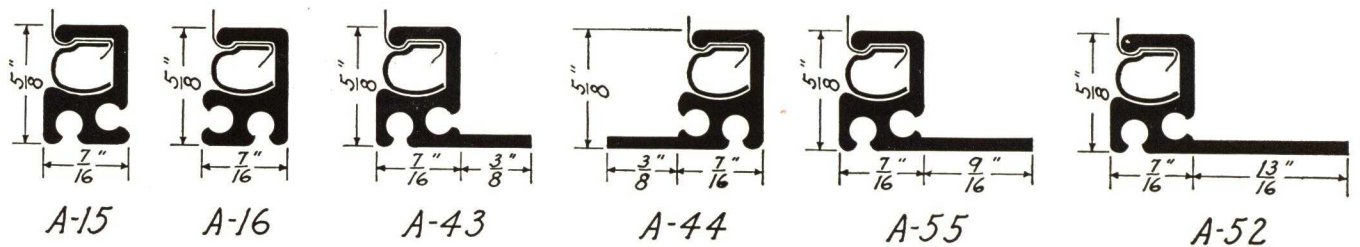
Wire cloth shall be 16 mesh aluminum in dull coated finish, .0126" diameter for window screens and .015" diameter for doors.

10. INSTALLATION

All screens shall be accurately fitted and secured in such a manner that they may be readily removed or reinstalled without damage to existing work. Screens shall be installed complete with all necessary hardware. Screens shall be stamped with a number and shall have a corresponding number on the adjacent trim.

EXTRUDED ALUMINUM FRAME SCREEN AND DOOR SECTIONS

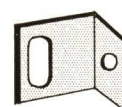
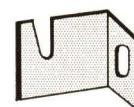
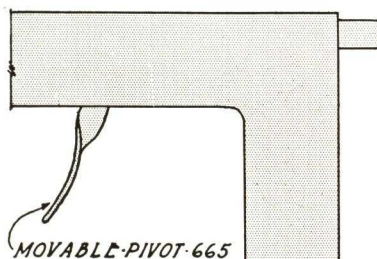
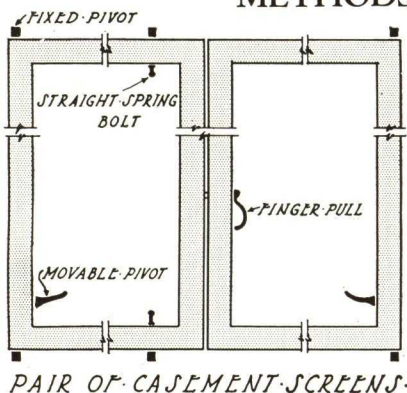
SCALE—FULL SIZE


 ORANGE · SCREEN
 515 · VALLEY · ST.

30

 COMPANY · INC.
 MAPLEWOOD · N. J.

METHODS OF APPLYING SCREENS, HARDWARE AND SCREEN GUIDES



CLIP 578

CLIP 566



CLIP 500



CLIP 593



CLIP-586

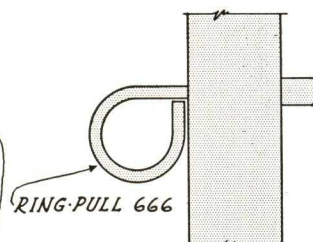
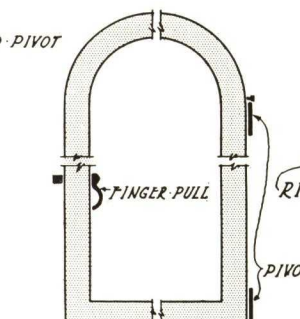
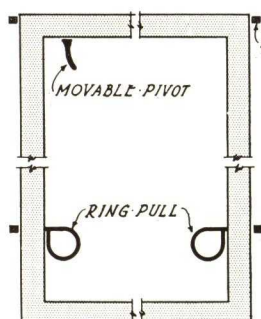


CLIP-508



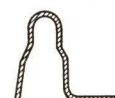
CLIP-525

TYPE-OF CLIPS USED FOR HOLDING
SCREENS IN PLACE ON STEEL CASEMENTS
AND PROJECTED VENTILATORS
SCALE: $\frac{1}{2}$ -FULL SIZE

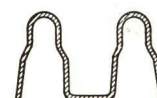


RING-PULL 666

PIVOT-HINGES



550



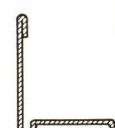
560



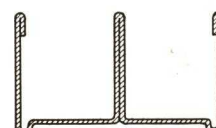
581-S



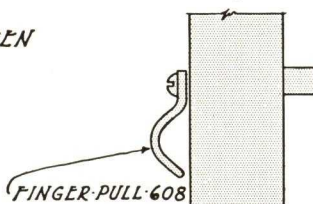
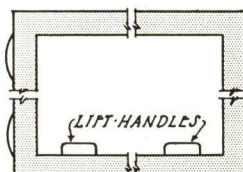
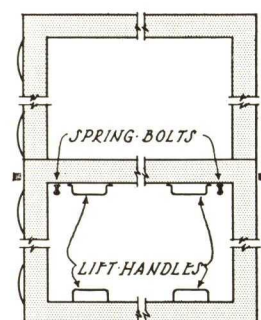
571-S



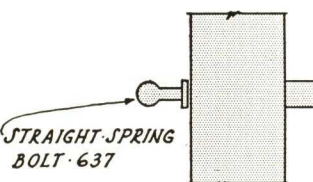
581-D



571-D



FINGER-PULL-608



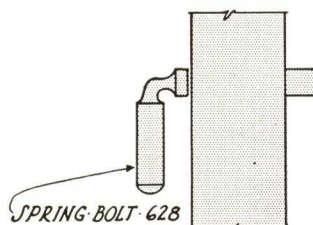
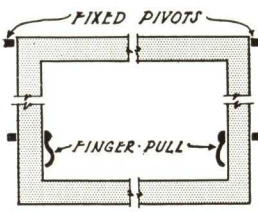
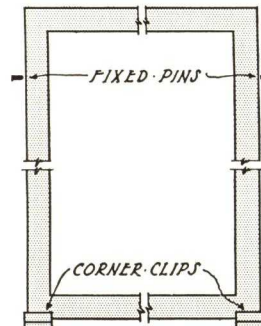
STRAIGHT-SPRING BOLT-637



A-33



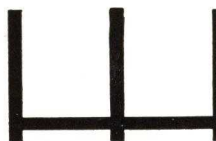
A-30



SPRING-BOLT-628



A-32



A-29

GUIDES FOR SLIDING SCREENS
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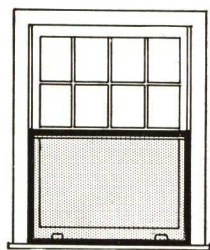
ORANGE SCREEN
515 VALLEY ST.

31

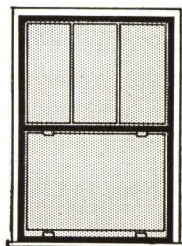
COMPANY INC.
MAPLEWOOD N. J.

3 METHODS OF SCREENING DOUBLE HUNG WINDOWS

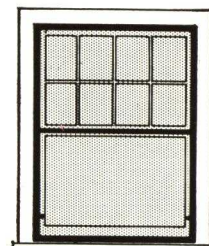
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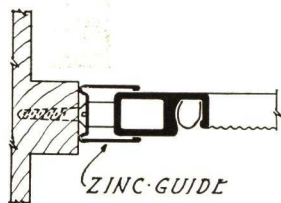
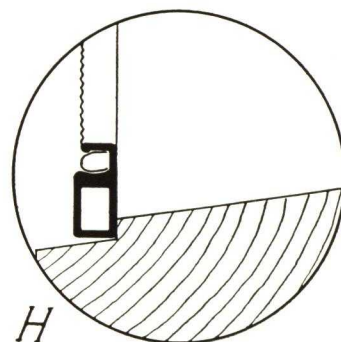
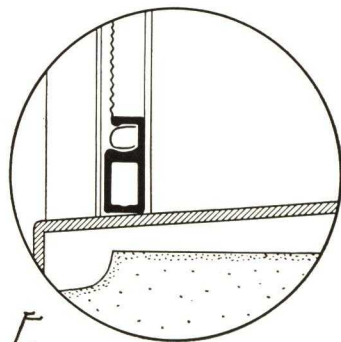
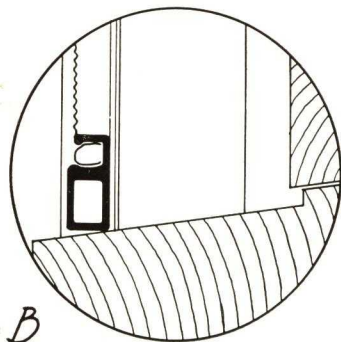
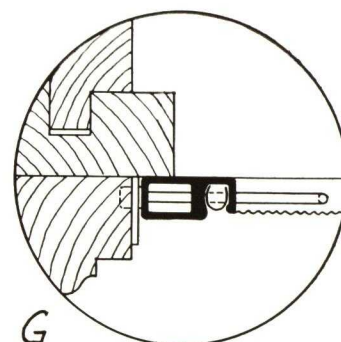
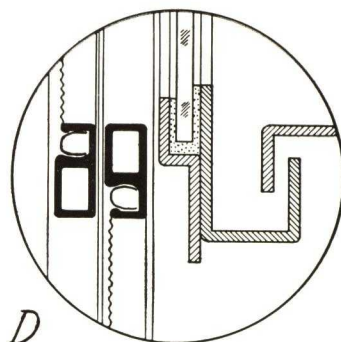
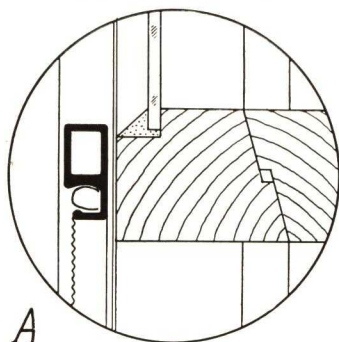
SINGLE
VERTICAL SLIDING



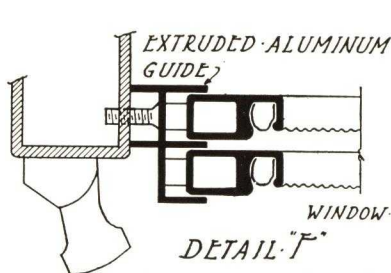
DOUBLE
VERTICAL SLIDING



TOP HUNG
FULL LENGTH

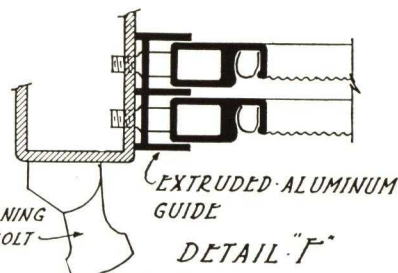


DETAIL "C"



DETAIL "F"

THIS TYPE OF GUIDE USED WHEN JAMB OF WINDOW DOES NOT PROVIDE SUFFICIENT SPACE FOR SCREENS.



DETAIL "F"

THIS TYPE OF GUIDE USED WHEN JAMB OF WINDOW PROVIDES SUFFICIENT SPACE FOR SCREENS.



DETAIL "J"

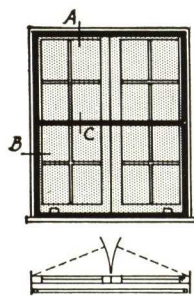
ORANGE · SCREEN

32

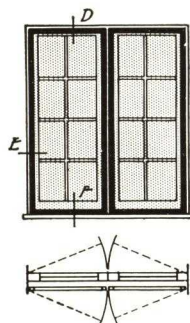
COMPANY · INC.
MAPLEWOOD · N. J.

3 METHODS OF SCREENING OUT-OPENING WOOD CASEMENTS

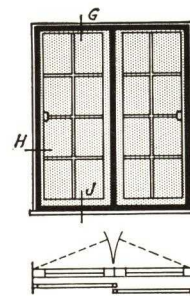
SCALE—1/2 FULL SIZE



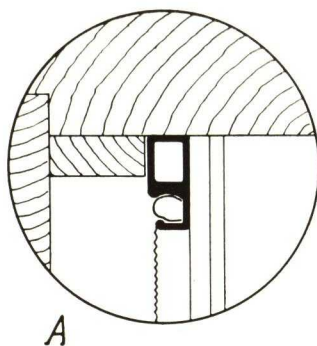
DOUBLE-VERTICAL
SLIDING SCREENS



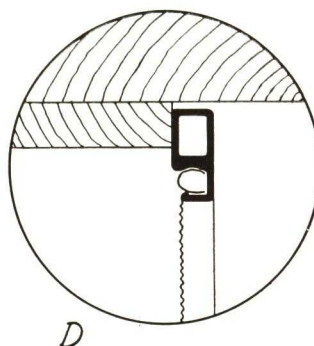
SIDE-HINGED
INSIDE SCREENS



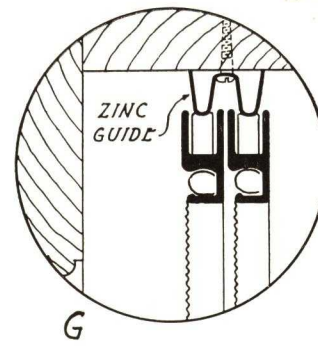
TWIN-HORIZONTAL
SLIDING SCREENS



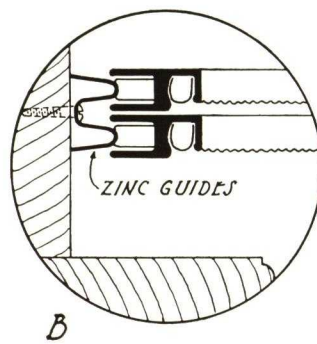
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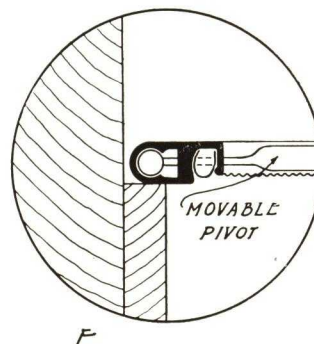
D



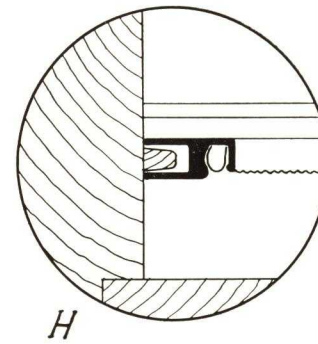
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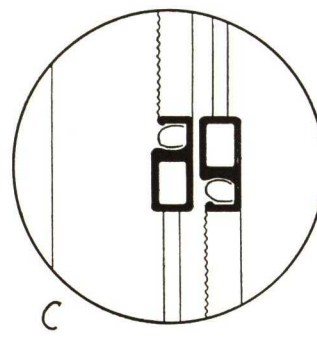
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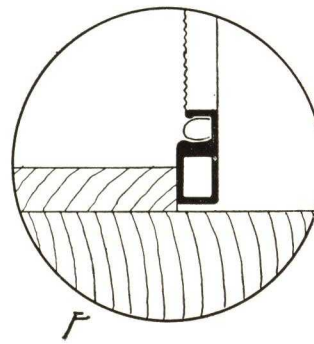
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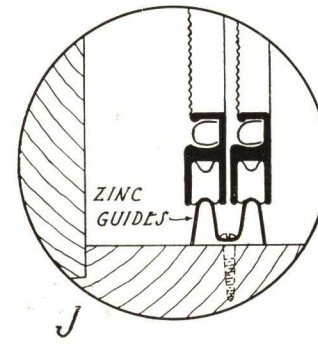
H



C



F



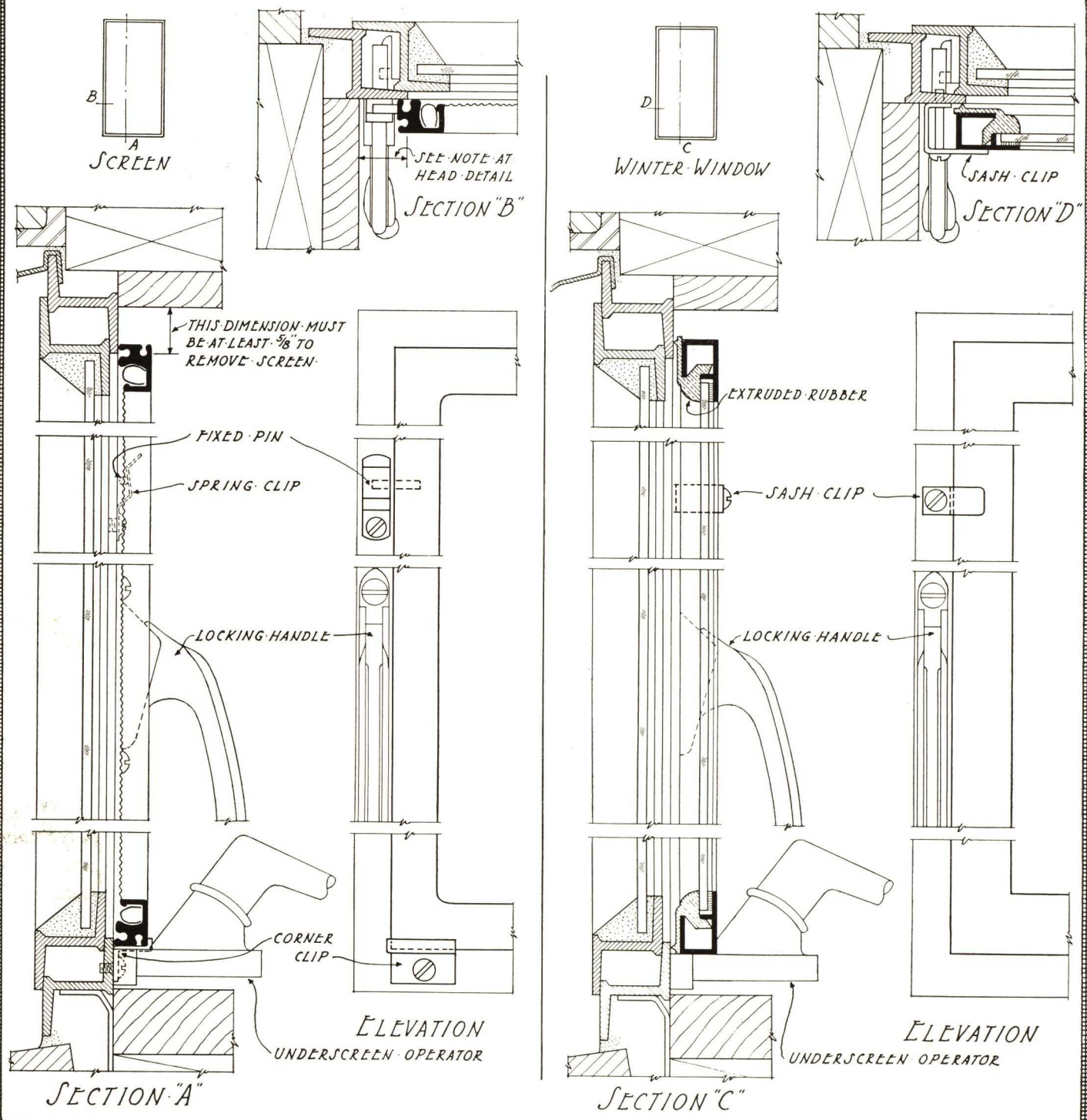
J

ORANGE · SCREEN

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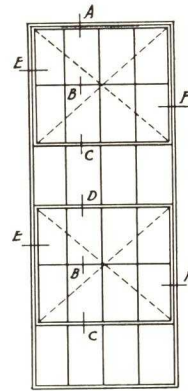
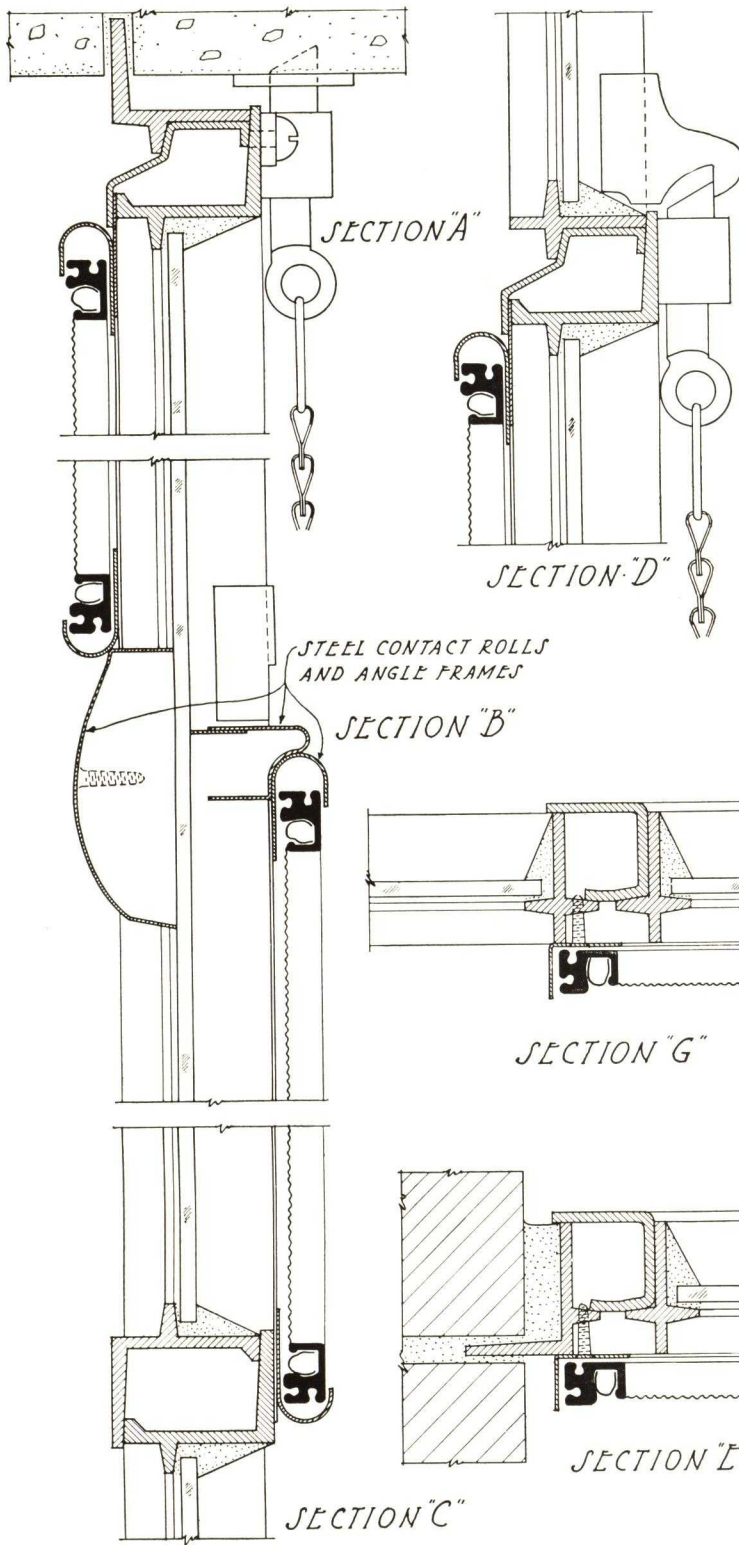
COMPANY · INC.
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MAPLEWOOD · N. J.

METHOD OF SCREENING AND APPLYING WINTER WINDOWS
TO STEEL CASEMENTS EQUIPPED WITH UNDERSCREEN OPERATOR
SCALE—1/2 FULL SIZE

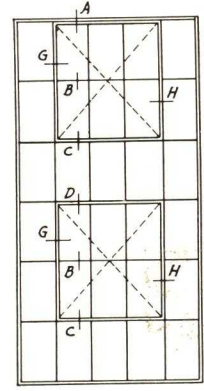


METHOD OF SCREENING STANDARD PIVOTED VENTILATORS

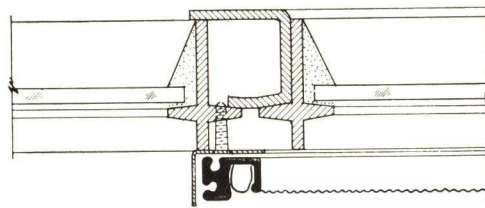
SCALE—1/2 FULL SIZE



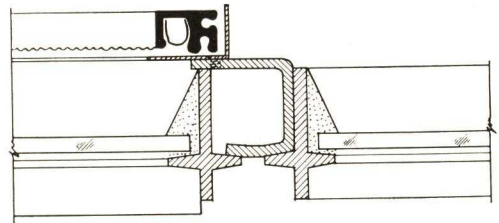
VENTILATORS—FULL
WIDTH OF SASH



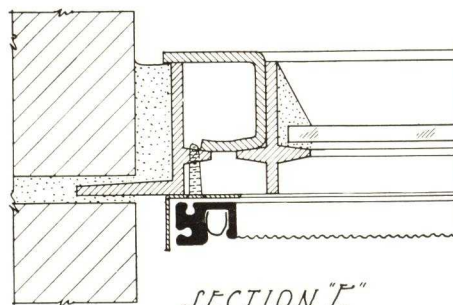
VENTILATORS—WITH
FIXED SIDE LIGHTS



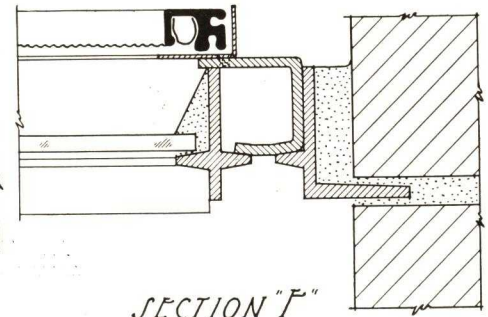
SECTION "G"



SECTION "H"



SECTION "E"



SECTION "F"

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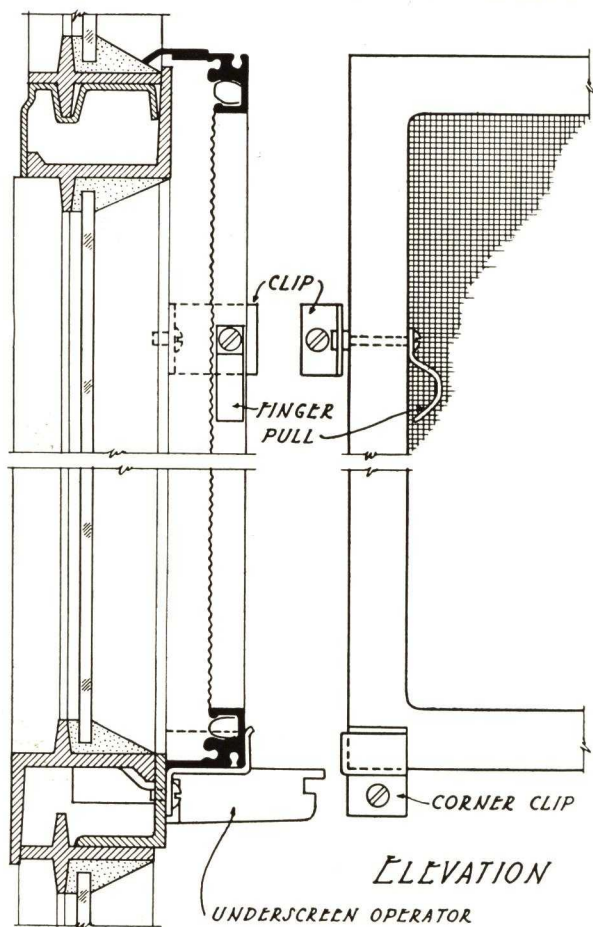
35

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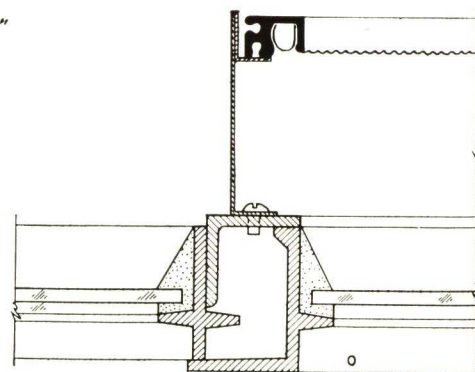
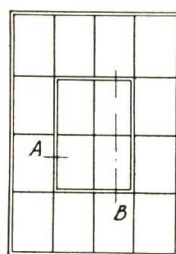
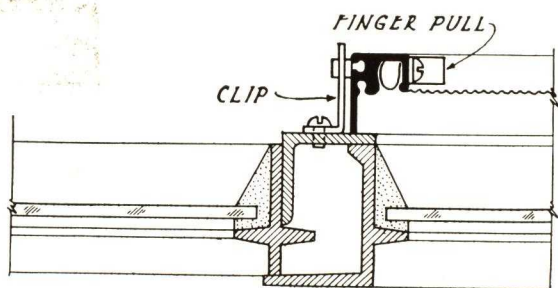
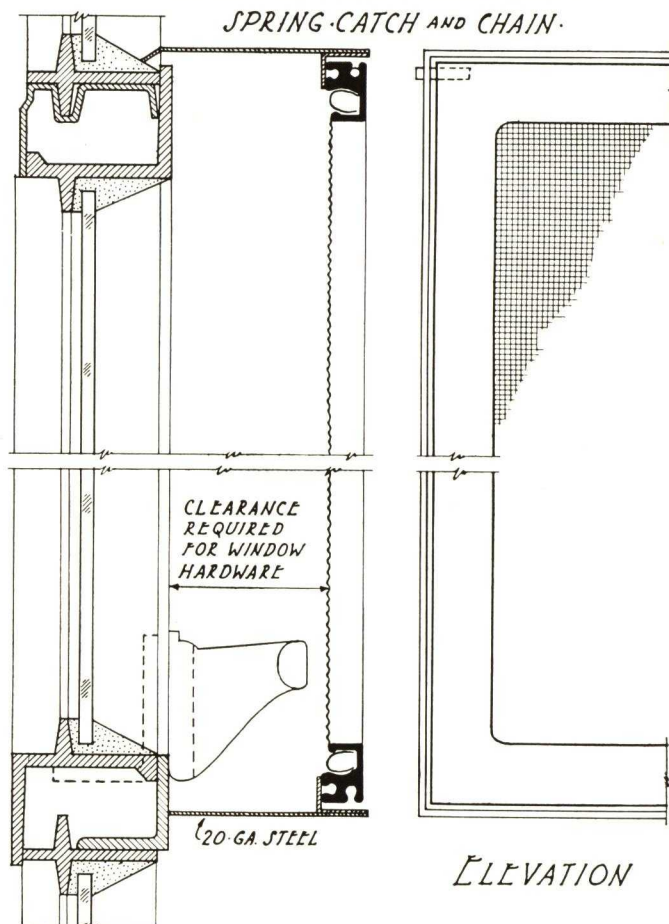
METHOD OF SCREENING OUT-AT-BOTTOM PROJECTED VENTILATORS

SCALE—1/2 FULL SIZE

DETAILS APPLIED TO VENTILATORS
EQUIPPED WITH UNDERSCREEN OPERATOR



DETAILS APPLIED TO VENTILATORS
EQUIPPED WITH CAM HANDLE OR
SPRING-CATCH AND CHAIN.



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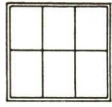
METHOD OF SCREENING IN-AT-TOP PROJECTED VENTILATORS

SCALE— $\frac{1}{2}$ FULL SIZE

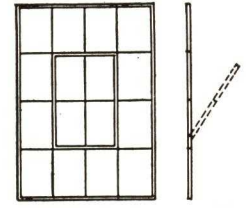
SPECIFICATIONS

SCREEN FRAMES SHALL BE MADE OF $\frac{7}{16} \times \frac{5}{8}$ "
(WITH $\frac{3}{8}$ " FLANGE) EXTRUDED ALUMINUM,
5355 ALLOY WITH ALL CORNERS WELDED
AND SURFACES FINISHED SMOOTH IN A
NATURAL ALUMINUM WIRE BRUSH FINISH.

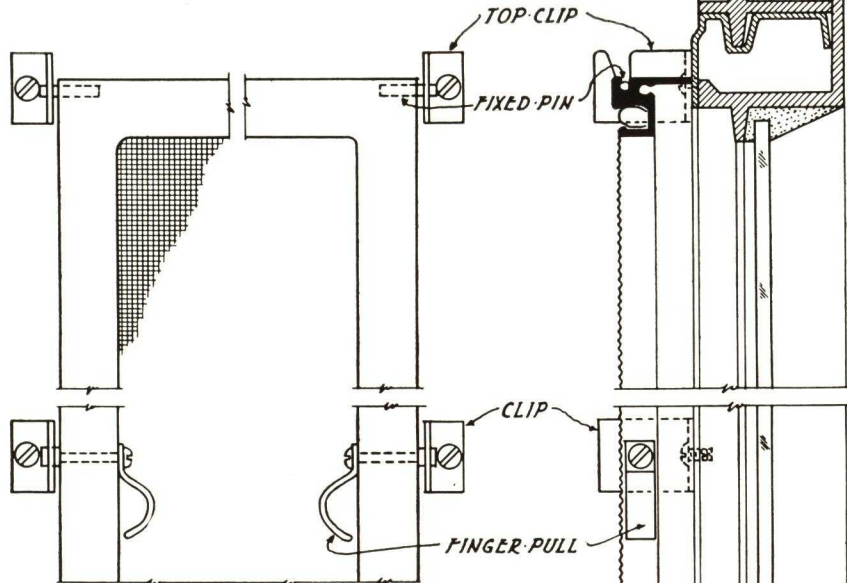
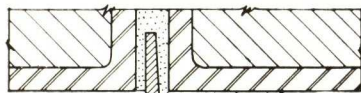
THE WIRE SHALL BE 16 MESH .0126"
ALUMINUM, DARK FINISH AND HELD IN
PLACE WITH ALUMINUM MOULDING,
ROLLED INTO CHANNEL GROOVE OF THE FRAME.
SCREENS SHALL BE HELD IN PLACE BY
FIXED PINS AND FINGER PULLS ATTACHED
TO SCREEN AND CLIPS PASTENED TO
WINDOW.



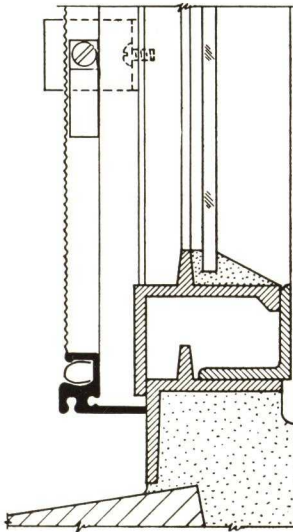
VENTILATOR SECTIONS
AT HEAD AND SILL



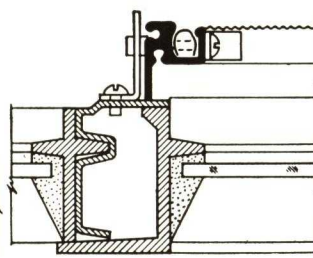
VENTILATOR SECTIONS
WITH FIXED LIGHTS
ABOVE AND BELOW



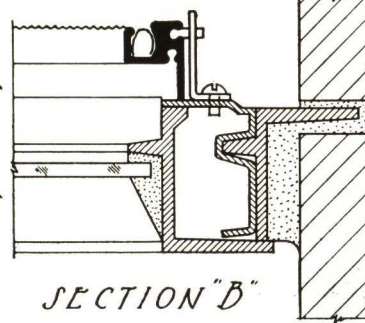
ELEVATION



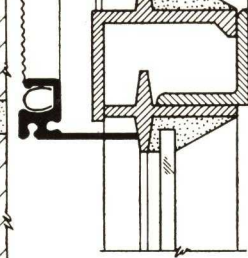
SECTION "A"



SECTION "D"



SECTION "B"



SECTION "C"

ORANGE SCREEN

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MAPLEWOOD N. J.



The Screening of Porches with

ORANGE EXTRUDED ALUMINUM PORCH SCREENS

SCREENS are a necessary adjunct to a porch and should be made as inconspicuous as possible. As the porch is generally used as an outdoor living room in summer, heavy screen frames reduce its desired feeling of airiness. Porch screens correctly designed and made of durable materials prove a good investment.

Orange Extruded Aluminum Frame Screens for porches, on account of their great strength, allow the use of very small sections for large areas. The welded corners of the frames are more rigid and decidedly tighter than those of other materials. They will not rust, buckle or warp.

Orange Extruded Aluminum Screens are available in any size, style or shape.

Detailing Porch Screens

On account of the numerous installation conditions—which

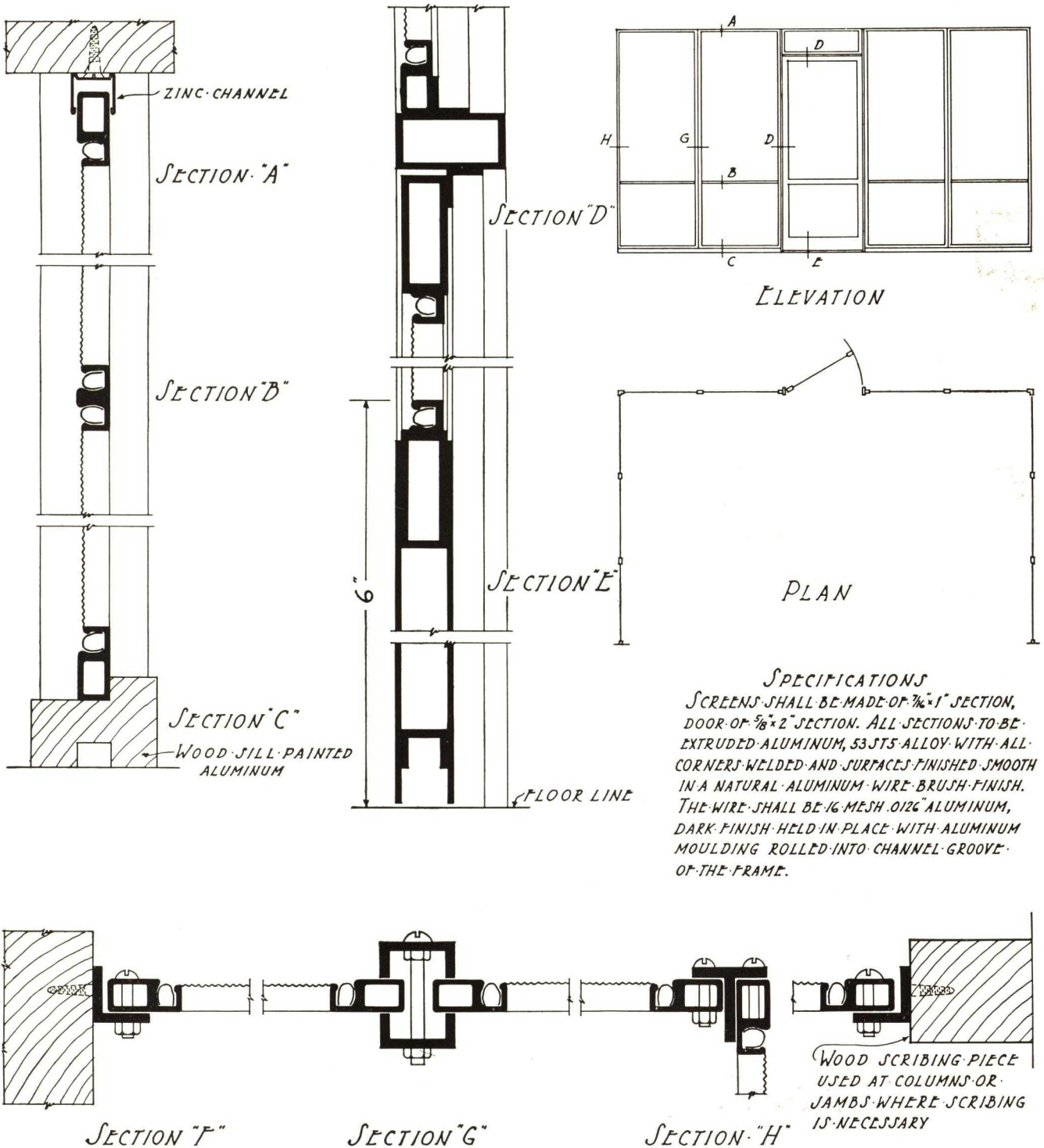
vary on practically every porch—it is impossible to cover all by details in a catalog.

On Plate No. 38 (opposite) we show a practical and satisfactory method of fastening screen porch sections. This method may be modified to suit the job conditions. In the illustration we show screen sections $7/16'' \times 1''$ which come within the size limits of the average porch. For extremely large sections, we recommend the use of our extruded aluminum section $5/8'' \times 1\frac{1}{4}''$.

We can also furnish porch sections in bronze seamless tubing, tubular steel, or wood—when so specified. We will be glad to offer practical suggestions for screening any porch. For simplicity of erection, we suggest that you consult us when the scale details are being prepared.

STANDARD DETAILS OF EXTRUDED ALUMINUM SCREEN PORCH

SCALE— $\frac{1}{2}$ FULL SIZE

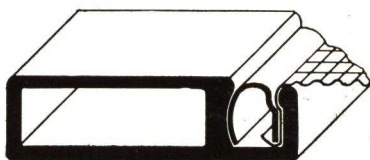


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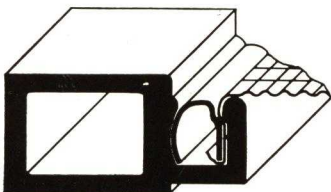
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DISTINCTIVE METAL SCREEN DOORS IN EXTRUDED ALUMINUM



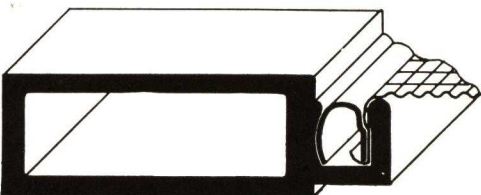
LIGHT WEIGHT (TYPE 1A)

Sizes up to 2'-6" x 7'-0". Shall be 7/16" x 1 1/4" with 1/16" walls. One rewirable brace 7/8" wide and 4" bottom rail.



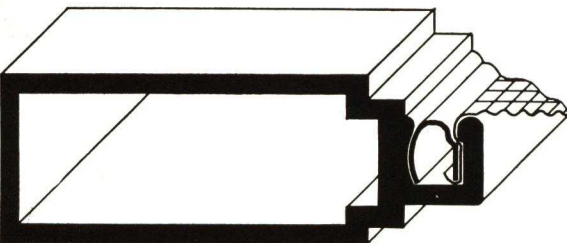
LIGHT WEIGHT (TYPE 5A)

Sizes up to 2'-6" x 7'-0". Shall be 5/8" x 1 1/4" with 3/32" walls. One rewirable brace 7/8" wide with 2" bottom rail.



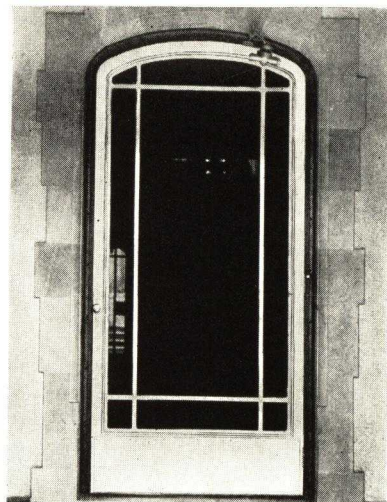
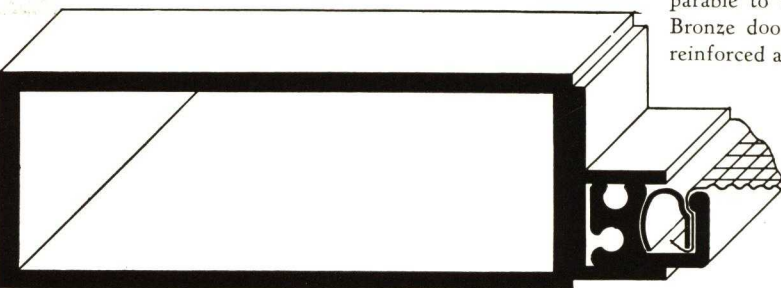
MEDIUM WEIGHT (TYPE 2A)

Sizes up to 3'-6" x 7'-6". Shall be 5/8" x 2" with 3/32" walls. One rewirable brace 2" wide and 6" bottom rail.

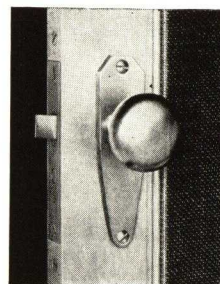


HEAVY WEIGHT (TYPE 3A)

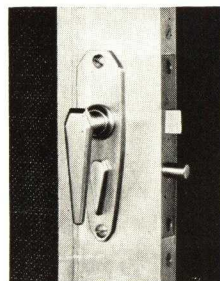
Sizes up to 4'-0" x 8'-0". Shall be 7/8" x 2 1/2" with 3/32" walls. One rewirable brace 2 1/2" wide and 8" bottom rail.



ONE OF THE SPECIAL EXTRUDED ALUMINUM SCREEN DOORS WITH OVAL HEAD



THE MODERN KNOB AND ESCUTCHEON PLATE USED WITH MORTISE LOCK



THE MODERN LEVER HANDLE AND DEAD BOLT USED WITH MORTISE LOCK

TYPES AND SIZES

Door frames are fabricated from extruded sections illustrated herewith. They are designed according to the size of the opening and the service required.

CONSTRUCTION

Every corner is firmly welded and finished perfectly smooth to form a solid seamless frame with invisible joints. Welded corners are more effective, stronger and practically unbreakable.

DOOR HARDWARE

Door hardware of suitable design in non-ferrous metal, dull chrome finish, furnished as standard equipment. Ornamental guards or grilles also furnished if so specified.

BRONZE DOORS

Where so specified, we can furnish bronze doors in sizes comparable to the extruded aluminum sections illustrated herewith. Bronze doors are constructed of drawn seamless tubing, heavily reinforced and welded or brazed for strength and rigidity.

At left: EXTRA HEAVY WEIGHT (TYPE 4A)

Sizes up to 4'-0" x 9'-0". Shall be 1 1/8" x 3 3/4" with 3/32" walls. One rewirable brace 4 1/2" wide and 8" bottom rail.

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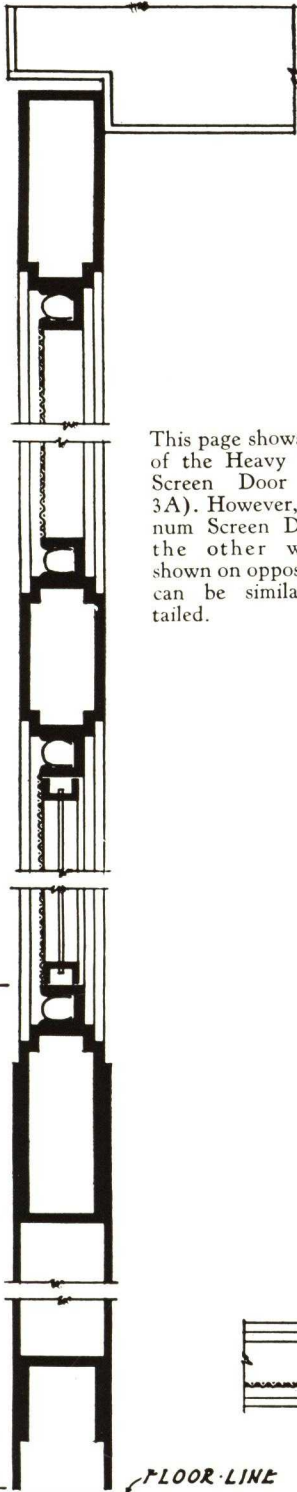
39

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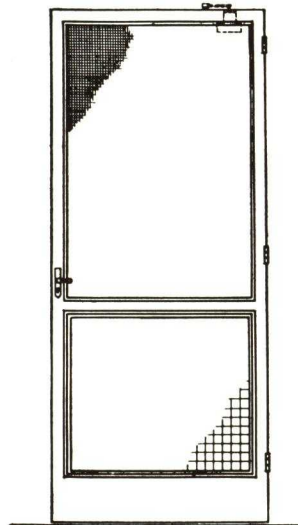
EXTRUDED ALUMINUM SCREEN DOORS

HEAVY WEIGHT (Type 3-A) • $\frac{7}{8}$ " x $2\frac{1}{2}$ "

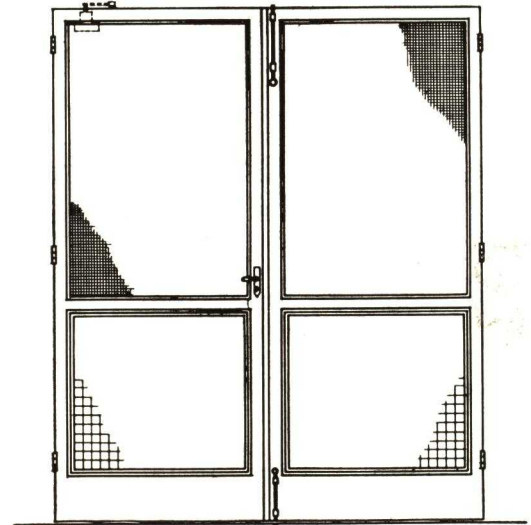
SCALE— $\frac{1}{2}$ FULL SCALE



This page shows details of the Heavy Weight Screen Door (Type 3A). However, Aluminum Screen Doors of the other weights shown on opposite page can be similarly detailed.



SINGLE DOOR

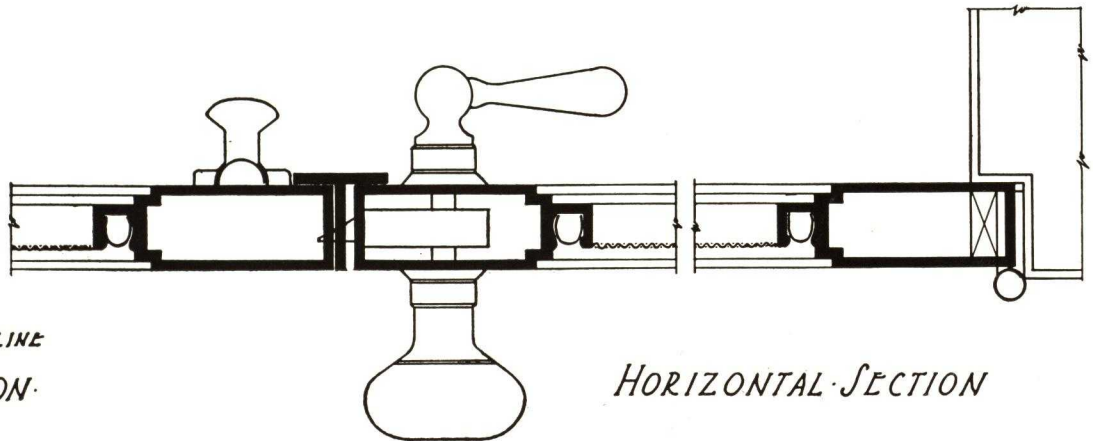


DOUBLE DOOR

SPECIFICATIONS

DOORS SHALL BE MADE OF $\frac{7}{8}$ " x $2\frac{1}{2}$ " EXTRUDED ALUMINUM, 5355 ALLOY WITH ALL CORNERS WELDED AND SURFACES FINISHED SMOOTH IN A NATURAL ALUMINUM WIRE BRUSH FINISH. WIRE CLOTH SHALL BE 16 MESH .015" ALUMINUM, DARK FINISH AND HELD IN PLACE WITH ROLLED ALUMINUM MOULDING ROLLED INTO CHANNEL OF THE FRAME. GUARD WIRE IN LOWER PANEL SHALL BE $\frac{1}{4}$ " x .054" THICK 12 MESH ALUMINUM SET IN $\frac{3}{8}$ " x $\frac{1}{4}$ " CHANNEL FRAME.

HARDWARE: EACH LEAF SHALL HAVE $\frac{1}{2}$ PAIR OF 3" x 2" LOOSE PIN HINGES, MORTISE LOCK AND LIQUID CHECK. OMIT CHECK ON STATIONARY LEAF OF PAIR OF DOORS AND FURNISH TOP AND BOTTOM BOLTS. ALL HARDWARE TO BE SOLID BRONZE DULL CHROME FINISH EXCEPT LIQUID CHECKS WHICH SHALL BE CAST IRON, SILVER PAINTED FINISH.



VERTICAL SECTION

HORIZONTAL SECTION

ORANGE SCREEN

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BRONZE AND STEEL FRAME SCREEN SECTIONS

BRONZE SCREENS OF SEAMLESS CONSTRUCTION

In Orange bronze frame screens we offer the strongest and most rigid construction that can be produced in tubular frame screens.

Each screen section is produced from a seamless round tube deformed through dies and requiring 3 or 4 draws to produce the required shape. This process makes a screen section of one piece construction with greater

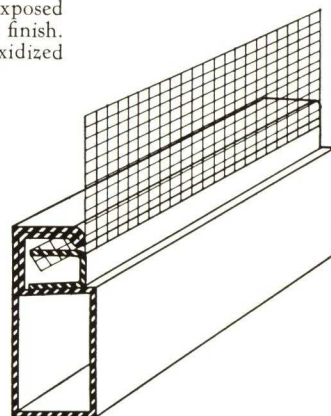
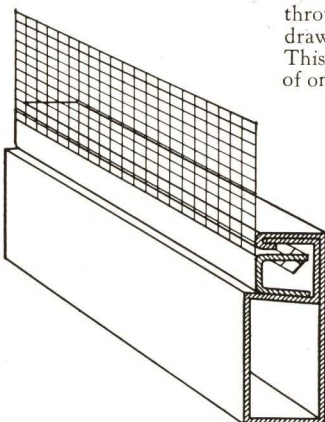
rigidity and strength and without weaves and twists so common with other makes of bronze screens rolled from sheet bronze.

Bronze frames are furnished in natural metal, which, when exposed to weather, oxidizes to a dark finish. They may also be artificially oxidized or polished and lacquered.

STEEL SCREENS OF TUBULAR CONSTRUCTION

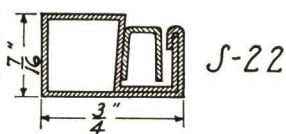
Screen frames are rolled from a single strip of copper bearing steel, passing through roll dies to produce the desired shape. Screen sections are then spot welded along the inner channel, to add strength and rigidity and prevent section from weaving and twisting.

Steel frames are furnished in electro-galvanized metal or rust-proofed in our own plant by the "bonderizing process" after the frame has been completely fabricated. In addition to the rust-proofing, the screen frames are given one or more coats of baked enamel finish, standard or sample color.

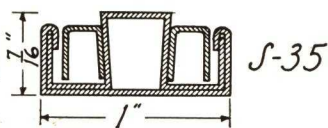


STEEL SECTIONS

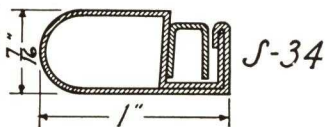
BRONZE SECTIONS



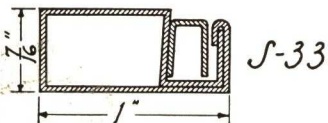
S-22



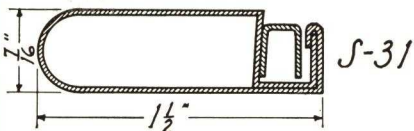
S-35



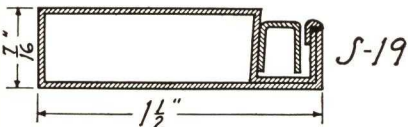
S-34



S-33



S-31



S-19

Corner Construction of Bronze and Steel Screens

All corners are accurately mitred and reinforced with internal hollow section completely soldered, wheel brushed and cleaned. Where so specified, all joints will be brazed or welded.

Wire Cloth

Wire mesh for both bronze and steel screens generally furnished is 16 mesh antique bronze. Finer meshes are furnished if specified.

Size Limitations for Sections

Up to 18 sq. ft.:

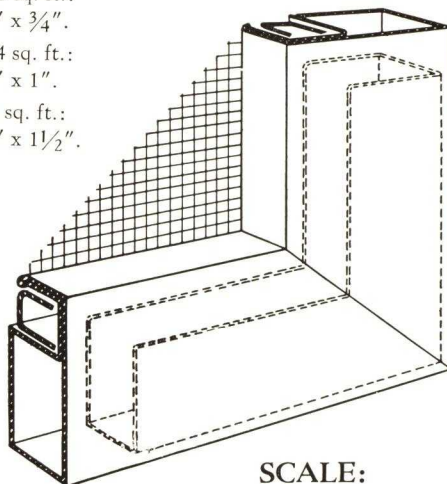
7/16" x 3/4".

Up to 24 sq. ft.:

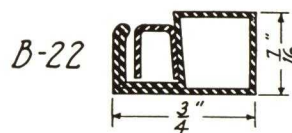
7/16" x 1".

Over 24 sq. ft.:

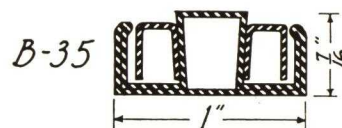
7/16" x 1 1/2".



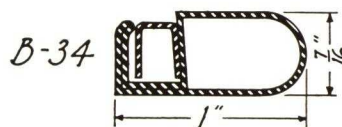
SCALE:
FULL SIZE



B-22



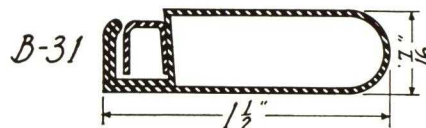
B-35



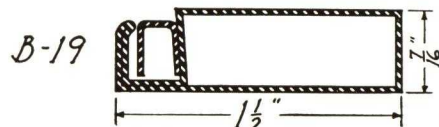
B-34



B-33



B-31



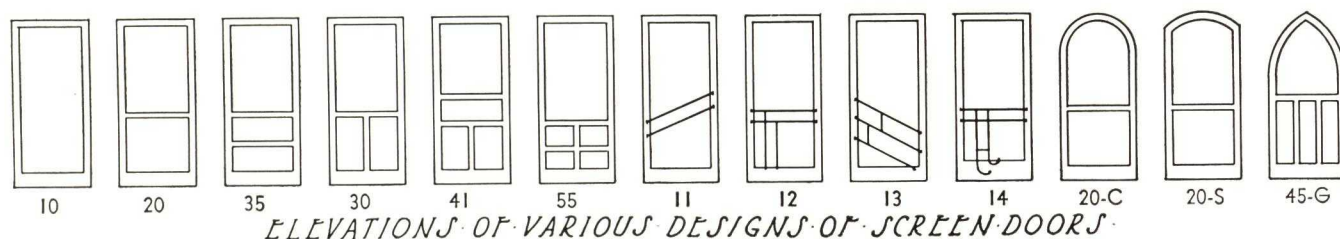
B-19

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WOOD FRAME SCREENS AND SCREEN DOORS



ELEVATIONS OF VARIOUS DESIGNS OF SCREEN DOORS.



These illustrations show some of the possibilities of decorative effects of ornamental grilles used in connection with screen doors.

The one at the left shows the possibility of carrying out the general character of the leaded glass side lights.

At the right is shown a grille designed for a screen door leading to a garden.



MATERIAL AND CONSTRUCTION

The Orange Screen Company has been manufacturing wood frame screens for the past 28 years and recommends them for use where the initial cost is a dominant factor and where maintenance cost is not important.

Screen frames are constructed of selected lumber thoroughly dried. All corners are mortised and tenoned, tightly wedged and held with water-proof glue, sanded both sides and painted with pure white lead and linseed oil, or stained to match the adjacent trim. Unless otherwise specified, screen frames are made of clear white pine; however, we can furnish a complete line of screen frames in birch, oak, cypress, chestnut, mahogany and other hardwoods when so specified.

WINDOW SCREENS

Window screens are either $\frac{7}{8}$ " or $1\frac{1}{8}$ " thickness with stiles and rails $1\frac{3}{4}$ " wide. Full length screens have horizontal cross rails to align with the meeting rails of the sash. Sliding

screens are furnished complete with springs, lifts and wood or metal guides full height of the opening.

PORCH SCREENS

Porch screens are constructed of either $1\frac{1}{8}$ " or $1\frac{3}{8}$ " thickness with $2\frac{1}{2}$ " stiles, $3\frac{1}{2}$ " top rail and 7" bottom rail. Screens are furnished complete with cross braces, stops, astragals and other fitting pieces.

SCREEN DOORS

Screen doors are furnished in $1\frac{1}{8}$ " or $1\frac{3}{8}$ " thickness and are designed to harmonize with the general architecture of the existing house. Main entrance doors are generally furnished with ornamental grilles in the lower panel of the doors. For service doors, grilles or guard wire for the lower panel is generally supplied. Screen doors are furnished complete with solid brass mortise lock, $1\frac{1}{2}$ pr. of loose pin hinges and either air check or liquid check.

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ORANGE SCREEN COMPANY

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NEW YORK OFFICE: 103 PARK AVENUE

Partial List of Representatives

Space Prevents the Listing of All Representatives

ALABAMA

BIRMINGHAM, Southern Sc. & W. S. Co.,
1733 McMillan Ave.

ARKANSAS

LITTLE ROCK, Nevil C. Winthrow Co.,
Insurance Bldg.

CALIFORNIA

LOS ANGELES, K. C. Gaines, 1046 So. Olive St.
SAN FRANCISCO, Braun-Steeple Co.,
636 Potrero Ave.

CONNECTICUT

DANBURY, Herbert M. Brown, Clapboard Ridge,
Dell View
HARTFORD, Hartford Wire Works Co.,
90 Allyn St.
STAMFORD, Fred S. Ruckel, 107 Washington
Ave.

DELAWARE

WILMINGTON, Morgan Bldg. Equipment Co.,
1900 Market St.

DISTRICT OF COLUMBIA

WASHINGTON, Arthur B. Gilbert, Chandler
Bldg., 1427 Eye Street, N.W.

FLORIDA

TAMPA, Stovall & Archer,
1009 Peninsular Tel. Bldg.
WEST PALM BEACH, Alexander Gordon,
P.O. Box 713.

GEORGIA

ATLANTA, Jos. S. Cook, P.O. Box 34,
North Side Sta.

ILLINOIS

CHICAGO, Roy A. Sanborn, 20 No. Wacker Dr.
PEORIA, Samuel J. Smith & Co.,
510 Lehmann Bldg.

INDIANA

EVANSVILLE, Charlton B. Green,
3421 Carl Ave.
INDIANAPOLIS, Pierson-Lewis Hdw. Co.,
115 E. Vermont St.

IOWA

DAVENPORT, Building Products Co.,
403 So. Howell St.

LOUISIANA

BATON ROUGE, Doherty Hardware Company
NEW ORLEANS, Riecke Cabinet Works,
Tulane Ave. cor. Solomon St.

MASSACHUSETTS

SPRINGFIELD, The A. S. Graves Co.,
14 Hawthorne St.

MICHIGAN

DETROIT, W. L. Holden, 9247 West Outer Dr.

MINNESOTA

MINNEAPOLIS, Geo. T. Warner,
126 So. 8th St.

MISSOURI

ST. LOUIS, A. A. Klutho Co.,
915 Syndicate Trust Bldg.

MONTANA

BUTTE, Archie W. Adams,
618 Metals Bank Bldg.

NEW HAMPSHIRE

NASHUA, New England Metal Weatherstrip Co.

NEW JERSEY

CAMDEN, Camden Iron Service Co.,
28 So. 4th St.

NEW YORK

BUFFALO, Paul Howlett, 243 Capen Blvd.
PORT RICHMOND, E. Sonnergren,
196 Lexington Ave.
ROCHESTER, E. W. Maurer, 705 Temple Bldg.

NORTH CAROLINA

CHARLOTTE, Edwin C. Boyette, Jr.,
1025 Arosa Ave.
RALEIGH, C. R. Huffman, 1323 Mordecai Dr.
SOUTHERN PINES, J. Bruce Cameron
WINSTON-SALEM, J. E. Hampton, Rt. 3,
R. R., Box 39.

OHIO

COLUMBUS, The Hausman Steel Co.
CLEVELAND, The Weathertite Co.,
1266 W. 6th St.
MARIETTA, E. A. Williams, 308 Fourth St.
TOLEDO, Frank Robinson, 1005 Shadowlawn Dr.
YOUNGSTOWN, L. D. Sheffield Co.,
144 W. Wood St.

OKLAHOMA

OKLAHOMA CITY, J. B. Klein Iron & Foundry
Co.

OREGON

PORTLAND, Cress & Co., 699 Pettygrove

PENNSYLVANIA

ALLENTOWN, Miller & Singer, 238 N. 8th St.
HARRISBURG, Metal Building Products,
1515 No. Cameron St.
HAZLETON, Home Improvement Sales Co.,
704 Markle Bank Bldg.
LANCASTER, Keystone Equipment Co.
PHILADELPHIA, Furlong & Stout, 10 S. 18th St.
PITTSBURGH, E. K. Geyser & Co.,
200 Cedarhurst St.
SCRANTON, A. D. Parsons, Inc., 151 Cedar Ave.
SPRINGFIELD, (Del. County), C. C. Conner,
21 Congress Ave.

TENNESSEE

CHATTANOOGA, J. H. Botsford & Co.,
P.O. Box 884
JOHNSON CITY, E. A. Lancaster, Jr.,
John Sevier Hotel Bldg.
NASHVILLE, Ryan Sales Corp.,
3520 West End Ave.

TEXAS

DALLAS, J. L. O'Hearn, 630 Wilson Bldg.
HOUSTON, Earl Jones, 708 M. & M. Bldg.
SAN ANTONIO, J. W. Phillips Co.,
Builders Exch.

UTAH

SALT LAKE CITY, Steel Engineers Co.,
1526 S.W. Temple

VIRGINIA

ARLINGTON, Wine & Minkel, P.O. Box 205
DANVILLE, J. W. Squire & Co., 760 Loyal St.
NORFOLK, Glass & Specialty Co., 224 W. 21st St.
PORTSMOUTH, H. B. Wilkins,
1213 Washington St.
RICHMOND, Applied Insulating Co.,
1818-20 W. Cary St.

WASHINGTON

SEATTLE, D. E. Fryer & Co., 304 Textile Tower

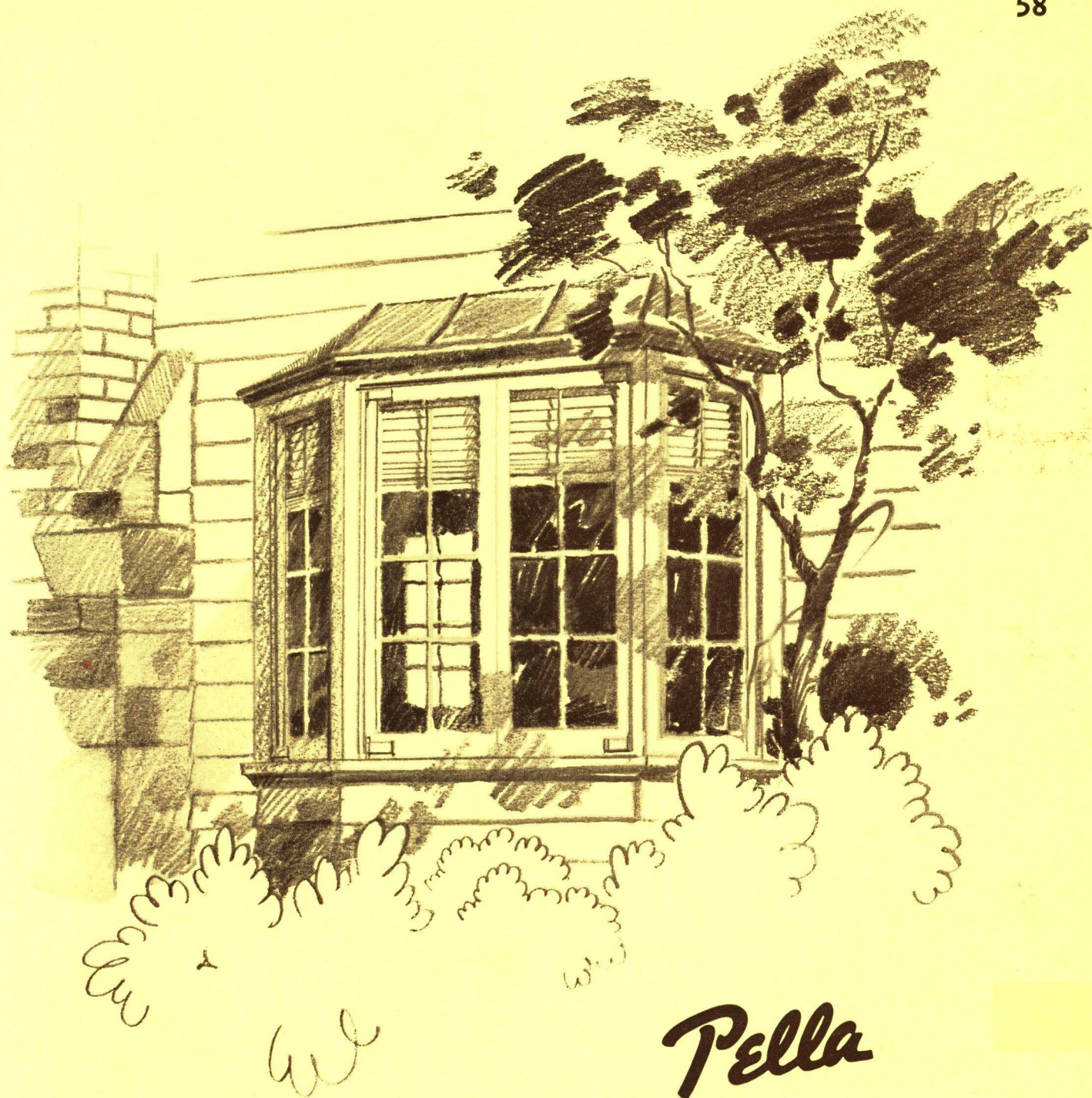
WISCONSIN

MILWAUKEE, C. C. Banholzer,
728 No. Jefferson St.

WYOMING

SHERIDAN, Western Steel & Machine Wks.,
401 Broadway





Pella

PRODUCTS

ROLSCREENS

VENETIAN BLINDS

UNIT CASEMENTS

ROLSCREEN COMPANY • PELLA, IOWA.

THE 3 FAMOUS *Pella* PRODUCTS



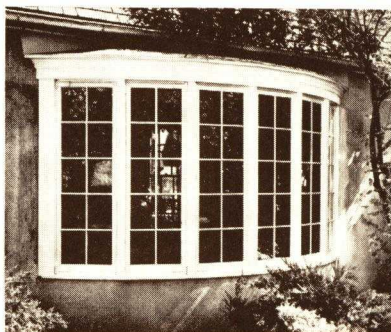
Pella ROLSCREENS

The standard of leadership among inside, rolling window screens. Once in place — always in place! Inconspicuous—they preserve the beauty of sparkling glass. Trouble-free operation assured by 15 exclusive, patented features.



Pella VENETIAN BLINDS

Truly the mark of practical elegance. Pella conceals all mechanism in neat, enclosed head piece only 1 3/8" deep! Positive double roller tilting device prevents slipping — trebles cord life! Finest materials. Gorgeous colors.



Pella CASEMENT WINDOWS

The only really complete window! Metal frame—wood lined. Rolscreened. Weather stripped. Dual glazed. Completely factory assembled. Meets rigid requirements of modern heating and air conditioning. For all types of architecture.



Pella
ROLSCREENS

MODERN ROLSCREENED WINDOW
 ←
 COMPARE THE
 DIFFERENCE IN
 APPEARANCE
 OLD FLAT SCREENED WINDOW →

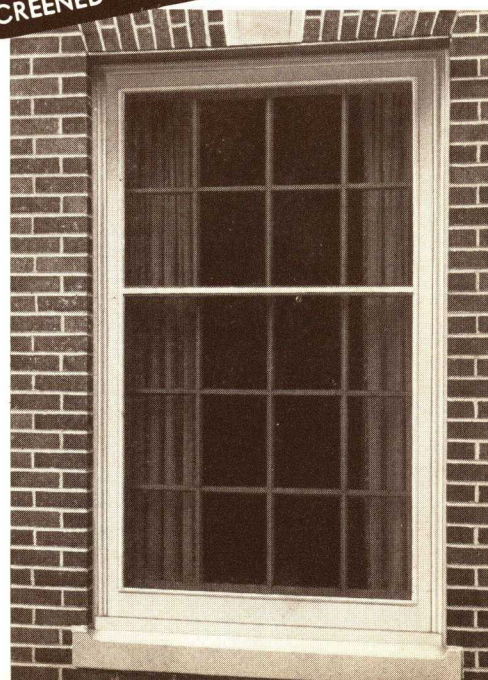
MODERN PELLA ROLSCREENS preserve the architectural beauty of clear, sparkling windows because they are so inconspicuous.

Old-fashioned, flat frame screens blot out beautiful windows—actually making a house old years before its time!

Specify ROLSCREENS—they help keep the homes you design looking like new.

Home owners never cease to appreciate the convenience of ROLSCREENS—nor do they ever seem to tire of proudly demonstrating them to friends and visitors.

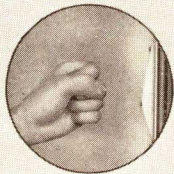
ROLSCREENS are fool-proof. Designed, engineered and durably built to give trouble-free, lifetime service. Over 1 ½ million are in use today in homes and buildings costing \$5000 and up.



Pella ROLSCREEN CONSTRUCTION

De Luxe Type

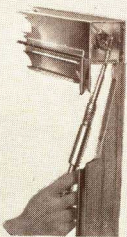
1. SCREEN GUIDES automatically adjust if woodwork shrinks or swells.



2. INDESTRUCTIBLE. Rolscreens will not bulge or tear. Wire-cloth releases from guides when and if struck—then automatically re-enters guides when screen is raised.

3. LUGS IN SELVAGE are gripped by inconspicuous Rolscreen guides to prevent sagging of wire-cloth.

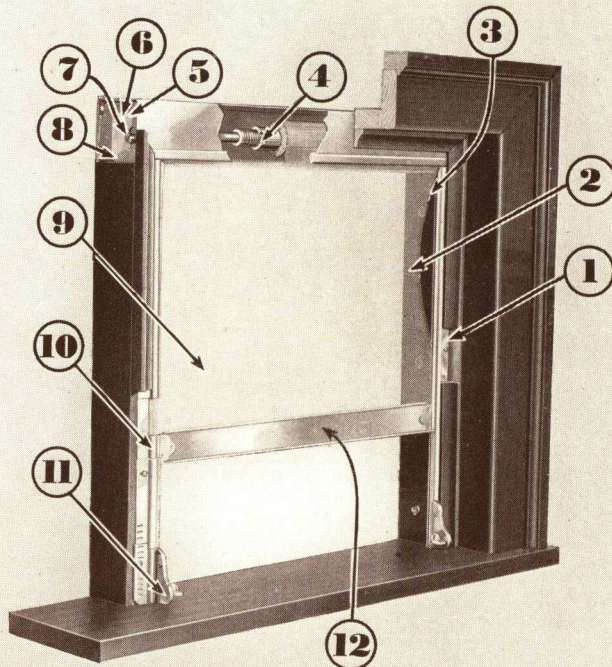
4. COIL SPRINGS are extra-heavy and oil tempered. Will not jam or fail.



5. SPRING TENSION is easily adjusted without disturbing screen.



6. BALL BEARINGS at both ends of roller assure smooth, easy operation, long life.

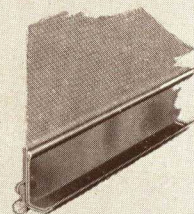


8. INVISIBLE ROLLER HOUSING made of lead-coated, terne-plate which makes perfect bond for paint. Electrically welded construction.

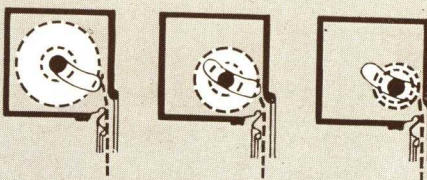
9. ALUMINA WIRE-CLOTH is triple-selvaged, rust-proofed — almost invisible. Self-cleaning. Will not break or crack under constant flexing. Clear grey color gives maximum visibility.

10. FRICTION BLOCKS prevent tilting of operating bar. Insure smooth, even operation at all times.

11. LOCK AUTOMATICALLY at bottom when lowered, giving secure fastening to all four sides of Rolscreen. Cannot be unlocked from outside.



12. PERFECT CLOSURE with sill is afforded by resilient, rubberized felt strip across bottom of operating bar.



7. ROLLER FLOATS forward when screen is lowered; backward when screen is raised. Eliminates drag on wire-cloth at housing edge.

ROLSCREENS fit any type and make of window . . . double-hung or casement . . . wood, steel or aluminum. Hundreds of special detail drawings are available for your reference.

Similarly, ROLSCREENS blend in perfectly with any style of window architecture and with any desired draping effect.

ROLSCREENS ARE ECONOMICAL

With ROLSCREENS, the first cost is the last cost. They positively eliminate all the usual yearly expenditures of labor and money for care, repairs and storing. Installed on the inside—they are conveniently accessible.

ROLSCREENS do not accumulate dust and dirt like outside screens. They do not interfere with casement latches or window locks. They make window washing easier.

10 YEAR GUARANTEE

ROLSCREENS are guaranteed against defects in workmanship or material for a period of ten years. A new ROLSCREEN or parts will be furnished FREE of CHARGE for any failing under this GUARANTEE. This does not cover damage or abuse to the screen or any other condition beyond the normal control of the ROLSCREEN COMPANY.

Children are safer because ROLSCREENS are "locked" in securely at the top, bottom and both sides. The whole household is safer because ROLSCREENS cannot be unlocked from the outside!

STOCK SIZES AVAILABLE

Both DeLuxe and Standard ROLSCREENS are built in sizes to fit all window openings from 10 inches to 61 inches wide and up to 120 inches high. They are carried in stock ready for immediate shipment.

ROLSCREEN MOUNTINGS

FRICTION ANGLES (illustrated left top) provide a simple means for mounting ROLSCREENS without special fitting or cutting of the wood trim. These angles support the roller housing and frictionally hold the ROLSCREEN guides. Made in $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and $\frac{7}{8}$ in. depths so that stock size ROLSCREENS can be fitted into all fractional inch width openings. See pages 6 and 7 for details.

DIRECT ATTACHMENT (illustrated left center) of ROLSCREENS onto steel casement sections is entirely practical for steel casements equipped with "screen-type" hardware. No special fitting or cutting. See page 7 for detail.

PLASTER CHANNELS (illustrated bottom left) are set on the rough jambs and then imbedded in the plaster. Ideal for installations where there is no wood trim and plaster is brought around jamb up to the sash. Removable filler caps support the roller housing. These caps also enable the housing to be easily and quickly removed.

SPECIFICATIONS

(A) SCREENS

Screens shall be (**DeLuxe**) (**Standard**) RolSCREENS as manufactured by the RolScreen Company, Pella, Iowa.

(B) WORK INCLUDED

Note: List and locate either in schedules on plans or in specifications under this heading. If both double hung and casement windows are included, list or schedule each under separate subheading.

(C) MATERIALS AND CONSTRUCTION

(C-1) Metal—Housing, guides and locking bar shall be constructed of heavy lead-coated terne-plate.

(C-2) Wire Cloth—Screen wire shall be 16 mesh rustproofed "Alumina" with triple selvage. The screen cloth shall have lugs spaced at regular intervals along the two edges which shall be engaged by the tubular guides.

(C-3) Metal Housing and Roller Assembly—The screen cloth shall be attached to a steel roller encasing a heavy, thoroughly lubricated, oil-tempered spring. The roller shall be (**roller bearing**) contained in a metal housing $2\frac{5}{8}$ in. square ($2\frac{7}{8}$ in. if opening is over 84 in.). Roller mounting shall be of floating type which allows roller to automatically move forward as size of screen roll reduces, eliminating "drag" of screen wire on lower edge of roller housing.

(C-4) Guides—The jamb guides shall be so mounted that they are slidably adjustable when the screen is raised or lowered to compensate for any expansion or contraction in the window frame. The guides shall be provided with lips at their upper ends inserted into slots in the roller housing (to assure proper alignment) with the beaded portion cut away adjoining the housing to allow the screen wire to re-enter the housing when accidentally knocked out of the guides.

(C-5) Spring Catches—Spring catches shall be attached to the lower end of the guides carefully adjusted to automatically lock the cross bar of the screen close to the sill.

(C-6) DeLuxe Operating Bar and Spring Tension Adjuster—Provide DeLuxe Operating Bars with rubberized felt sill contacts and Spring Tension Adjusters.

(D) WOOD JAMB STOPS

The wood stops, to which the screen guides are fastened and which support the roller housing, shall be furnished and installed with stop screws and washers by others.

(E) PLASTER JAMB CHANNELS

RolScreen guides and housing shall be mounted on plaster jambs in RolScreen Plaster Channels set in position before plastering. Channels shall be set absolutely plumb and true on each jamb and accurately on some "full inch" dimension back to back.

(F) FRICTION ANGLES

Friction angles shall be mounted on the jambs or window as detailed and shall be set true and plumb. They shall receive and hold in position the RolScreen housing and guides.

(G) INSTALLATION

RolSCREENS shall be accurately installed in strict accordance with the manufacturer's erection instructions. Guides shall be so mounted that the beaded portions and outside edges of guides shall not be in contact with window jambs. Screen shall operate freely and easily.

STANDARD TYPE ROLSCREENS

Standard ROLSCREENS have all the construction and operating features as given for DeLuxe ROLSCREENS on opposite page, except 5. Spring Tension Adjustment, 6. Ball Bearings, 12. Rubberized Felt Strip on Operating Bar. However, feature 12 may be had with Standard ROLSCREENS at slight extra cost.

Pella ROLSCREEN

TYPICAL WIDTH DIMENSIONS

PELLA ROLSCREEN INSTALLATION DETAIL

IMPORTANT: RolSCREENs are built in Standard Stock Sizes, varying by just 1" in widths, from 10" to 61", inclusive. The "A" widths as indicated are nominal stock size widths. An example of possible variation in over-all widths of a 24" stock size is given at right. The over-all width on this 24" size can vary from a minimum of 23" to a maximum of 23 7/8".

The "B" dimension taken from face to face of stops MUST BE CONTROLLED to any "half-inch", viz., 22 1/2" for this 24" stock size example. This dimension can always be arrived at by varying the thickness of the stops. For close fit this "B" dimension may be reduced by 1/8" to, for instance, 22 3/8", 23 3/8", etc., but it must be accurately adhered to.

Three flange widths on guides are available as shown.

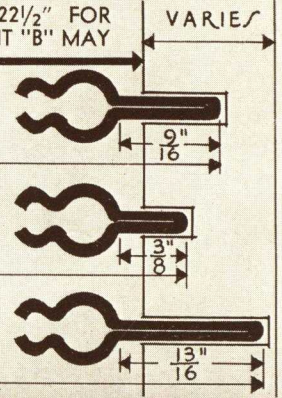
"H" is height dimension and can vary.

"B" THIS DIMENSION MUST BE CONTROLLED TO ANY "HALF-INCH" VIZ., 22 1/2" FOR 24" ROLSCREEN. FOR CLOSE FIT "B" MAY BE REDUCED 1/8" TO 22 3/8"

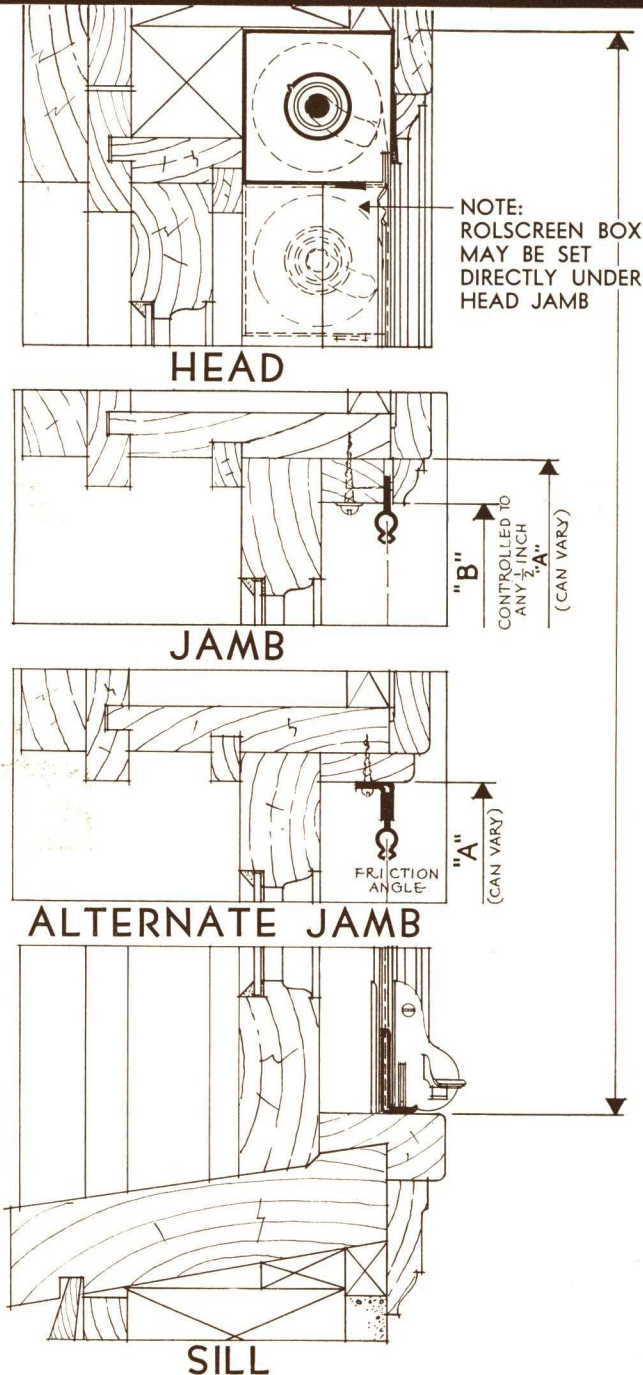
"A" MINIMUM OVER-ALL STANDARD FLANGE GUIDES 23 3/8"

"A" MINIMUM OVER-ALL NARROW FLANGE GUIDES 23"

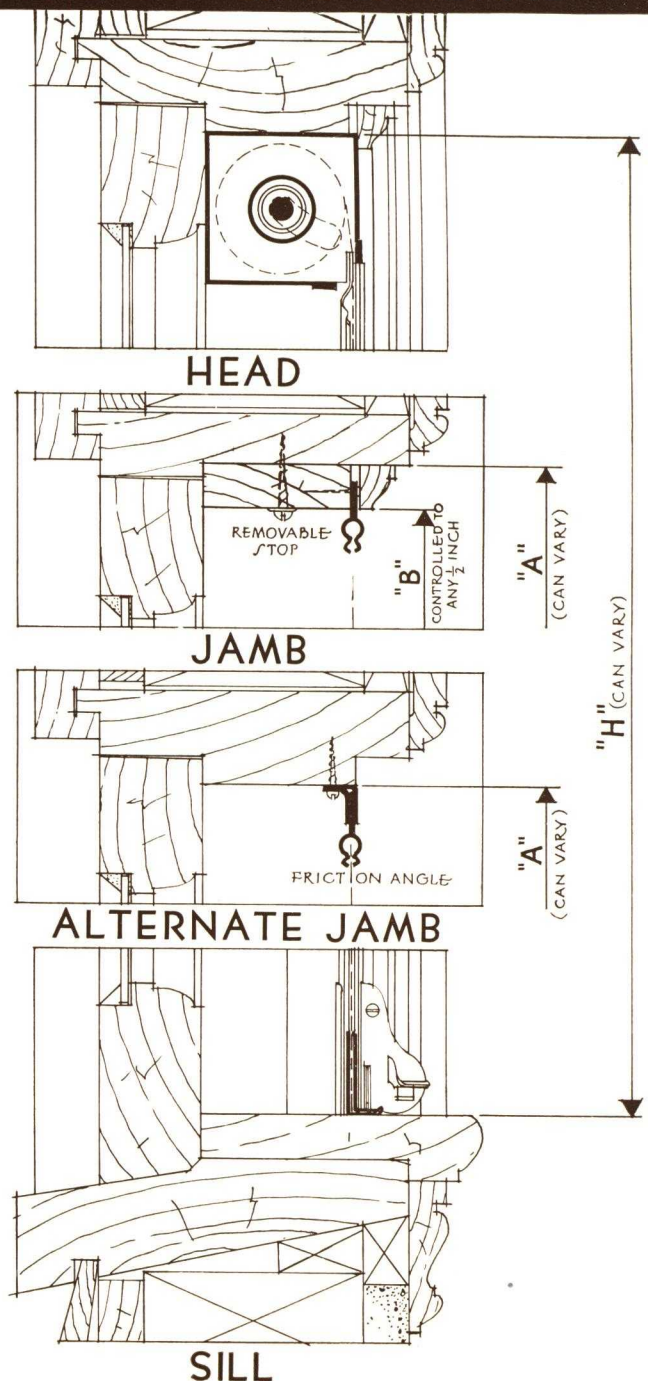
"A" MINIMUM OVER-ALL WIDE FLANGE GUIDES 23 7/8"



DOUBLE HUNG



WOOD CASEMENTS



INSTALLATION DETAIL

4 HOUSING SIZES

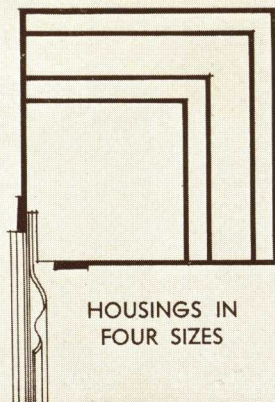
25/8" Housing is considered Standard and can be used for heights up to 84".

27/8" Housing must be used for heights over 84".

2 1/8" Housing may be used for heights up to 54".

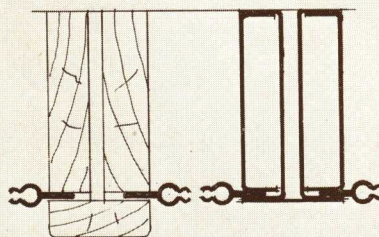
17/8" Housing may be used for heights up to 36".

REVERSED OPERATING BAR — If desirable, the operating bar attached to the bottom of the screen cloth can be reversed so that the screen cloth will unroll out of the back of the housing instead of the front, thus placing the cloth and side guides nearer the sash.



HOUSINGS IN
FOUR SIZES

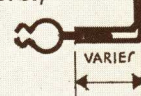
MULLIONS



MULLIONS MAY BE MADE UP OF WOOD OR STEEL. STEEL MULLIONS FURNISHED BY ROL-SCREEN COMPANY

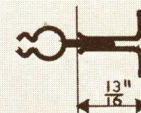
SPECIAL MOUNTINGS

FRICTION ANGLE
(DETAIL NO. 50)



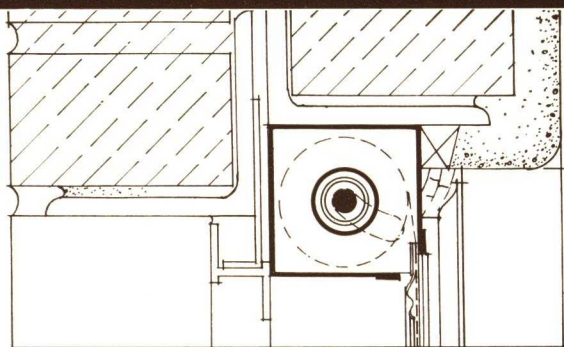
VARIES

PLASTER CHANNEL

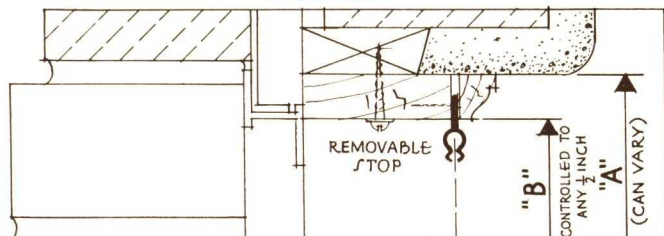


13"
16"

STEEL CASEMENTS



HEAD



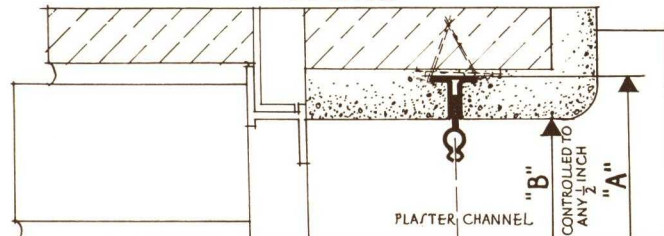
REMOVABLE STOP

"B"

CONTROLLED TO ANY 1/2 INCH

"A" (CAN VARY)

JAMB



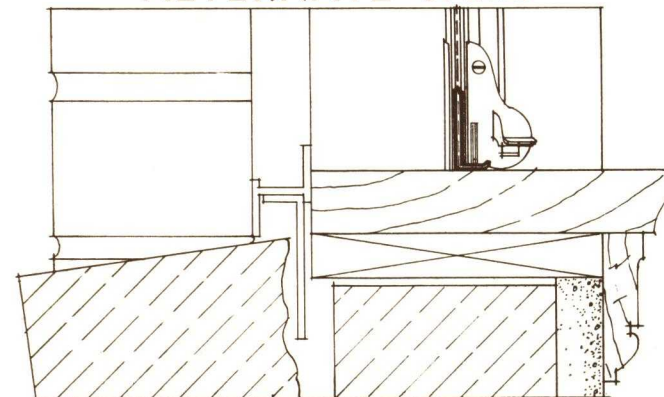
PLASTER CHANNEL

"B"

CONTROLLED TO ANY 1/2 INCH

"A"

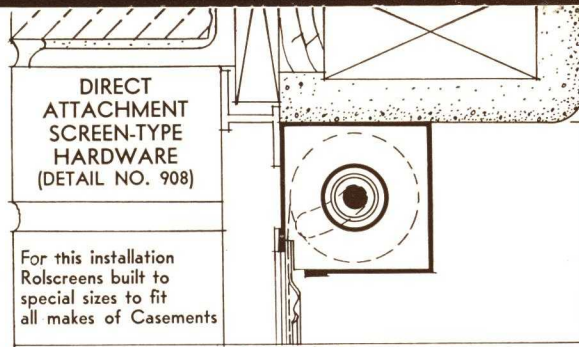
ALTERNATE JAMB



SILL

"H" (CAN VARY)

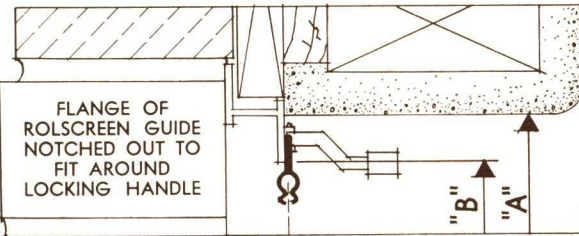
STEEL CASEMENTS



DIRECT ATTACHMENT SCREEN-TYPE HARDWARE (DETAIL NO. 908)

For this installation Rol-screens built to special sizes to fit all makes of Casements

HEAD

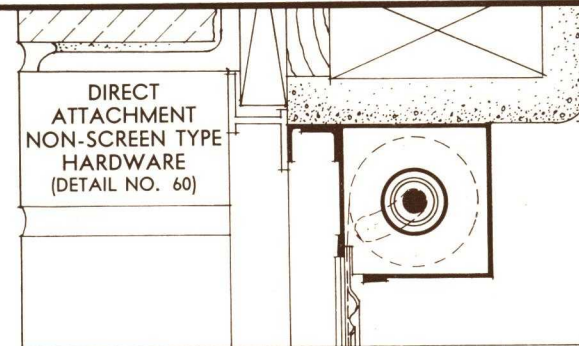


FLANGE OF ROL-SCREEN GUIDE NOTCHED OUT TO FIT AROUND LOCKING HANDLE

"B"

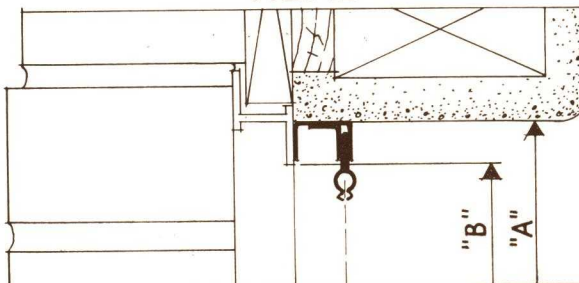
"A"

JAMB



DIRECT ATTACHMENT NON-SCREEN TYPE HARDWARE (DETAIL NO. 60)

HEAD



"B"

"A"

JAMB

"H"

Pella CASEMENT CONSTRUCTION

FEATURES OF Pella UNIT CASEMENTS

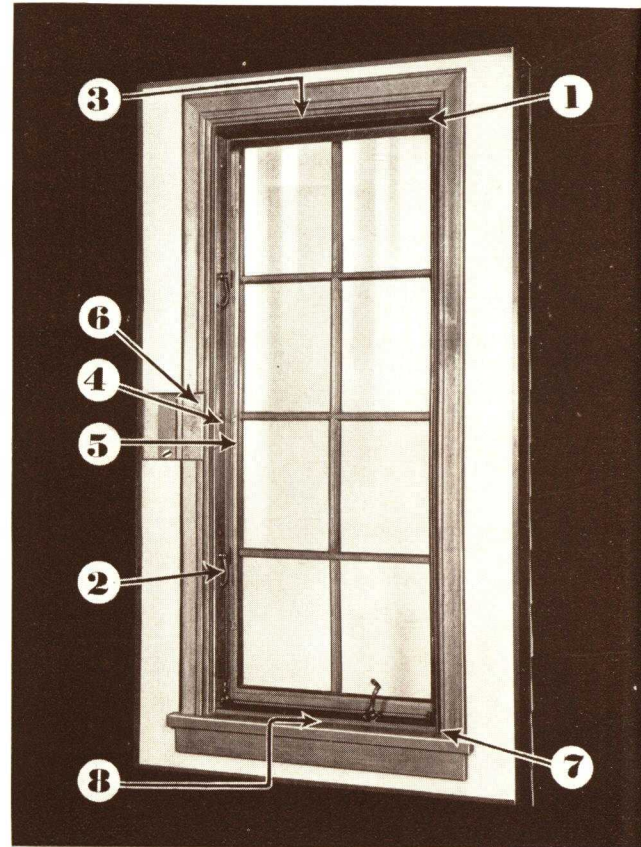
HEAVY, RUST-PROOF METAL FRAME IS WOOD LINED FOR BEAUTY AND INSULATING QUALITIES

1. **ROLSCREENED**—Equipped with famous Pella ROLSCREENS. No storing, no taking down for window washing.
2. **BEAUTIFUL HARDWARE**—Specially designed. Graceful lines and easy to operate. Satin, polished chrome or statuary bronze.
3. **RIGID METAL FRAMES**— $\frac{1}{8}$ in. rust-proof, special process, zinc-coated steel. $5\frac{1}{8}$ in. wide. Made to fit all walls.
4. **DUAL GLASS**—Removable, single panel, Libbey-Owens DSA glass protects against winter cold and summer heat.
5. **WEATHERSTRIPPING**—Spring bronze, exclusive design. Not affected by painting. Adjustable. You can see it work.
6. **INSIDE INTERLOCKING FINS**—Galvanized steel. Can be punched with nails when installing. Light gauge.
7. **WOOD TRIM**—Frame lined with clear white pine (other woods if desired). Insulates—beautifies.
8. **FACTORY ASSEMBLED**—Factory-fitted complete with sash, ventilating equipment, dual glass and ROLSCREEN.

AUTHENTIC DESIGNS

PELLA CASEMENTS blend into and emphasize the character of any style architecture. They will convey the impression of dignity and stateliness required for colonial architecture, "coziness" for Cape Cod, breadth for Modern or Spanish and sturdiness for half-timbered English.

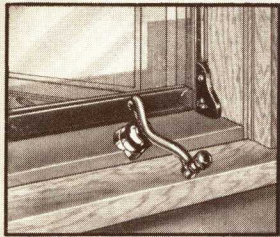
Can be specified with glass arrangements in either small panes or long, horizontal lights. Vertical muntins may be omitted.



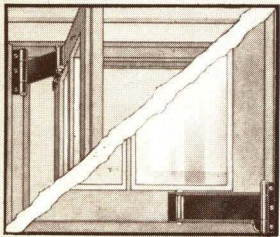
The Window That Has Everything

PELLA CASEMENTS are completely assembled at the factory, sash made of genuine white pine accurately fitted with all hardware, weatherstripping, non-extension cleaning hinges, underscreen sash operator, sash locks, and the famous PELLA ROLSCREENS completely installed. No tedious fitting and assembling on the job.

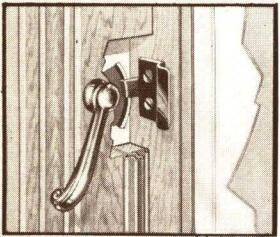
The PELLA UNIT CASEMENT is a complete unit, designed for practical and simple installation to meet the needs of modern air conditioning and ventilating and is highly efficient as to weathering, air leakage, and heat and cold conductivity. PELLA CASEMENTS are among the few really complete windows on the market today.



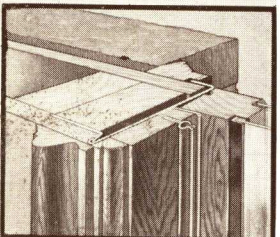
UNDER-SCREEN OPERATOR, worm gear type. Satin, polished chrome or statuary bronze finished handles.



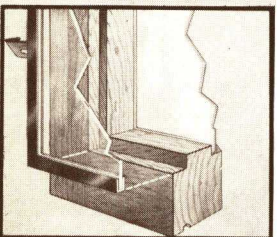
NON-EXTENSION HINGES unlatch so as to permit washing outside of windows from the inside.



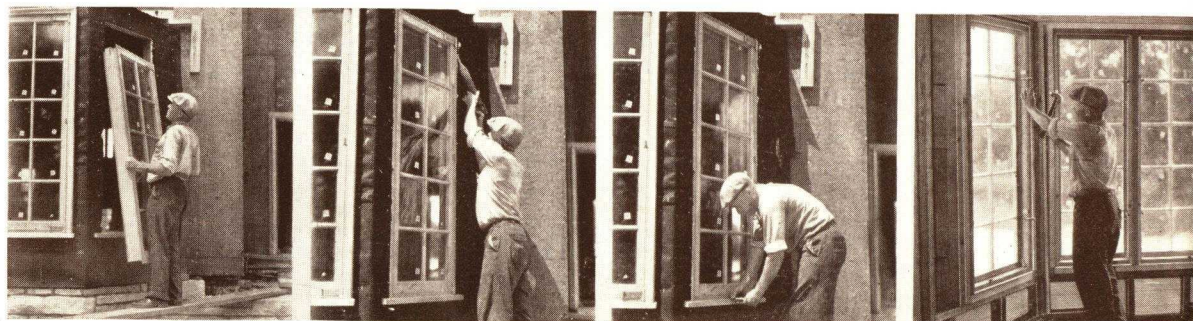
GRACEFUL SASH LOCKS have cam action. Sturdy. Satin, polished chrome or statuary bronze.



STEEL FRAMES fit snugly into any wall. No warping. No joints to pull apart. Galvannealed.

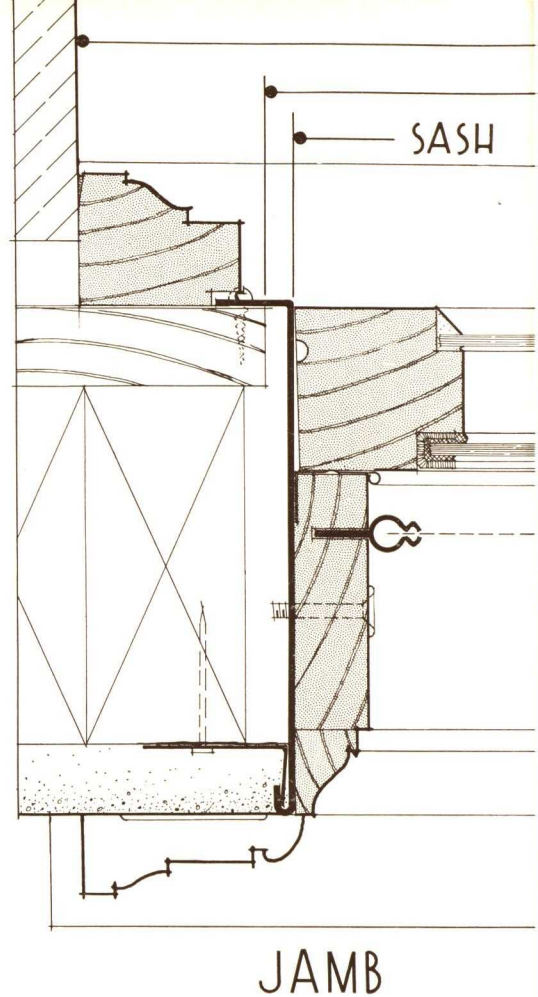
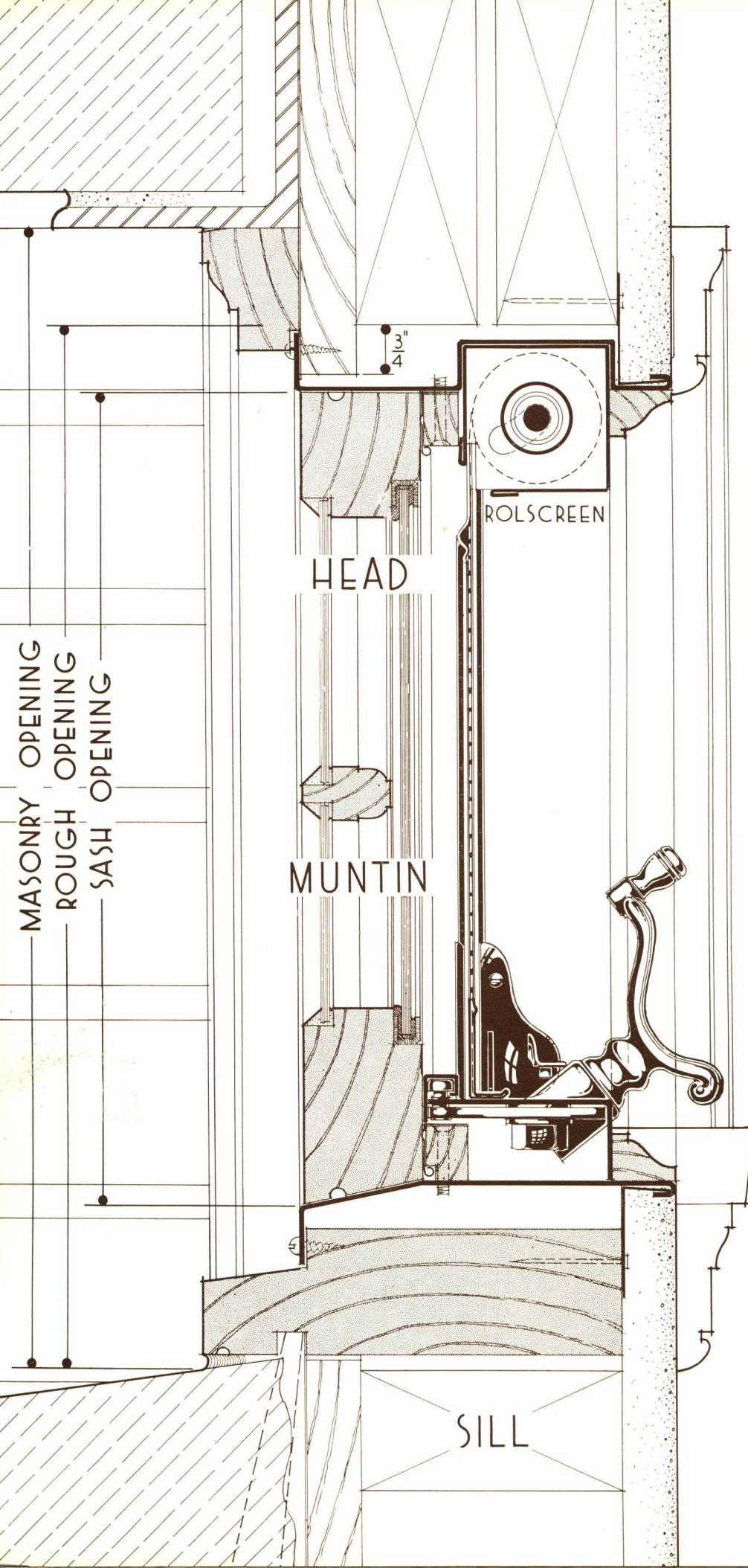


DUAL GLAZING insulates against winter cold and summer heat. Easily removable.



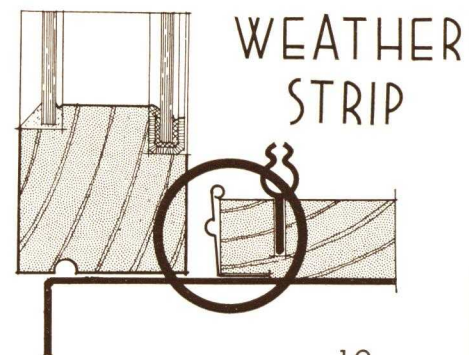
PARTIAL TABLE OF SIZES

MASONRY OPENING									
ROUGH OPENING									
SASH OPENING									
8'-3 1/2"	8'-2 7/8"	7'-10 3/4"	7'-3 1/8"	7'-1 3/4"	6'-10 3/8"	6'-2 3/4"	6'-2 3/4"	5'-2 3/8"	5'-1"
1714	1715	1615	1614	1513	1514	1413	1515	1414	1313
2718	2710	2610	2619	2516	2519	2416	2510	2410	2316
4728	4710	46210	4628	4526	4528	4426	45210	44210	4326
6738	67310	66310	66310	6536	6538	6436	65310	6438	6336
8748	87410	86410	86410	8546	8548	8446	85410	8448	8346
10758	107510	106510	10658	10556	10558	10456	105510	10458	10356
411 1/2"	4'-7 1/2"	4'-6 5/8"	4'-6 1/8"	4'-5 1/8"	4'-5 1/8"	4'-4 1/8"	4'-5 1/8"	4'-4 1/8"	4'-3 1/8"
6'-10 5/8"	6'-6 5/8"	6'-6 1/8"	6'-5 1/8"	6'-5 1/8"	6'-4 1/8"	6'-4 1/8"	6'-5 1/8"	6'-4 1/8"	6'-3 1/8"
211 1/8"	2'-7 3/8"	2'-6 7/8"	2'-6 1/2"	2'-5 1/2"	2'-5 1/2"	2'-4 1/2"	2'-5 1/2"	2'-4 1/2"	2'-3 1/2"
3'-9"	3'-4 3/4"	3'-4 1/4"	3'-3 3/4"	3'-3 1/4"	3'-3 1/4"	3'-2 3/4"	3'-3 1/4"	3'-2 3/4"	3'-1 3/4"
6'-9 3/8"	6'-5 3/8"	6'-5 1/8"	6'-4 3/8"	6'-4 1/8"	6'-4 1/8"	6'-3 3/8"	6'-4 1/8"	6'-3 3/8"	6'-2 3/8"
7'-7 1/4"	7'-3"	7'-2 1/2"	7'-2 1/4"	7'-1 3/4"	7'-1 3/4"	7'-1 1/4"	7'-2 1/4"	7'-1 3/4"	7'-1 1/4"
28 1/2"	24 1/2"	24"	23 1/2"	23 1/4"	23 1/4"	22 1/4"	23 1/4"	22 1/4"	21 1/4"
5'-2 3/8"	4'-10 3/8"	4'-9 3/8"	4'-8 3/8"	4'-7 3/8"	4'-7 3/8"	4'-6 3/8"	4'-7 3/8"	4'-6 3/8"	4'-5 3/8"
7'-8"	7'-3 3/4"	7'-3 1/4"	7'-2 3/4"	7'-2 1/4"	7'-2 1/4"	7'-1 3/4"	7'-2 1/4"	7'-1 3/4"	7'-1 1/4"
10'-1 5/8"	9'-9 3/8"	9'-8 3/8"	9'-7 3/8"	9'-6 3/8"	9'-6 3/8"	9'-5 3/8"	9'-6 3/8"	9'-5 3/8"	9'-4 3/8"



Pella
**CASEMENT
 WINDOWS**

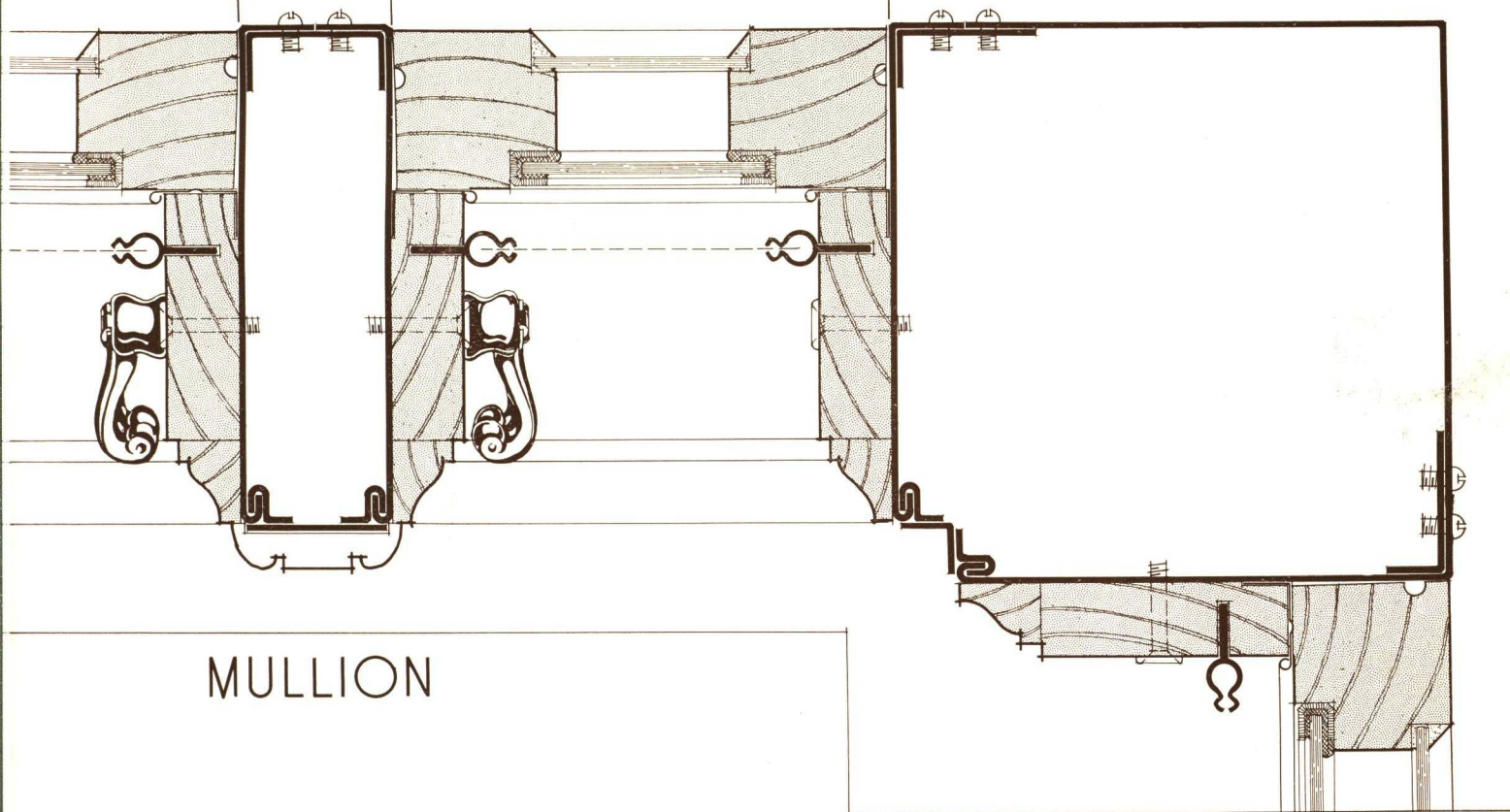
WRITE FOR DETAILS
 SHOWING ALL TYPES
 OF WALL CONSTRUCTION



MASONRY OPENING

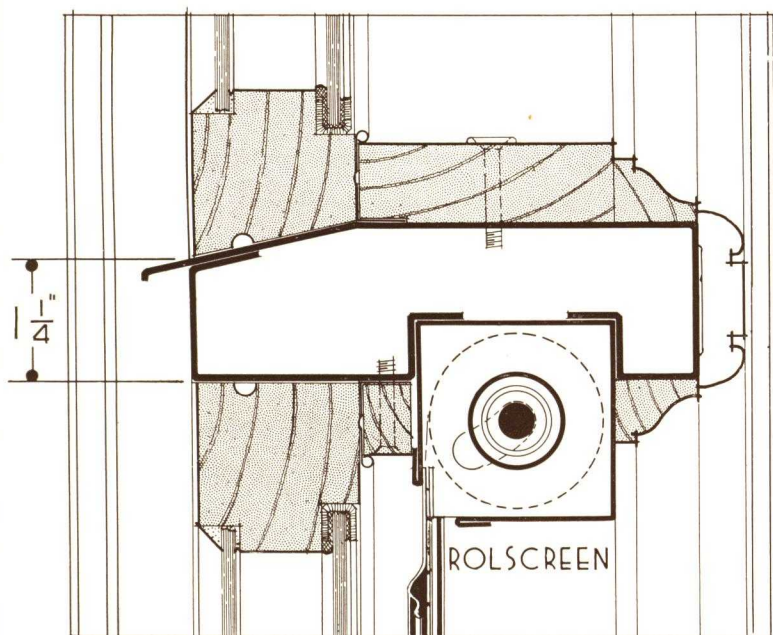
ROUGH OPENING

OPENING — 1 $\frac{5}{8}$ — SASH OPENING

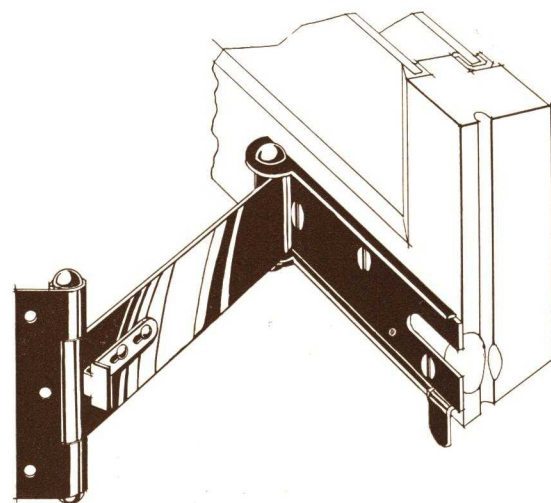


MULLION

CORNER WINDOW SECTION



TRANSOM



HINGE

HALF FULL-SIZE
DETAIL NO 1105

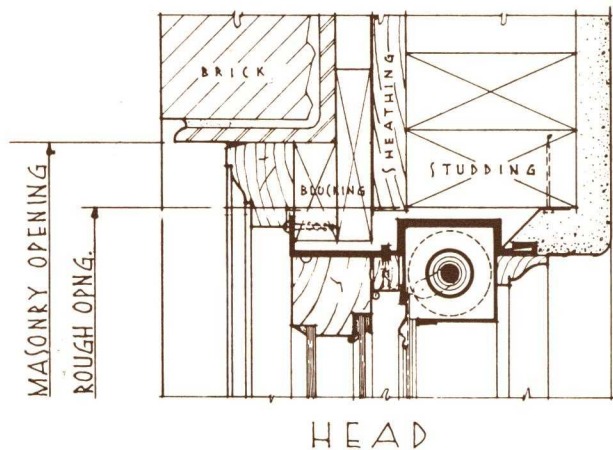
BRICK VENEER

WOOD FRAME

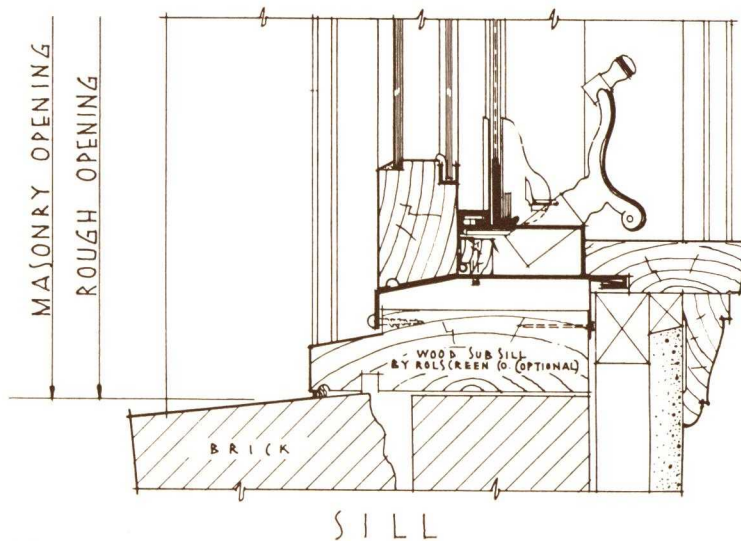
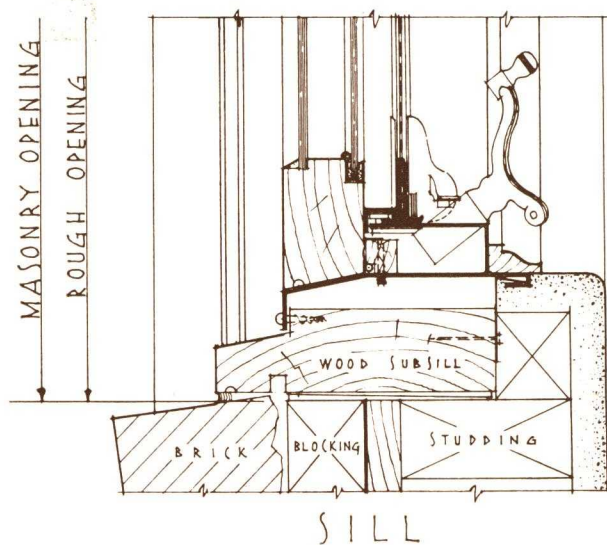
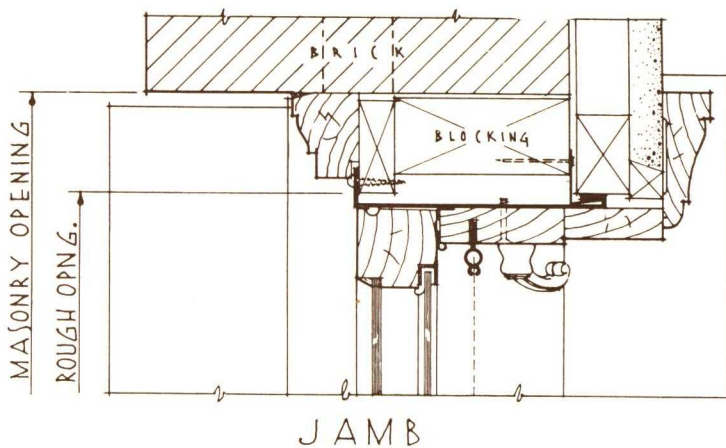
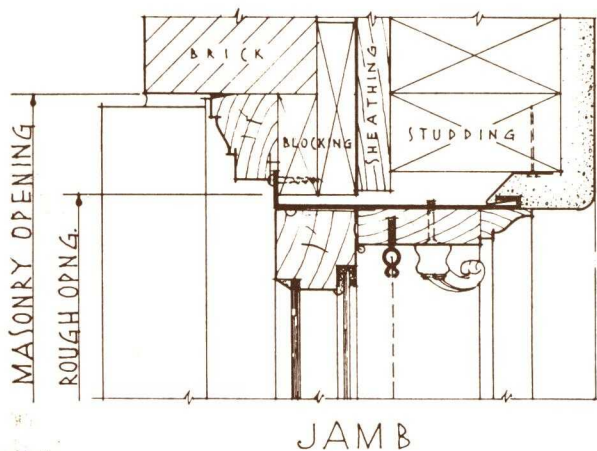
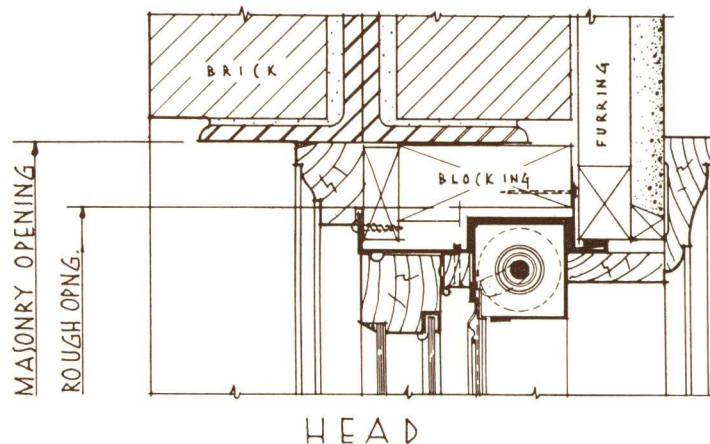
ALL WOOD PARTS AS SHADED IN ARE FURNISHED BY ROLSCREEN CO.

WRITE FOR DETAILS LIKE THESE
showing all types of wall construction

BRICK VENEER DETAIL 1109, QUARTER FULL-SIZE



9" BRICK WALL DETAIL 1106, QUARTER FULL-SIZE





Walter R. Casson Residence, Des Moines, Iowa

Architects: Kraetsch and Kraetsch, Des Moines, Iowa

SPECIFICATIONS

FRAME—16-gauge ($\frac{1}{8}$ in.) Galvannealed Steel—special zinc coated and impregnated, rust-proof, non-flaking. Paint adheres perfectly. Over-all width of frame $5\frac{5}{8}$ in. for net wall thickness of $5\frac{1}{4}$ in.

SASH—Treated White Sugar Pine, $1\frac{3}{4}$ in. thick. Corners mortised and tenoned. Water groove all around. Muntin bars $\frac{3}{8}$ in. between glass; dividing of lights as shown in size schedule is standard. Vertical muntin bars or all muntins may be omitted at no extra cost.

GLASS—Libbey-Owens SSA Standard: DSA, Obscure, $\frac{1}{8}$ in. plate, leaded optional as extra. Or sash can be furnished unglazed with an allowance for glass.

GLASS SIZES— 9×12 in. except 12×12 in. for 1 light wide units and 8×12 in. in 3 light wide ventilating. If vertical bars are omitted, glass size is $18\frac{3}{8} \times 12$ in. for 2 light wide, $24\frac{3}{4} \times 12$ in. for 8×12 in. 3 light wide.

WEATHERSTRIPPING—Spring Bronze, exclusive design—not affected by painting, adjustable—installed so you can see it work.

WOOD TRIM—All wood trim fitted and installed on inside of steel jamb is clear White Pine. Special woods as an extra.

INSIDE INTERLOCKING FINS—Galvanized steel, light gauge—can be punched with nails when installing.

OUTSIDE TRIM—Wood trim in treated Clear White Pine, consisting of brick mould (or outside casing) and wood sub-sill of patterns as detailed furnished as regular equipment.

SASH OPERATOR—Worm gear type made integrally with removable steel sill.

SASH LOCKS—Cam action. One lock installed on sash up to three-lights high. Two locks installed on four and five-lights high. Operator and locking handles finished in statuary bronze (bright or satin chromium optional).

HINGES—Special design double acting, cadmium plated. Sash normally pivots at jamb. By operating simple release, sash pivots away from jamb for washing windows from inside. No exaggerated sash bevel necessary as required with extension hinge. Sash sections are practically $1\frac{3}{4}$ in. square—full size.

MULLIONS—To make up multiple units, individual units are combined with metal mullions as detailed—unusually rigid construction. No extra charge for mullions when outside trim is furnished. Mullions are furnished in lieu of outside wood trim at sides which is not needed when units are combined. Where wood outside trim is furnished by others, there is small extra charge for steel combining mullions.

DUAL GLAZING—A single pane of Libbey-Owens DSA glass set in cadmium plated steel frame and rubber—removable, mounted on wood sash with hinged clips. Prevents frosting in winter—holds out heat in summer.

SCREENS—Famous PELLA ROLSCREENS installed complete. No storing, no taking down for window washing, raised when window is closed, no interference with Venetian Blind installation, no interference with dual glazing.

CAULKING—Ample provision for caulking around sash unit and moulds. Caulking compound and installation screws are included.

Pella VENETIAN BLINDS

conceal all mechanism into neat enclosed head piece



FEATURES OF PELLA VENETIAN BLINDS

All mechanics concealed—eliminating expense of wooden cornices or valances. Mechanism enclosed in a sturdy metal housing only $1\frac{3}{8}$ in. deep. No interference with drapes. Non-slipping, Double Roller Tilting Device: one roller unwinds as the other roller rewinds. Can be quickly adjusted. Ingenious Automatic Lock securely holds blind at any point desired. It cannot slip and doesn't bite cords. Large oversize pulleys—1 in. diameter—greatly reduce cord wear. Slats nest into a neat bundle—20% smaller in size—eliminates light lines or "peek holes." See illustration below.

SPECIFICATIONS

HEAD MEMBER—Shall be an all-metal rigid housing $1\frac{3}{8}$ in. deep by $2\frac{1}{2}$ in. wide.

TILTING MECHANISM—All tilting mechanism shall be concealed in head member and shall consist of a gear-synchronized pair of rollers for winding and unwinding supporting ladder tapes, all to be adjusted so as to be positive, operate easily, tilt without cord slippage and to hold slats in any tilted position.

PULLEYS—Cold rolled steel 1 in. diameter. Concave raceways.

AUTOMATIC CORD LOCK—Non-slip, non-cutting. To positively lock at any point without backlash.

BRACKETS—Heavy steel, of design as required.

SLATS AND BOTTOM RAIL—Shall be made of strictly selected No. 1 Western Yellow Cedar, smoothly finished. Clean cut cord holes in slats. Slats to be $\frac{1}{8}$ in. thick by $1\frac{3}{4}$ in., 2 in. or $2\frac{3}{8}$ in. wide. Bottom rail to be $\frac{3}{4}$ in. thick on small blinds and $1\frac{1}{8}$ in. thick on large and of same width as slats. All edges to be rounded.

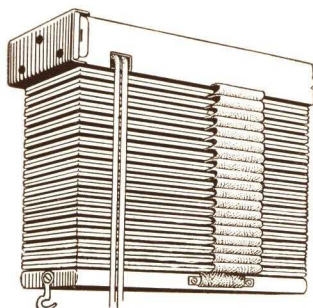
FINISH—Shall consist of three coats synthetic enamel—supplied in 18 standard colors.

LADDER TAPE—Best quality interwoven—supplied in 15 standard colors.

CORDS—Heavy duty, hollow braided, glazed.

GUIDES (When specified)—Cold rolled channels $\frac{9}{16} \times \frac{9}{32}$ in. Guide shoes on every 8th slat.

TYPE OF LIFT—Blinds of 50 sq. ft. and under shall be single lift unless over 72 in. wide. Double lift shall be furnished on blinds of 50 sq. ft. and over and on blinds over 72 in. wide.



BUNDLING FEATURE

BUNDLE SIZE

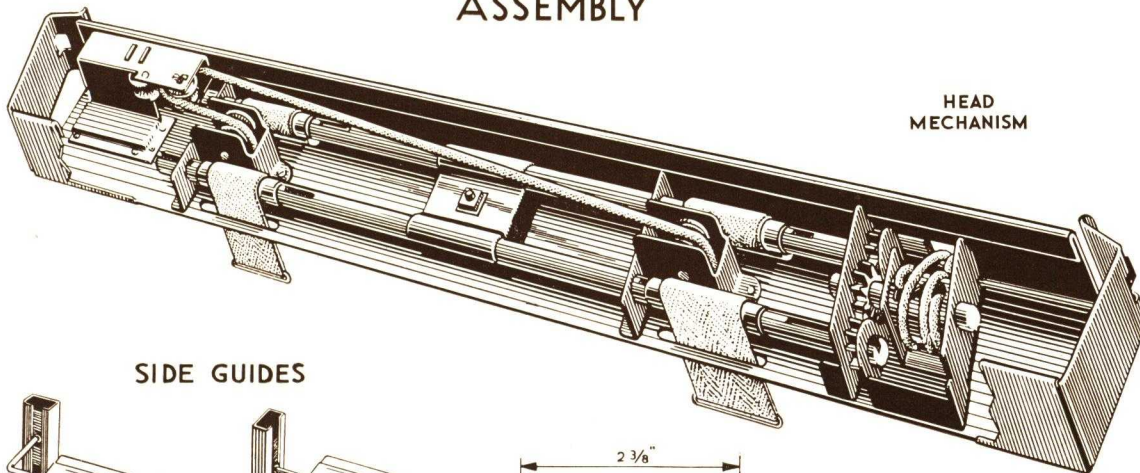
Approximate size of bundle including housing and bottom when blind is raised.

Blind Height	$1\frac{3}{4}$ " Slats	2" Slats	$2\frac{3}{8}$ " Slats
36"	7"	$6\frac{1}{2}$ "	6"
48"	$8\frac{1}{4}$ "	$7\frac{3}{4}$ "	7"
60"	$9\frac{1}{2}$ "	9"	8"
72"	$11\frac{3}{4}$ "	$10\frac{1}{2}$ "	9"
84"	13"	$11\frac{3}{4}$ "	10"
96"	$14\frac{1}{4}$ "	$13\frac{1}{4}$ "	11"
108"	$15\frac{1}{2}$ "	$14\frac{3}{4}$ "	12"
130"	$16\frac{3}{4}$ "	16"	13"

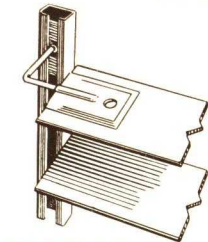
INSTALLATION DETAIL

Pella VENETIAN BLINDS

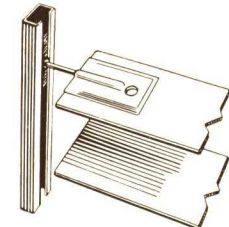
ASSEMBLY



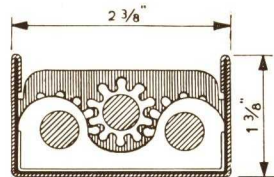
SIDE GUIDES



FACE OF WALL



BETWEEN JAMBS



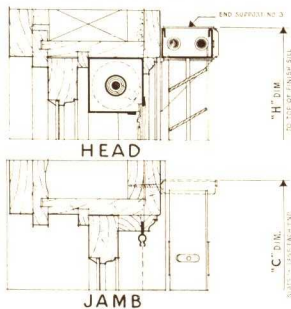
HEAD CROSS SECTION

HEAD MECHANISM

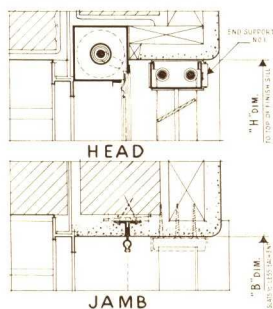
ALL TILTING MECHANISM IS ENCLOSED. THERE ARE NO EXPOSED BRACKETS • NO TILTING BARS • NO LIGHT LINES. BLIND BUNDLES COMPACTLY.

ROLSCREENS AND PELLA VENETIAN BLINDS

DOUBLE HUNG WINDOWS
FRAME CONSTRUCTION

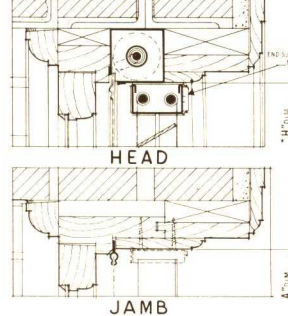


STEEL CASEMENTS

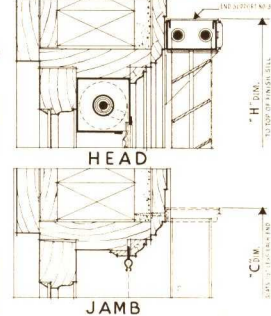


WOOD CASEMENTS

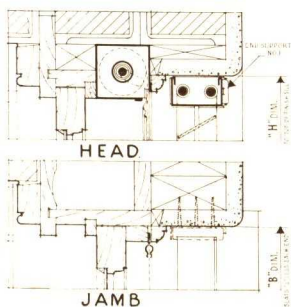
MASONRY CONSTRUCTION



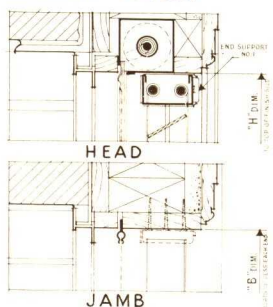
FRAME CONSTRUCTION



MASONRY CONSTRUCTION

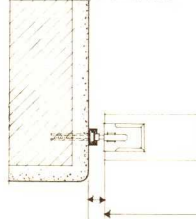


BRICK VENEER



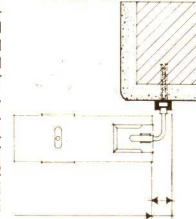
DIMENSIONS FOR GUIDED BLINDS

BETWEEN JAMBS



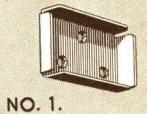
NOTES: ALL FREE HANGING INSTALLATIONS SHOWN ON THIS PAGE CAN BE MADE WITH BLINDS GUIDED AT SIDES OF OPENINGS IF THESE DIMENSIONS ARE OBSERVED. HEIGHT DIMENSIONS FOR GUIDED BLINDS ARE SAME AS FOR FREE HANGING BLINDS.

FACE OF WALL

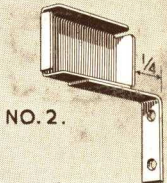


THE STOCK END SUPPORT BRACKETS FOR PELLA BLINDS SHOWN IN THIS COLUMN CAN BE ORDERED BY NUMBER. IF THEY DO NOT MEET SPECIAL CONDITIONS, SUBMIT SKETCH AND DIMENSIONS.

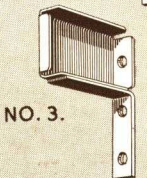
END SUPPORTS



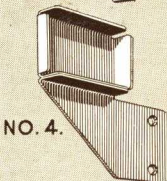
NO. 1.



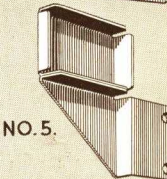
NO. 2.



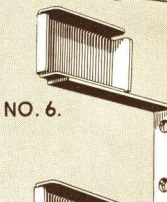
NO. 3.



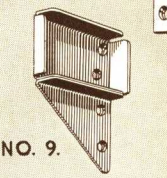
NO. 4.



NO. 5.



NO. 6.

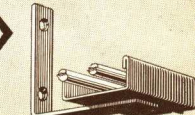


NO. 9.

CENTER SUPPORTS



NO. 7.



NO. 8.

Pella

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MEMPHIS,
H. C. Foster, Mgr.,
1584 Union Ave.,
Phone: 7-2161

NASHVILLE,
C. B. Mallory, Mgr.,
3rd Nat. Bank Bldg.,
Phone: 6-0325

TEXAS

DALLAS,
Jack E. Mauney, Mgr.,
513 Construction Bldg.,
Phone: 2-8463

EL PASO,
Wm. P. Tisdale, Mgr.,
500 E. 10th St.,
Phone: Main 4441

HOUSTON,
M. S. Lehman, Mgr.,
340 M. & M. Bldg.,
Phone: Fairfax 3389

UTAH

SALT LAKE CITY,
A. Bernstein, Mgr.,
204 Inter. Depot Bldg.,
Phone: Wasatch 2748

VIRGINIA

RICHMOND,
Farr Nutter, Mgr.,
523 W. Broad St.,
Phone: 3-3100

ROANOKE,
H. L. Rosenbaum, Mgr.,
100 W. Campbell Ave.,
Phone: 2-2298

WINCHESTER,
E. W. Armstrong, Mgr.,
39 E. Piccadilly St.,
Phone: Win. 639

WASHINGTON

SPOKANE,
C. L. Modesitt, Mgr.,
1519 S. Lincoln St.,
Phone: Riverside 0884

W. VIRGINIA

CHARLESTON,
E. G. Thorne, Mgr.,
1626½ Bigley Ave.,
Phone: 24-012, 29-223

HUNTINGTON,
A. C. Mead, Mgr.,
5 Mortimer Place,
Phone: 8349

WISCONSIN

MILWAUKEE,
E. T. Ver Halen, Mgr.,
2401 N. Maryland Ave.,
Phone: Lakeside 1140

UNIVERSAL ROLLER SCREEN COMPANY

Manufacturers of Roller Screens and Light-Proof Shades

3423 Armitage Avenue, CHICAGO, ILLINOIS

ROLLER SCREENS

Construction

The Universal Roller Screen is constructed with mechanical simplicity, yet it is the leader in technical advancements.

The head case at the top of the window, houses the roller onto which the screen cloth is soldered. Through the box ends, which are fitted over both sides of the head case, runs the rod. The coil spring, attached to the rod, is encased by the roller. At both ends of the roller are bushings to minimize the friction. The tension of the screen is held by the angle key within the box end. The guides fastened to the sides of the window frame, hold the case in place. In each guide channel there is always at least three-quarters of an inch of screen cloth to allow the screen to give under pressure. No ordinary blow will puncture the wire, it is not rigid but self-stretching.

The lower end of the wire is securely fastened to the bottom rail. The rail extends across the entire width of the cloth and the slides are fitted into each end. Along the lower edge of the rail is a felt bumper which fits against the sill. To stiffen and for the sake of convenient operation, a lifting bar is attached to the front of the rail. On either end of the rail is an exposed locking device, which automatically catches when the screen is lowered. This exclusive feature eliminates any possibility of opening the screen from the outside.

When the screen lock is released, the screen does not fly to the top but stops at a convenient height, where by the touch of the hand the screen may be raised or lowered.

Materials and Finish

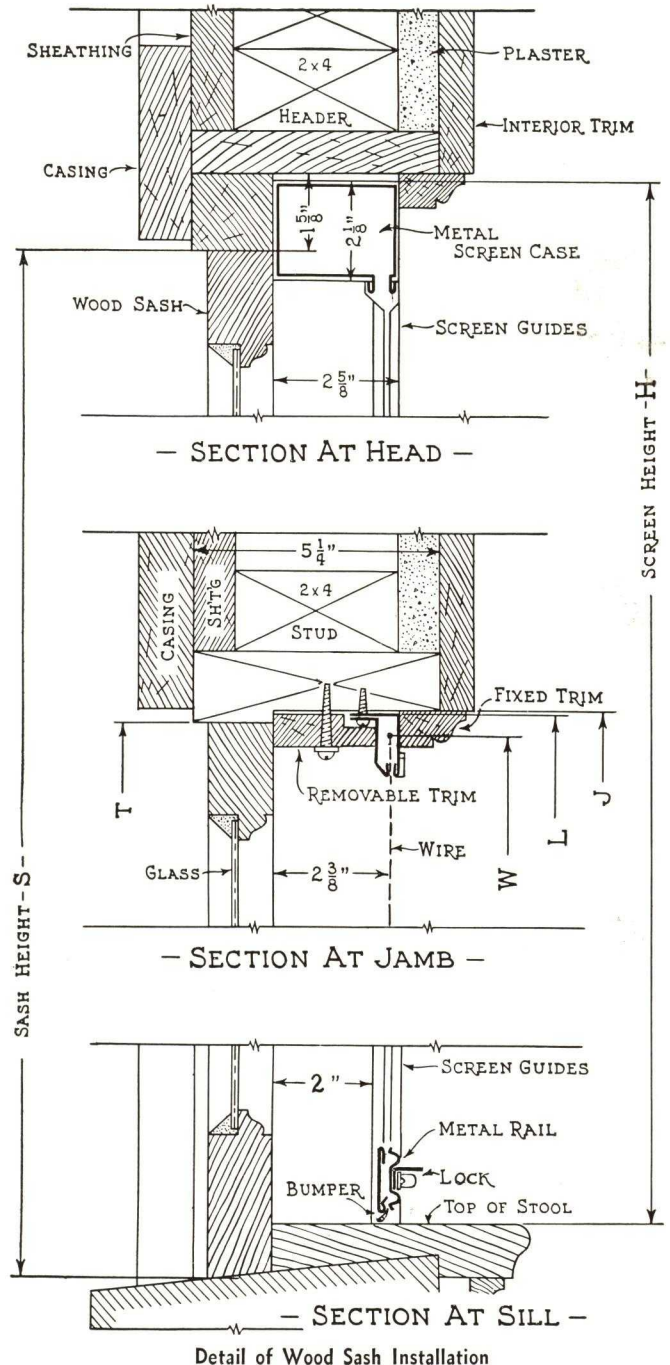
The head case, guides, rail, and slides are usually made from heavy lead-coated terne plate or bronze. Electrically welded steel tubing is used for the roller and the coil spring, made of music wire, is lubricated with non-running grease. To insure definite service, brass bushings support the rod of cold rolled steel. Sixteen mesh bronze screen cloth is used because of its durability. The bumper is of a chemically treated felt and the locking device is made entirely of bronze to insure against rust.

To add to the harmony of the room, the roller screen is always blended with the color scheme of the window. A high grade commercial lacquer is sprayed onto the metal, to give the screen a fine, glossy finish.

LIGHT-PROOF SHADES

In the modern X-ray room where it is essential to have absolute darkness, the Universal Light-Proof Shade has solved the problem to the highest degree of perfection in practicability and design.

The construction of the shade is very similar to that of the screen, except that an opaque shade cloth is used. The cloth, especially manufactured for us, is made of strong double fabric, covered with rubber on one side and with peroxylin on the other. The different coatings prevent the cloth from sticking to itself and keep it soft and pliable under all weather conditions. Metal stiffeners are placed sufficiently across the cloth to re-enforce it. In the head case, a ventilator is incorporated for the purpose of eliminating air pressure between window



and shade and also giving some circulation to the room while the shade is drawn. The sill strip which fits into the rail shuts off all light leakage at the lower edge of the shade. Into the narrow lips of the guides, the shade cloth extends sufficiently to eliminate any reflections.

LIGHT-PROOF LOUVRES

To give better circulation to the dark room, the Universal Light-Proof Louvre is widely used. It is the most efficient ventilation where absolute darkness is required. Write for further details.

WATSON MANUFACTURING COMPANY, INC.

EXECUTIVE OFFICE AND FACTORY

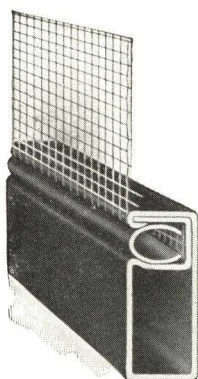
630 Taylor Street, JAMESTOWN, N. Y.

Experience

Watson products reflect over 50 years' experience in developing, manufacturing and installing products of superior quality. Modern processes, materials, finishes, in conjunction with specially designed up-to-date machinery assure products that are abreast of the times. A sincere desire to satisfy, careful adherence to details and specifications and constant improvements, moreover, have established an enviable reputation for quality and service. A central location provides ideal shipping facilities.



Watson Screens for Doors and Windows



The special feature of Watson Metal Frame Screens is the tubular construction, having great strength, stiffness and rigidity. The wiring edge is rounded, preventing cutting of the wire cloth. The double walls of the groove are soldered or welded together, which gives extra strength to take up the strain of the wiring and prevents twisting of the frame.

Standard wire cloth used is 16-mesh, regular weight, commercial bronze; heavy bronze cloth or cloth of other metals can be supplied when specified.

Twentieth Century Screens—Frames made of bronze, steel or other metals. Framework furnished in several widths for screens of all types.

Economy Screens—Frames of steel and with square edges, of welded construction and furnished in various types.

Note: All steel frame screens made of cold-rolled copper-bearing steel, hot electro-galvanized after fabrication. Wire cloth attached by splines of rustless Milloy metal (an alloy of zinc).

Bronze Frame Screens (Rustproof)—Finished in any of the bronze, brass or copper finishes or, if left unfinished, will eventually oxidize to a statuary bronze color.

Other Frame Metals—Aluminum, inconel, monel and other nickel and copper alloys, stainless steel, etc., may be furnished.

Roll Screens—Furnished in two types; namely, Twentieth Century and Efficiency. Furnished in bronze, steel or other metals. Bronze screens finished to match interior hardware. Steel screens enameled any color or grained to harmonize with interior trim.

Watson Wood Frame Insect Screens and Screen Doors—Frames are made of white pine with doweled corner construction. The wire cloth is held in the wiring groove by means of rattan splines. They are finished with three coats of synthetic enamel in any color selected.

Watson Metal Screen Doors—Carefully designed door construction, are manufactured in extra heavy, heavy, medium and light weights each of ample strength, stiffness and durability, and made of bronze, steel, aluminum, inconel, monel, stainless steel, etc.

Watson Venetian Blinds

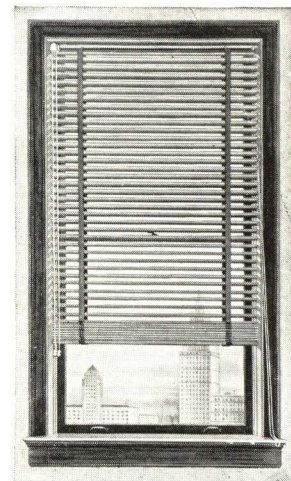
Watson Venetian Blinds are made in the following types: Single Lift, Double Lift, Plain Roller and Ratchet Roller.

Watson Venetian Blinds are made of bass-wood, with metal brackets and hardware. The slats are supported by woven fabric ladder tapes. All pulleys operate easily on hardened steel roller bearings, which are standard construction and provide for a minimum of effort in operation.

The slats are tilted by means of a worm and gear tilting device. The tilting bar is supported from the head bar by metal brackets.

Watson Blinds are equipped with automatic cord locks and cord equalizers.

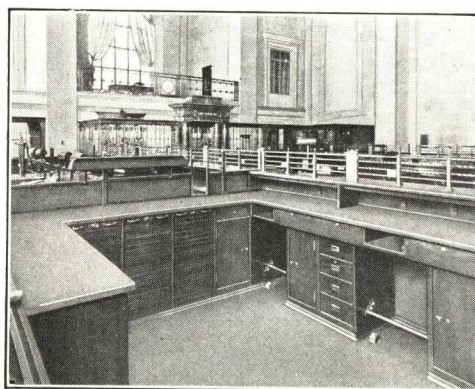
Bottom bar holding brackets, channel or rod guides, and other accessories can be supplied.



Watson Metal Furniture and Interior Equipment

The Watson Company manufactures a stock line of metal office furniture and special built-to-order interior metal equipment.

We maintain a large force of trained engineers to help architects, contractors and owners solve their

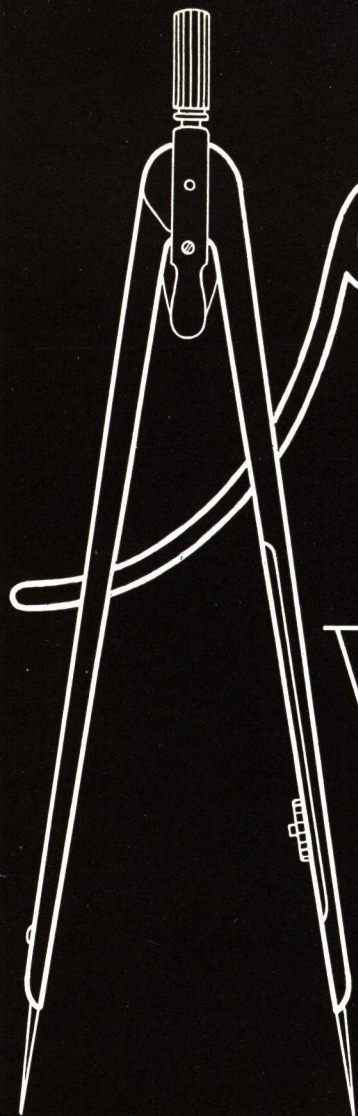


interior equipment problems. We are particularly interested in Steel and Bronze Equipment, including counters, desks, tables, filing cabinets and partitions, for Banks, Courthouses, Hospitals, Libraries and Public Buildings.

Watson Metal Access Panels

Watson Access Panels are constructed of heavy gauge steel, with rounded corners in two types: "Standard" and "Hinged." Finished in one light primer coat unless other finish is specified.

1 9 3 9

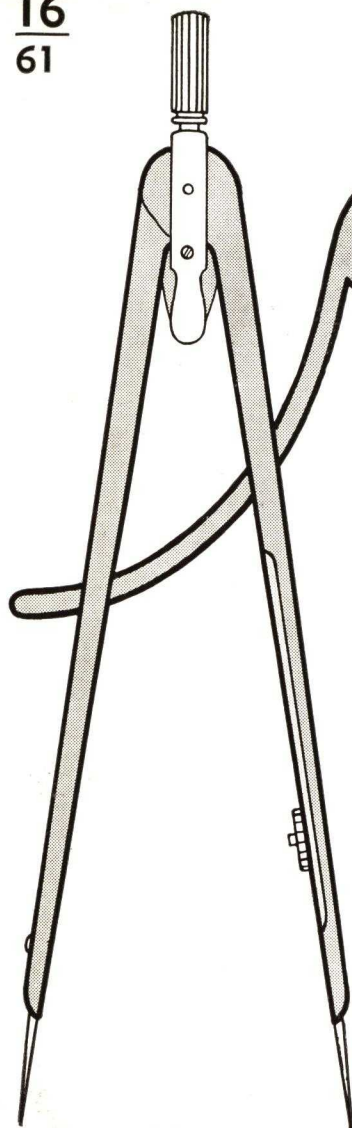


Accurate
METAL
WEATHER
STRIPS

**FOR
WINDOWS
AND
DOORS**



ACCURATE METAL WEATHER STRIP CO.
New York N. Y.



ACCURATE WEATHER STRIPPING

Double Hung Windows

- Weight and Pulley Type
See Page 4
- Spring Balance Type
See Page 5
- Spiral Balance Type
See Page 6
- Austral Type
See Page 7

Casement Windows

- Inswinging Wood
See Page 7
- Outswinging Wood
See Page 8
- Steel Casements
See Page 8

Entrance Doors

See Page 9

Sliding Doors

See Page 12

Extruded Saddles

See Page 10

ccurate METAL

FOR VARIOUS TYPES OF WOOD

WEATHER STRIPPING A NECESSARY FEATURE OF MODERN BUILDING CONSTRUCTION

The importance of correct, carefully planned weather stripping cannot be stressed too forcefully. Today—with the prevention of heat leakage a necessary factor in insulation of modern building construction—the requirements of weather stripping also become increasingly exacting. It is therefore of prime importance not only that all windows and exterior doors be weather stripped—but that the stripping used should be of the construction and form best suited to each particular type of sash or door . . . and that it have the necessary strength and durability to assure years of satisfaction even under severe conditions.

ITS IMPORTANCE WITH AIR CONDITIONING SYSTEMS

As efficient weather stripping is an absolute requirement with air conditioning and temperature control operations, its importance is vividly accentuated. Naturally, the economical operation of air conditioning and heating systems depends, in good part, on the elimination of one of the greatest opportunities for air leakage—the leakage around doors and windows.

ONE TYPE CANNOT SERVE ALL CONDITIONS

As modern architecture demands a variety of sash and door constructions, it is obvious that one system of weather stripping cannot meet all requirements accurately and efficiently. It is therefore necessary that a system of weather stripping designed to meet the peculiarities of each type of window and door be used. On the following pages we illustrate the most widely used types and combinations of ACCURATE Metal Weather Strips—each type designed for particular requirements. In addition to these types, we manufacture numerous special strips for unusual requirements. We are also equipped to roll strip to individual specifications; the cost is moderate.

TYPES OF MATERIALS AND QUALITY

While zinc and bronze are the two metals most commonly used for metal weather strips, we can also supply our equipment in other metals such as brass, aluminum, stainless steel, etc.

The zinc metal used is of purest quality, specially rolled and tempered to our own specification. In fabrication, the zinc is sheared and formed across the grain, thereby giving it considerably more rigidity than regular ribbon zinc. The sheet zinc, in addition, gives greater resistance to extreme temperature changes.

DISTRIBUTED THROUGHOUT THE UNITED STATES

The ACCURATE Metal Weather Strip Co., maintains, in connection with its Main Office at New York, an experienced engineering department. In addition, the company is nationally represented in the principal cities. All agents are thoroughly experienced and equipped to render efficient service through trained mechanics. Write to us for address of our nearest agent.

Accurate Caulking Compound

This compound contains the highest grade of required ingredients. It remains pliable indefinitely. Furnished in several colors in Knife Grade and Gun Grade. Highly efficient for sealing joints between masonry and windows and door frames. HOW TO SPECIFY: All joints around outside window and door frames shall be caulked with ACCURATE Caulking Compound in accordance with manufacturer's standards.

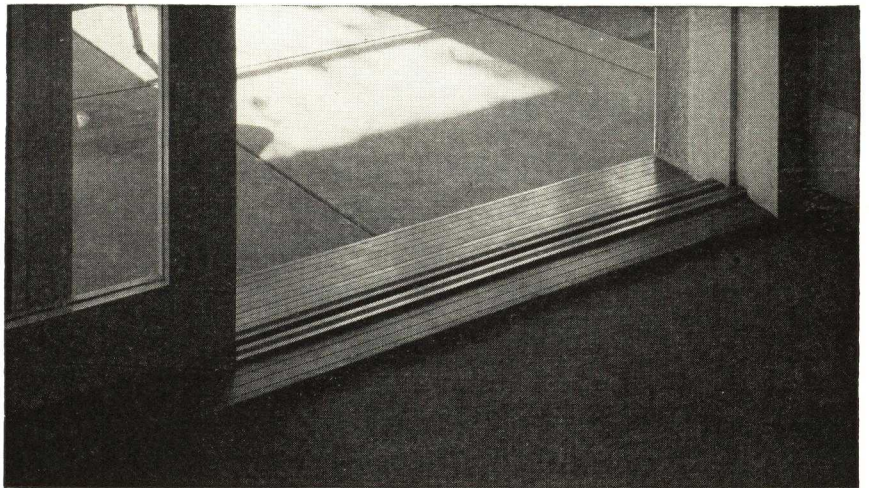
WEATHER STRIPS AND SADDLES AND METAL WINDOWS AND DOORS

Accurate now Offers . . .

EXTRUDED METAL WEATHER STRIPPING AND SADDLES FOR EXTERIOR SLIDING DOORS

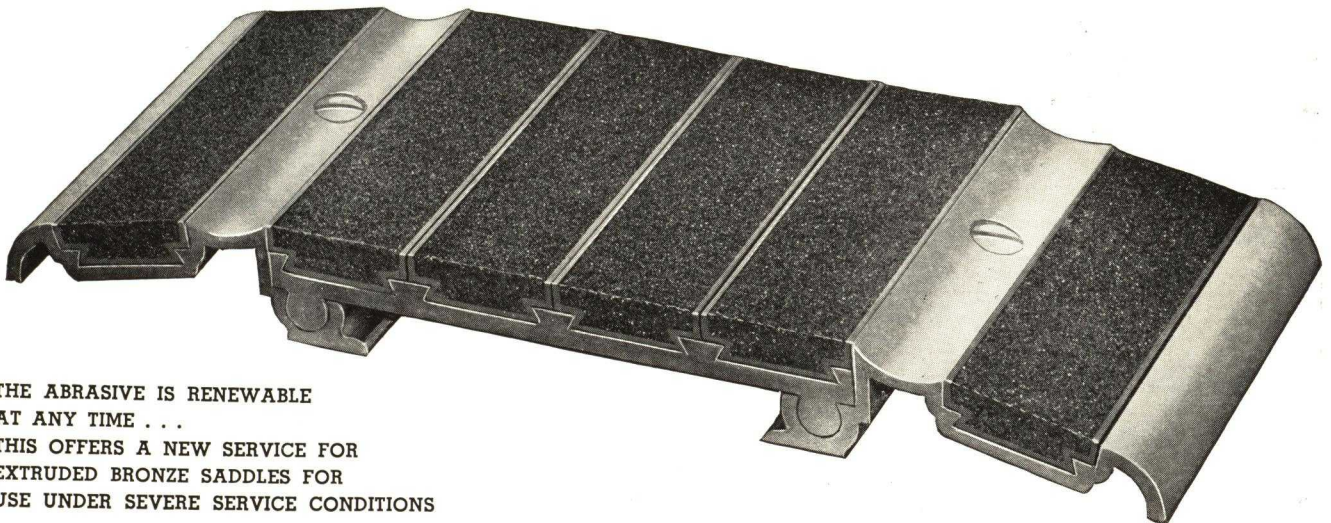
Weather stripping of exterior sliding doors has always presented difficulties. This is particularly true at the bottom of the door—where the ordinary type of saddle has not proved satisfactory, as it is not primarily designed for this type door.

ACCURATE now offers an ingenious and practical type of extruded bronze saddle and weather stripping. Both were designed—in co-operation with architects—specifically for exterior sliding doors, and both have proved entirely satisfactory in actual use under severe conditions. The weather stripping is for the head, jambs and meeting stiles of the double sliding doors; details of actual typical installations sent on request. The saddles, for both single and double sliding doors, are shown full size on page 12.



RESIDENCE, SCARSDALE, N. Y.
Architects, Fordyce and Hamby and George Nelson
Building Contractor, August Nelson

A RENEWABLE ABRASIVE TYPE OF EXTRUDED SADDLES FOR EXTERIOR DOORS



THE ABRASIVE IS RENEWABLE
AT ANY TIME . . .
THIS OFFERS A NEW SERVICE FOR
EXTRUDED BRONZE SADDLES FOR
USE UNDER SEVERE SERVICE CONDITIONS

WEATHER STRIPPING DOUBLE HUNG WINDOWS



SERIES No. 10 EQUIPMENT (Corrugated)

This type is adapted to all types of sliding sash. Covers full width at head, sill and pulley stiles.

No.	Head Strip	Sill Strip	Meeting Rail	Upper Sides	Lower Sides	Sash Thickness
10A	No. 2	No. 3	No. 7 and 8	No. 2CX	No. 4C	1 3/8
10B	No. 3	No. 6	No. 7 and 8	No. 3CX	No. 5C	1 3/4
10C	No. 6	No. 10	No. 7 and 8	No. 10CX	No. 9C	2 1/4

Furnished as standard in No. 9 Gauge Zinc (Thickness .018).
Can be furnished in heavier material where required.

HOW TO SPECIFY—All double hung windows shall be equipped with "ACCURATE" Metal Weather Strips, Series No. 10 equipment, cross grain zinc (or cold rolled bronze) in accordance with manufacturer's standards.

SERIES No. 20 EQUIPMENT

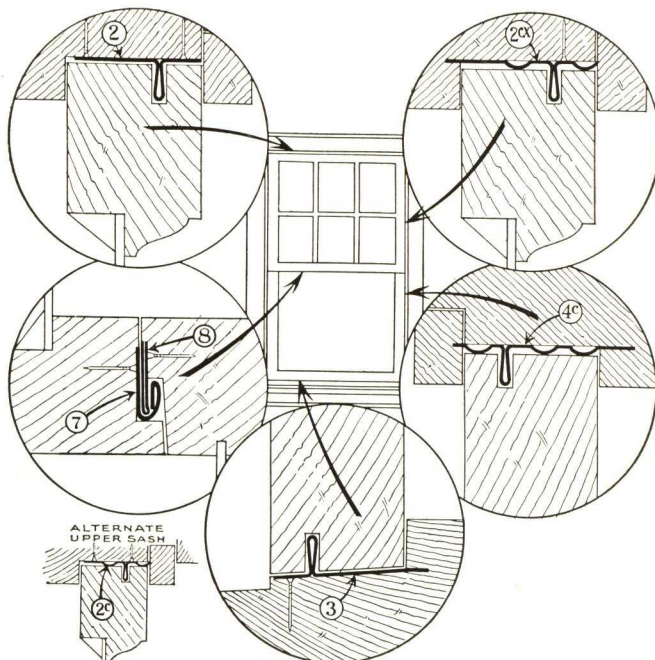
This equipment gives actual contact at sash cord borings and on pulley stiles. The pulley stile strips are attached with screws permitting easy removal. After sash are squared, variation in alignment is corrected by packing out the No. 11 type strip with waterproof Ruberoid strips so that the pulley stile members are parallel.

	Type	Gauge	Thickness	Attached
Head	1	9	.018	Nailed
Sill	17A	12	.028	"
Meeting Rail	7C 8C	11 9	.024 .018	"
Pulley Stiles	11	9	.018	Screwed

HOW TO SPECIFY—All double hung windows shall be equipped "ACCURATE" Metal Weather Strips, Series No. 20 equipment, with heavy duty 12 gauge sill member and double tongue side members, all cross grain zinc (or cold rolled bronze) in accordance with manufacturer's standards.

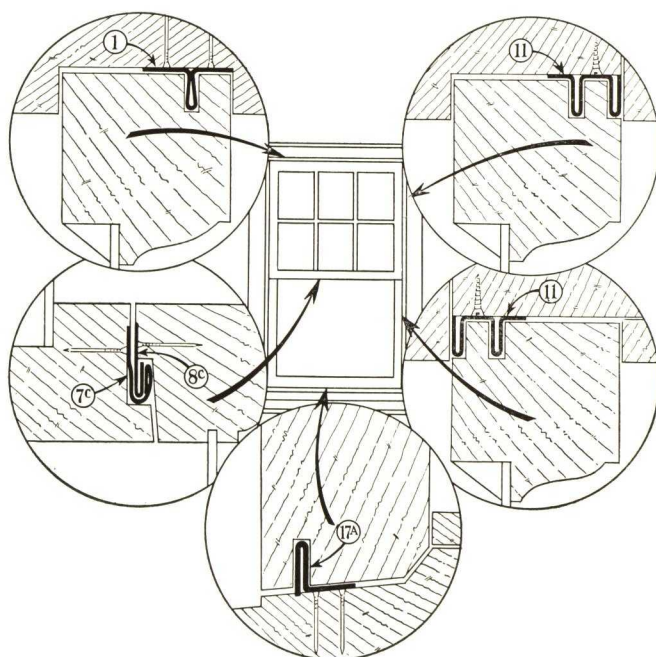
SERIES No. 10 EQUIPMENT

Inexpensive Type
Generally Used With Stock Sash



SERIES No. 20 EQUIPMENT

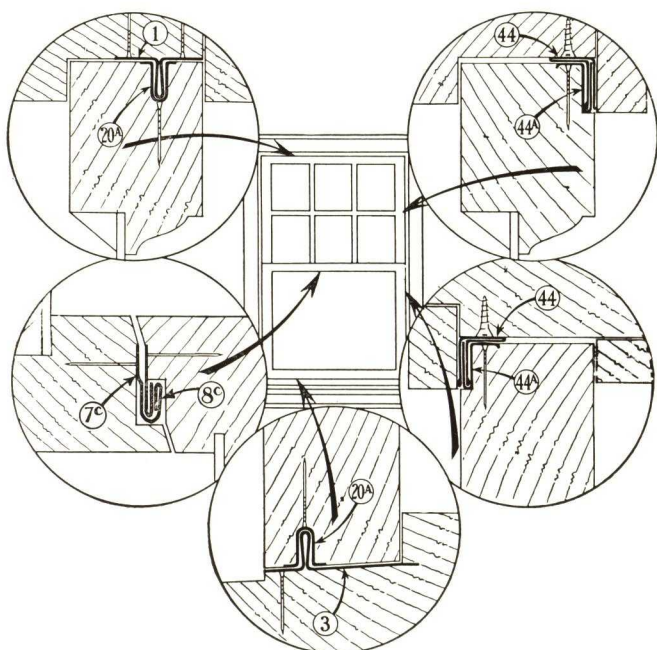
A Double Groove Type With
High Efficiency • For Better Class Work



WEATHER STRIPPING DOUBLE HUNG WINDOWS

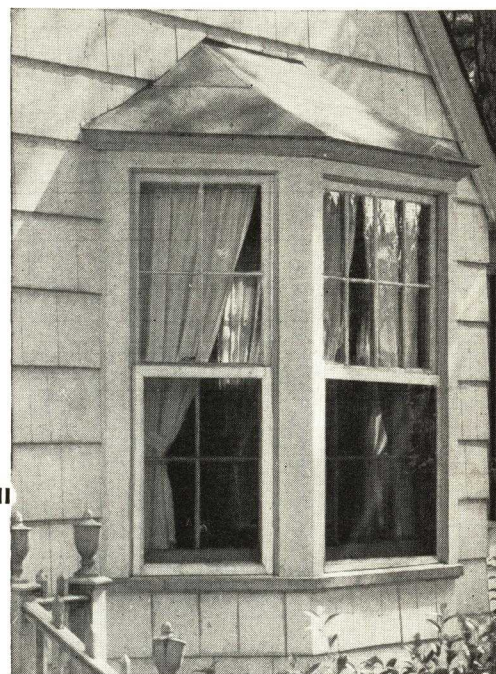
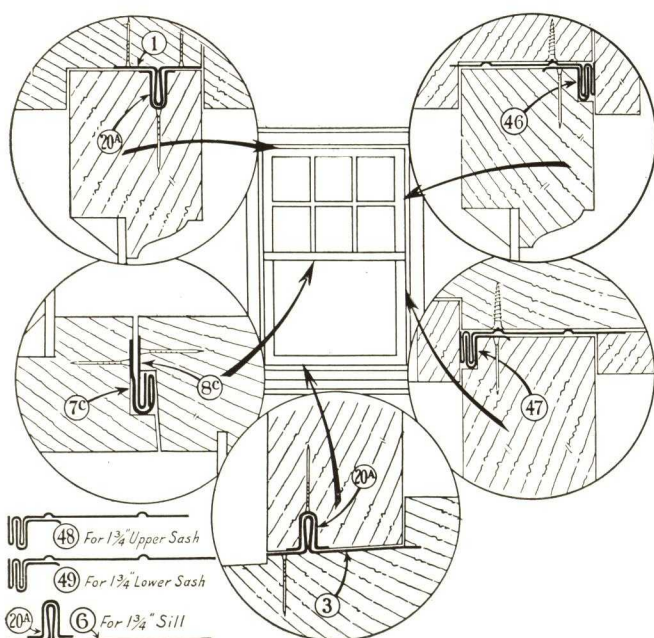
SERIES No. 40 EQUIPMENT

A Two Member Type • Metal to Metal Contact Especially Adapted to Thin Sash. Also for Spring Balance Type



SERIES No. 50 EQUIPMENT

Similar to No. 40 Except Pulley Stile Members. No. 46, 47 Cover Full Width of Pulley Stile



SERIES No. 40 EQUIPMENT

This type is not affected by normal swelling or shrinking of the sash and frames.

Flexibility of the pulley stile members assures easy operation of sash, regardless of weather conditions.

Head	Sill	Meeting Rails		Pulley Stiles	Sash Sides
No. 1 & 20A	No. 3 & 20A	No. 7C & 8C		No. 44	No. 44A
.018	.018	.024	.018	.018	.018

HOW TO SPECIFY—All double hung windows shall be equipped with "ACCURATE" Metal Weather Strips, Series No. 40 equipment, metal to metal contact throughout, all cross grain zinc, in accordance with manufacturer's standards.

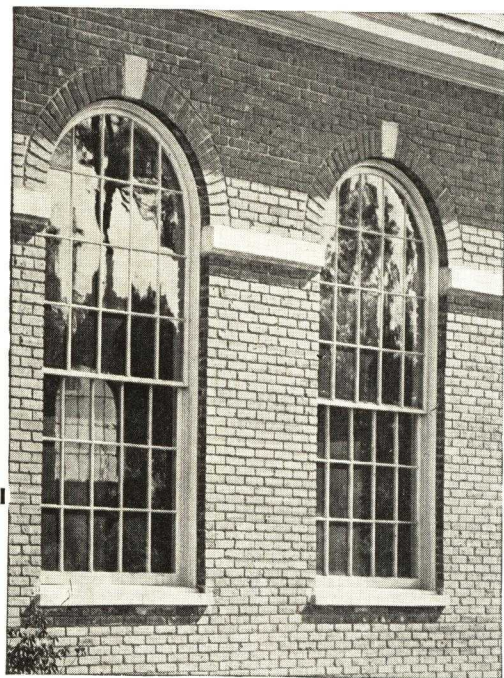
SERIES No. 50 EQUIPMENT

Pulley stile strips are attached with screws.

No.	Head Strip	Sill Strip	Meeting Rails		Upper Sides	Lower Sides	Sash Thickness
50A	No. 1 & 20A	No. 3 & 20A	No. 7C & 8C		No. 46 comb.	No. 47 comb.	1⅜
50B	No. 1 & 20A	No. 6 & 20A	No. 7C & 8C		No. 48 comb.	No. 49 comb.	1¾
Thick-ness	.018	.018	.018	.024	.018	.018	.....

HOW TO SPECIFY—All double hung windows shall be equipped with "ACCURATE" Metal Weather Strips, Series No. 50 equipment, metal to metal contact throughout, all cross grain zinc, in accordance with manufacturer's standards.

WEATHER STRIPPING DOUBLE HUNG WINDOWS



SERIES No. 30 EQUIPMENT

A heavy No. 16 gauge channel is screwed to the pulley stiles and engages a channel type lining on the sash.

Head	Sill		Meeting Rails		Sash Sides
No. 1	No. 17A or 12		No. 7C & No. 8C		No. 11A
.018	.028	.045	.024	.018	.045

HOW TO SPECIFY—All Double hung windows shall be equipped with "ACCURATE" Metal Weather Strips, Series No. 30 equipment, with heavy duty 16 gauge sill member, all cross grain zinc (or cold rolled bronze) in accordance with manufacturer's standards.

Note: Specify thickness of sill member desired.

SERIES No. 35 EQUIPMENT

The interlocking strip offers an air tight and weather tight construction without interfering with the operation of the balance. It also allows for expansion and contraction of the sash.

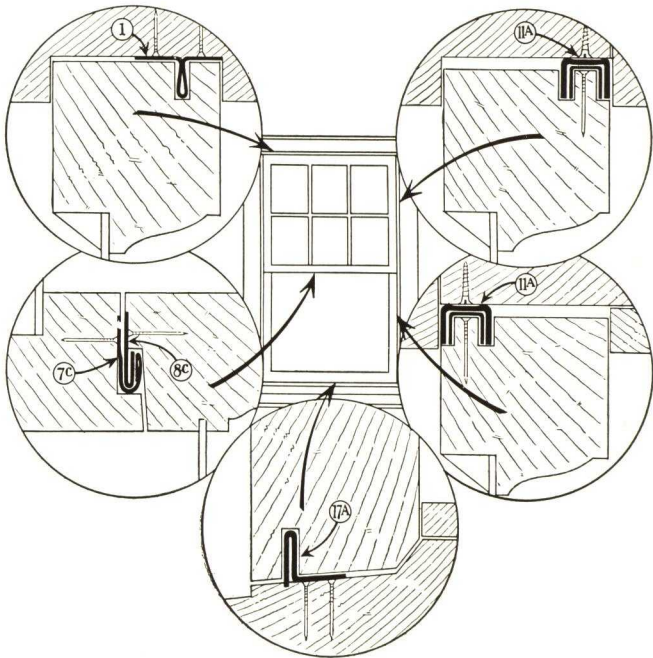
Over 10,000 windows equipped in one project in Arlington, Va.

Head Strip	Sill Strip	Meeting Rails		Upper Sides	Lower Sides	Sash Thickness
No. 2	No. 3	No. 7	No. 8	No. 61	No. 60	1 3/8
.018	.018	.024	.018	.018	.018	

HOW TO SPECIFY—All double hung windows with Unique Sash Balances shall be equipped with "ACCURATE" Series No. 35, all cross grain zinc, in accordance with manufacturer's standards.

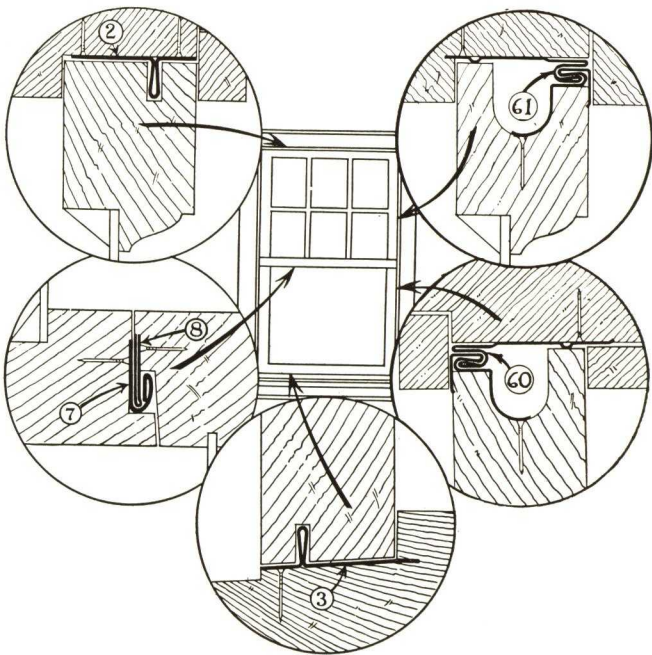
SERIES No. 30 EQUIPMENT

For Heavy Sash in Schools, Office, Hospital and Institutional Buildings



SERIES No. 35 EQUIPMENT

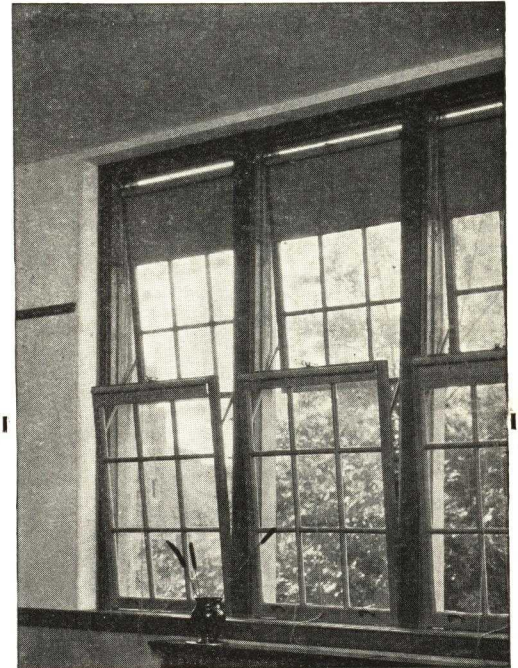
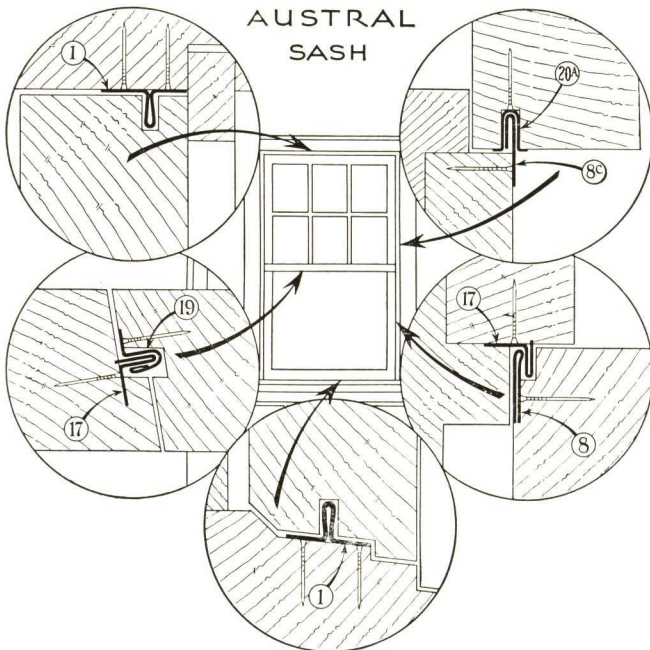
Designed Especially for Use with Unique Balance Equipment



WEATHER STRIPPING AUSTRAL TYPE SASH AND IN-SWINGING WOOD CASEMENT WINDOWS

SERIES No. 70 EQUIPMENT

Designed Especially for Austral Sash



SERIES No. 70 EQUIPMENT

We have weather-proofed many austral type windows with this equipment, and obtained high efficiency in results.

Other types of balanced or revolving sash require varying weather strip members. We will submit, upon request, shop drawings showing weather strip applied on these other types of sash.

Head Strip	Sill Strip	Meeting Rail	Upper Sides	Lower Sides	
No. 3	No. 1	No. 19 & No. 17	No. 8C & No. 20A	No. 17	No. 8
.018	.018 .028	.024	.018	.024	.018

HOW TO SPECIFY—All Austral types sash shall be equipped with "ACCURATE" Metal Weather Strips, Series No. 70 equipment, all cross grain zinc (or cold rolled bronze) in accordance with manufacturer's standards.

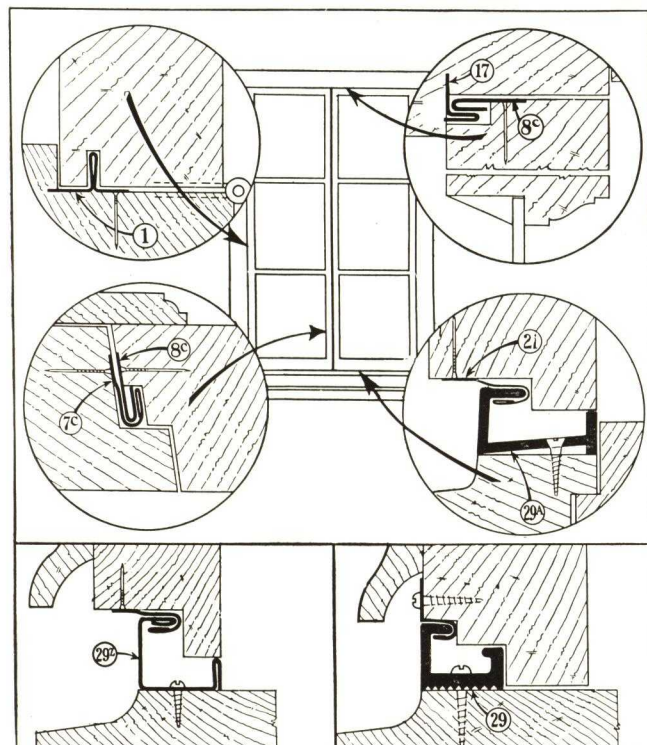
Note: Specify thickness of sill desired.

SERIES No. 80 EQUIPMENT

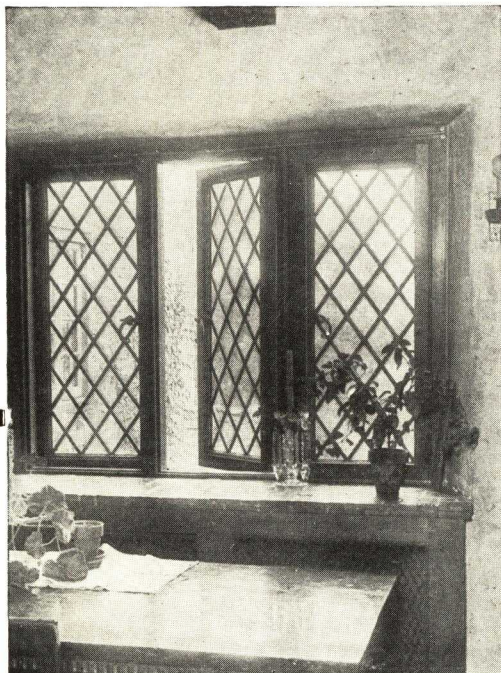
Special attention is given to inswinging casement windows to prevent water leakage. Trough type equipment at sill is essential to effect proper drainage.

No.	Head and Lock Stile	Hinged Stiles	Sill	Meeting Stiles	Sash Thickness
80A	17 & 8C .024 | .018	No. 1 .018	29A extruded	7C & 8C .024 | .018	1 3/4 to 2 1/4
80B	17 & 8C .024 | .018	No. 1 .018	29 extruded	7C & 8C .024 | .018	1 1/8 to 1 3/8
80C	17 & 8C .024 | .018	No. 1 .018	29ZINC .031	7C & 8C .024 | .018	1 1/8 to 1 3/8

HOW TO SPECIFY—All inswinging wood casements shall be equipped with "ACCURATE" Metal Weather Strips, Series No. 80 equipment with special extruded bronze (or zinc) sills to prevent any possible water leakage, all in accordance with manufacturer's standards.



WEATHER STRIPPING OUT SWINGING CASEMENT WINDOWS AND STEEL SASH



SERIES No. 90 EQUIPMENT

Where it is desired to use a brass saddle at sill, we recommend the No. 23 as illustrated on page 9.

Head Strip		Sill Strip		Meeting Stiles		Hinge Stile	Lock Stile	
No. 17 & 8C		No. 17 & 8C		No. 17 & 8C		No. 1	No. 17 & 8C	
.024	.018	.024	.018	.024	.018	.018	.024	.018

HOW TO SPECIFY—All outswinging wood casements shall be equipped with "ACCURATE" Metal Weather Strips, Series No. 90 equipment, all cross grain zinc, in accordance with manufacturer's standards.

SERIES No. 100 EQUIPMENT For Steel Sash

There are many varying details in construction of steel sash, requiring bronze members of different sizes and shapes.

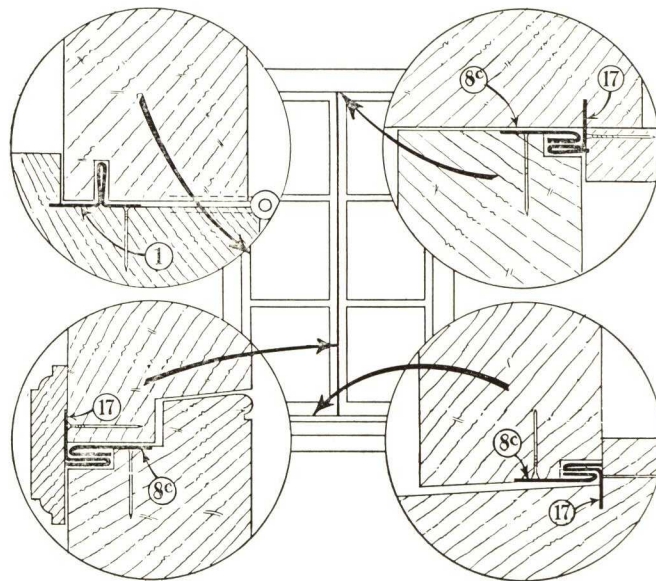
The drawing at right illustrates the most efficient type of Accurate Steel Sash Equipment for average conditions.

Submit detail and name of manufacturer of sash to be weather-stripped.

Strip is in one piece with double thickness at clamping point. Felt attached to frame prevents leakage around it.

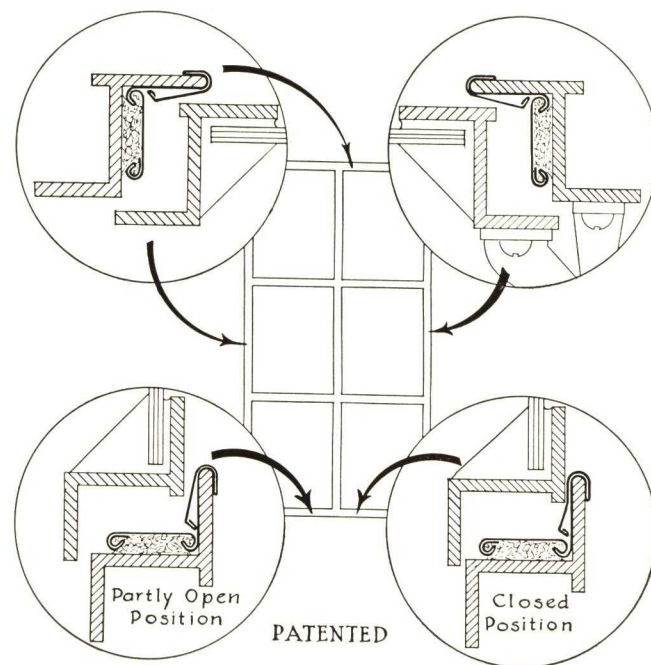
HOW TO SPECIFY—All steel casements shall be equipped with "ACCURATE" Metal Weather Strips, Series No. 100 equipment, special spring bronze, in accordance with manufacturer's standards.

SERIES No. 90 EQUIPMENT Simple in Design But Thoroughly Effective



SERIES No. 100 EQUIPMENT An Efficient Accurate Design for Most Steel Sash Equipment • For Types Applicable to Each Steel Sash

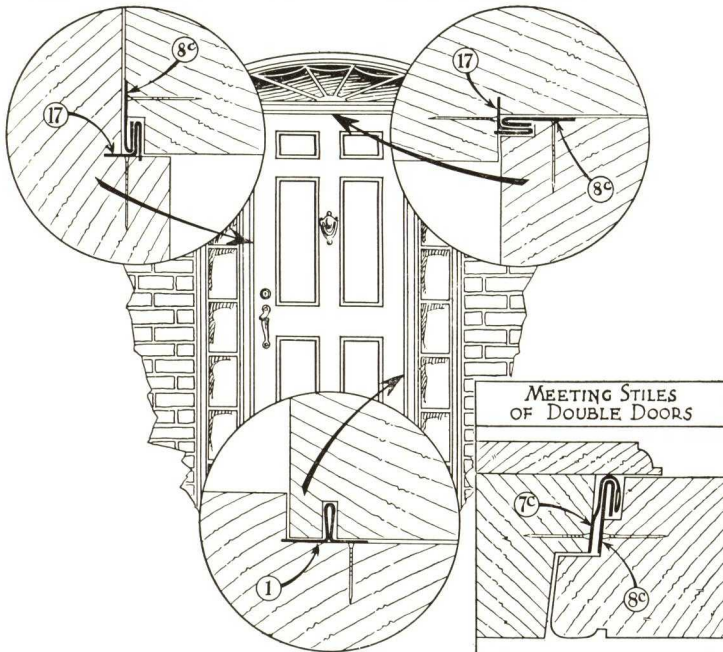
Manufacturer send us Sash Manufacturer's name for Special Detail.



WEATHER STRIPPING ENTRANCE DOORS

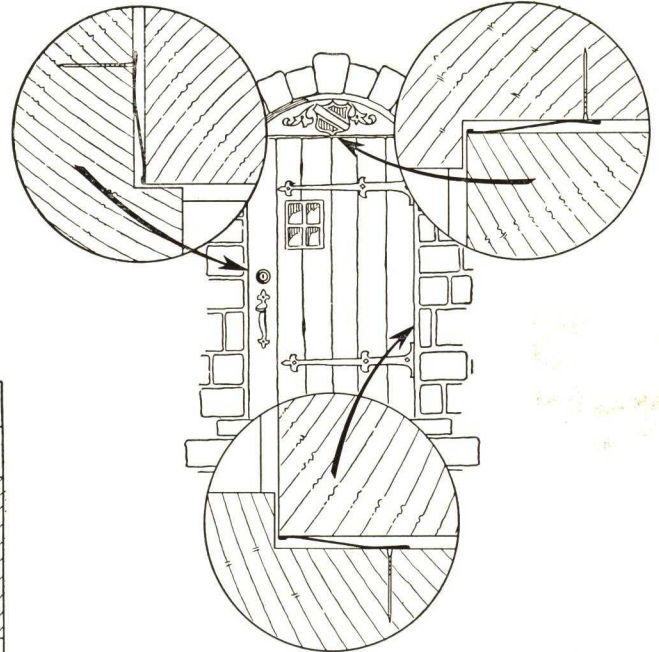
SERIES NO. 500 EQUIPMENT

Interlocking Type Weather Stripping



SERIES NO. 600 EQUIPMENT

Spring Bronze Type Weather Stripping



WEATHER STRIPPING FOR JAMBS AND HEADS

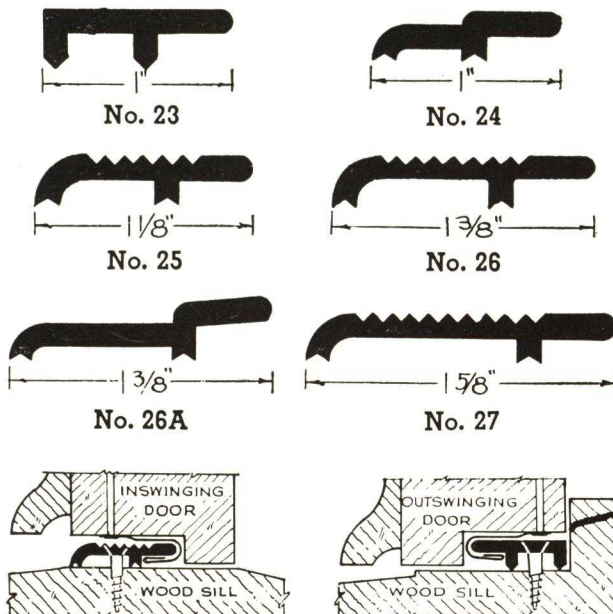
Above are shown two types of weather stripping for entrance doors opening in. While the Interlocking Type is preferable, Spring Bronze Strips are used in some sections of the country for doors, transoms and hinged windows instead of interlocking weather strip. Spring Bronze is furnished in widths of 3/4 in.,

1 in., 1 1/8 in., 1 1/4 in., 1 3/8 in., 1 1/2 in., 1 3/4 in and with double hemmed or beaded edge for heads and jambs.

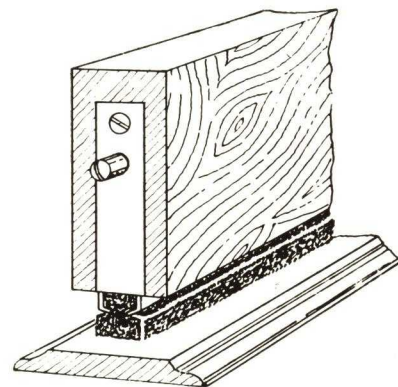
HOW TO SPECIFY—(Specify equipment number, with width of spring bronze strip for jamb and head, also number of saddle section desired.)

EXTRUDED BRASS SILL PIECES

Adapted principally for application on top of existing thresholds and where the doors are protected. Under normal conditions these sill pieces are weatherproof.



DRAFT PROOFING INSIDE DOORS



For inside doors, where it is desired to prevent draft from coming under the doors, the ACCO Automatic Door Bottom should be used. It contains a metal shell encasing a felt strip which drops as the door is closed and is automatically raised as the door opens.

Complete details will be furnished upon request.

"ACCURATE" SECTIONAL EXTRUDED SADDLES FOR EXTERIOR DOORS OPENING IN

(Note: For One Piece Extruded Saddles See Page 14)

ADVANTAGES OF SECTIONAL EXTRUDED SADDLES

"ACCURATE" Sectional Extruded Saddles combine features of flexibility not obtainable in the one piece type saddles. The extension members are interchangeable and carried in stock in standard widths from one inch to seven inches, with one inch variant, making it possible to extend or decrease the width of interior or exterior members to meet practically all conditions. For example, the width of saddles 28B, 28C, 32C and 32B may have extensions of seven inches on each side of the main member or the entire saddle reduced to four and one half inches.

SELF-LEVELING PRINCIPLE—A most important feature is the Self-Leveling Principle of the pivoted extension members. This is particularly important when floor and sill levels vary. Both extension members may be screwed in place or the inner extension member may be left loose and made to extend over mats, runners or similar floor coverings.

SADDLES FOR NORMAL EXPOSURE

Under certain conditions we recommend a wide saddle, the width being governed by the entrance details.

NO. 28B—This saddle, besides having the interlocking water stop, also has an outside groove which acts to stop rain from driving under the door.

NO. 28C—This is similar in construction to 28B but does not have the outer water stop and should be used when doors are less exposed.

NO. 32C—For use similar to 28B but has water groove and drainage holes in the middle of the center member.

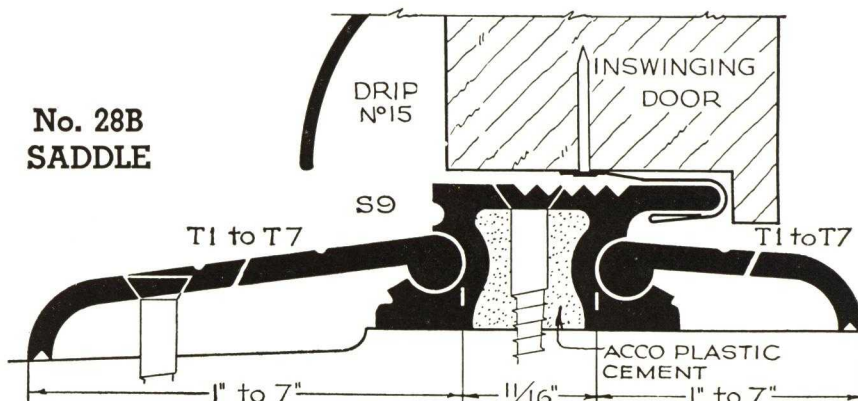
SADDLES FOR EXCEPTIONAL EXPOSURE

NO. 34A—This saddle is designed so that any water which might be forced past the weather strip seal, drips into trough where it is drained out through conveniently placed weep holes.

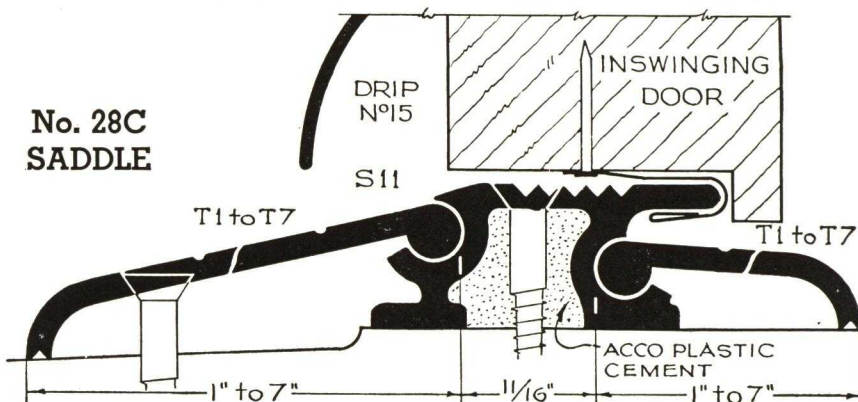
Alternate: Center member S15 may be used instead of S13 (see page 15), complete details on request.

The extruded brass raindrip No. 15 is recommended for use in all installations for doors opening in.

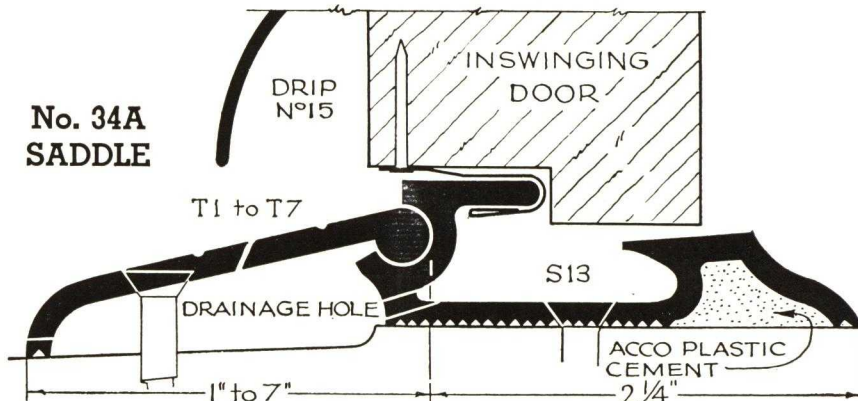
**No. 28B
SADDLE**



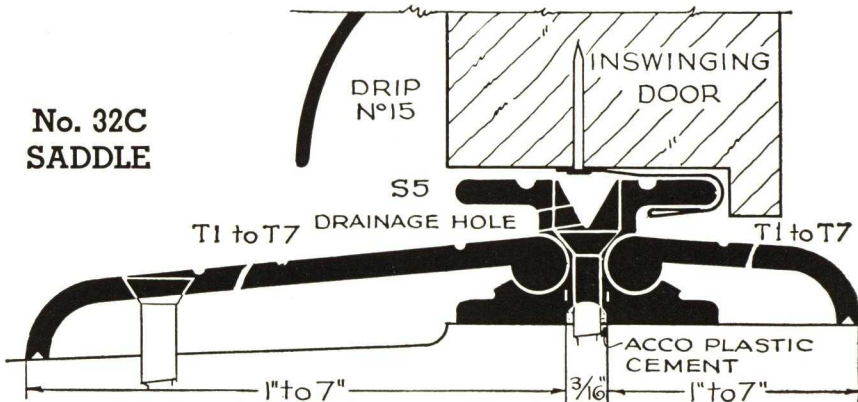
**No. 28C
SADDLE**



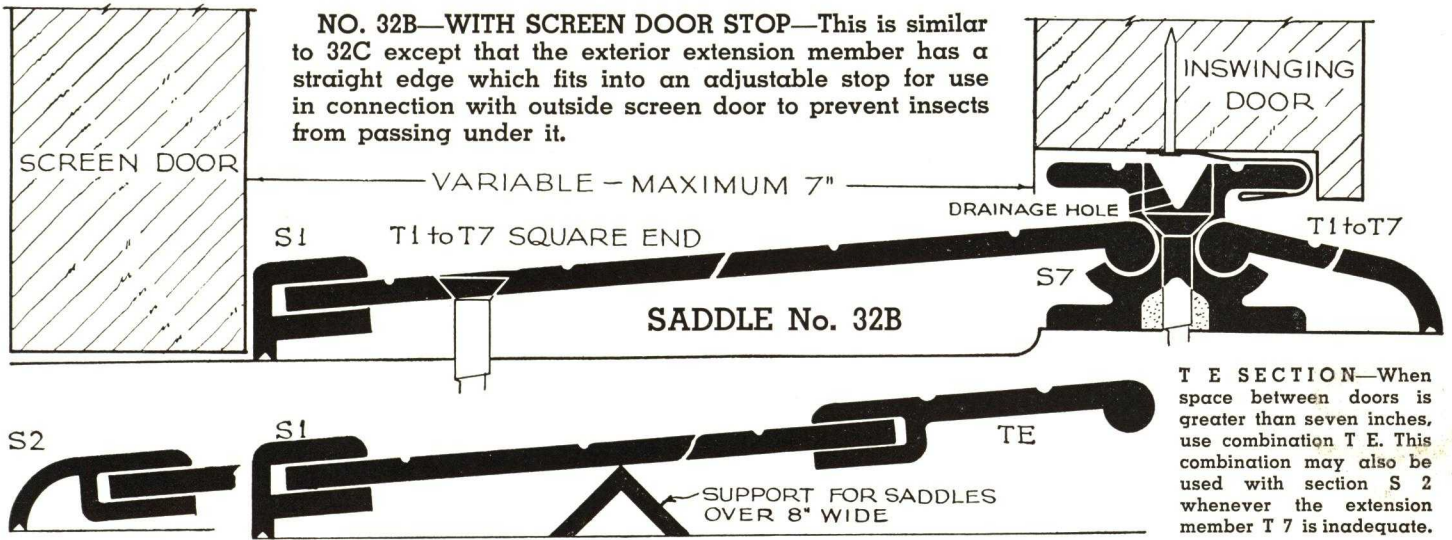
**No. 34A
SADDLE**



**No. 32C
SADDLE**

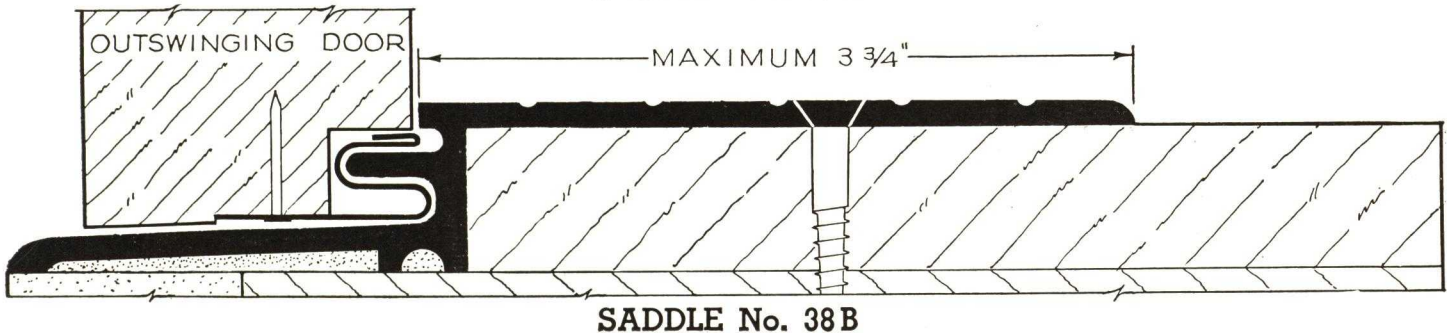
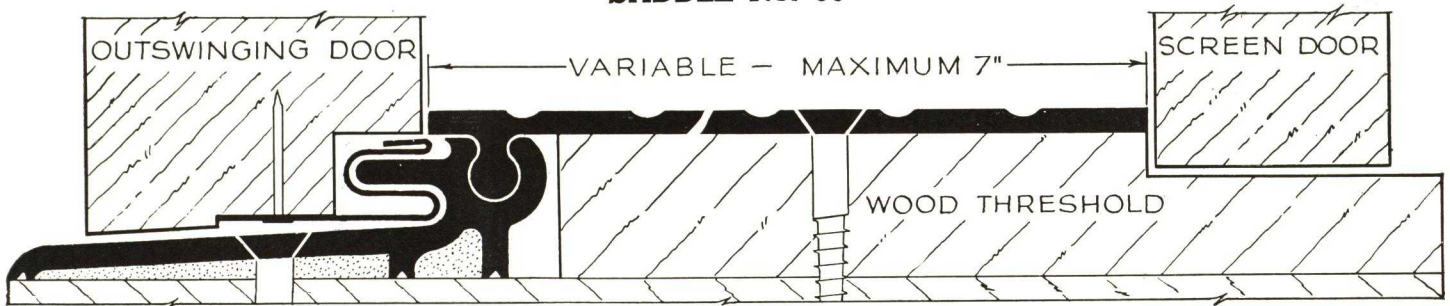
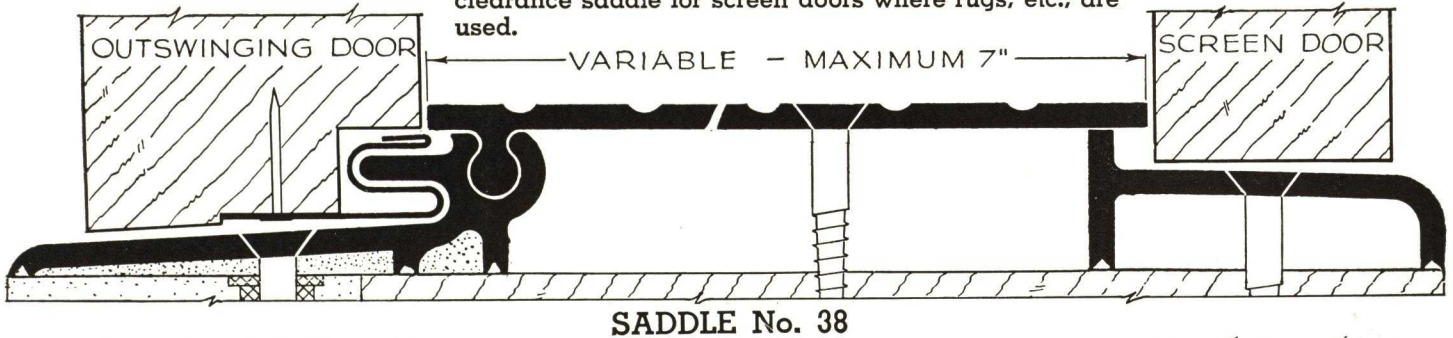


"ACCURATE" SECTIONAL UNIT SADDLES FOR EXTERIOR DOORS OPENING IN • AND WITH SCREEN DOOR STOP



"ACCURATE" SECTIONAL UNIT SADDLES FOR EXTERIOR DOORS OPENING OUT

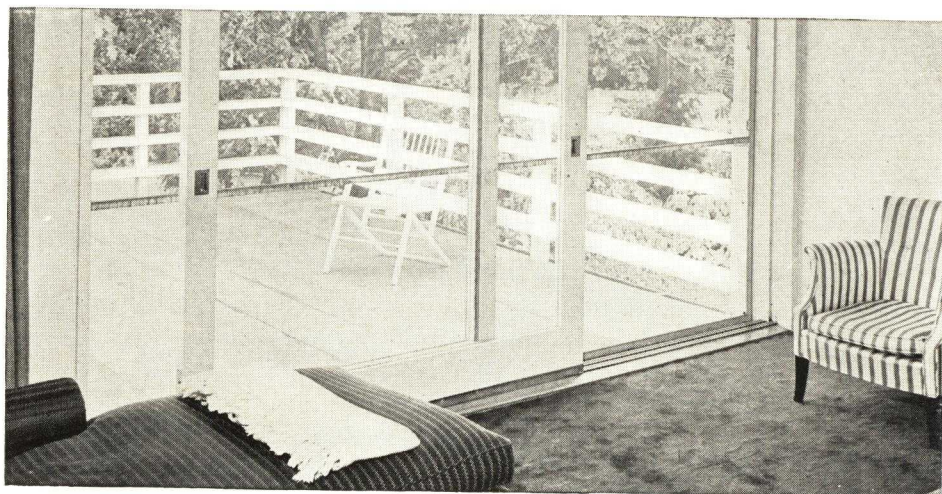
Provides a combination weatherproof saddle and a clearance saddle for screen doors where rugs, etc., are used.



"ACCURATE" SECTIONAL UNIT SADDLES FOR EXTERIOR SLIDING DOORS TO PORCHES

Photo at right shows an actual installation of double sliding doors, where Saddle No. 850 was used. This newly constructed residence in Scarsdale, N. Y., is located at the top of a high cliff where it is subjected to extreme exposure. (Architects, Fordyce and Hamby and George Nelson. Building contractor, August Nelson.) The installation has proved thoroughly weatherproof. Full size weatherstripping details furnished upon request.

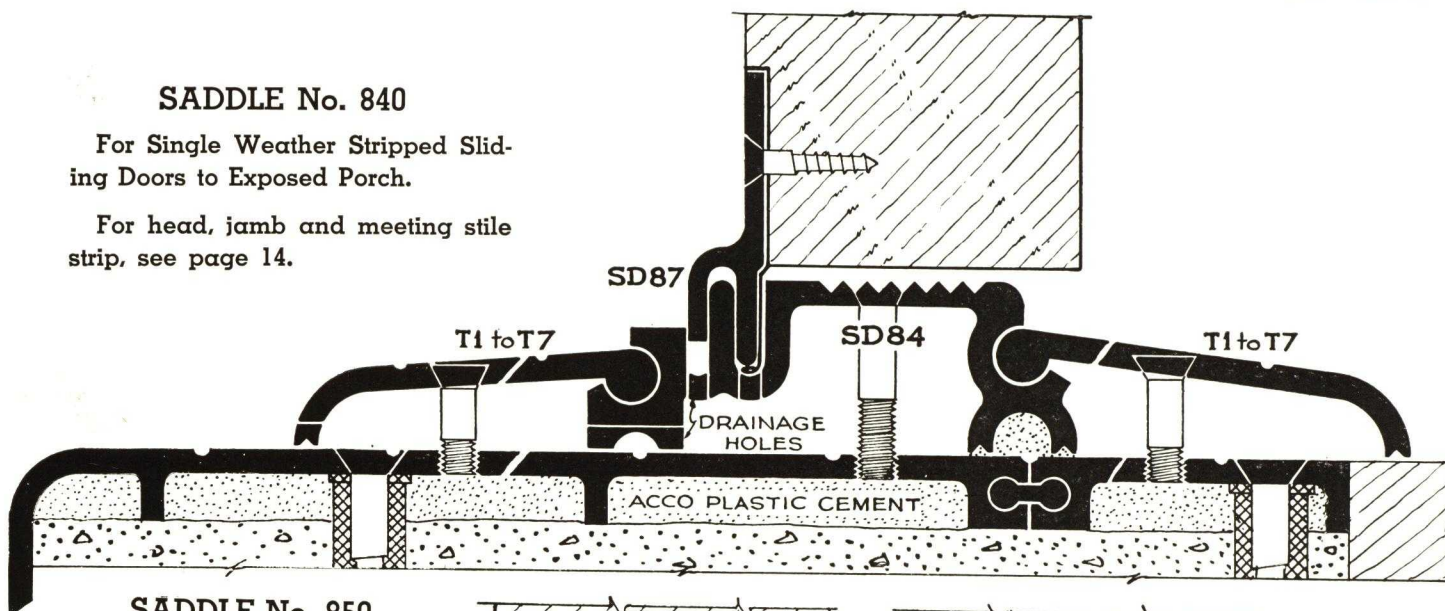
For weatherstripping jambs, head and meeting stiles, use Sections No. 105, No. 106 and No. 108 (see page 14).



SADDLE No. 840

For Single Weather Stripped Sliding Doors to Exposed Porch.

For head, jamb and meeting stile strip, see page 14.

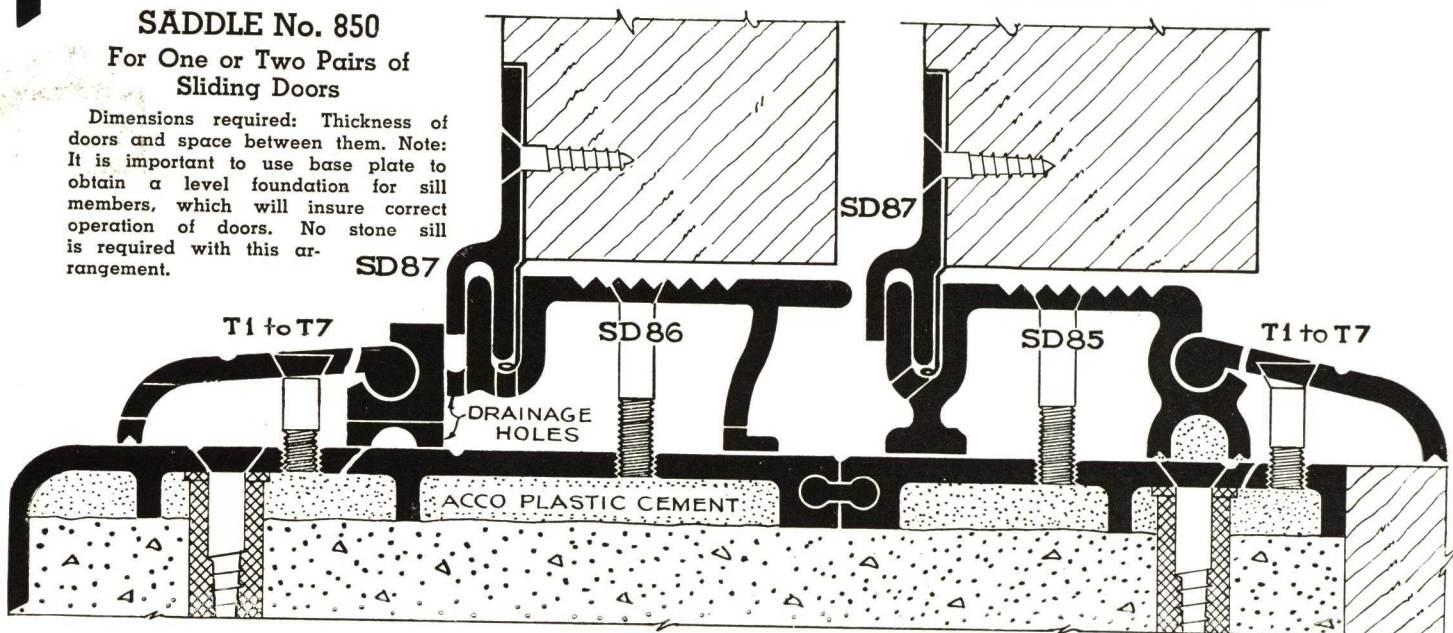


SADDLE No. 850

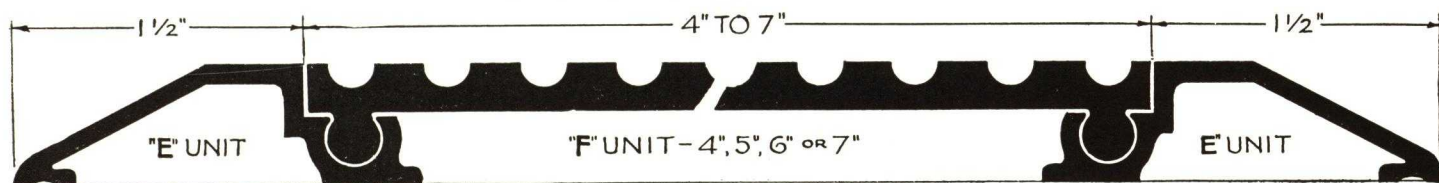
For One or Two Pairs of Sliding Doors

Dimensions required: Thickness of doors and space between them. Note: It is important to use base plate to obtain a level foundation for sill members, which will insure correct operation of doors. No stone sill is required with this arrangement.

SD87

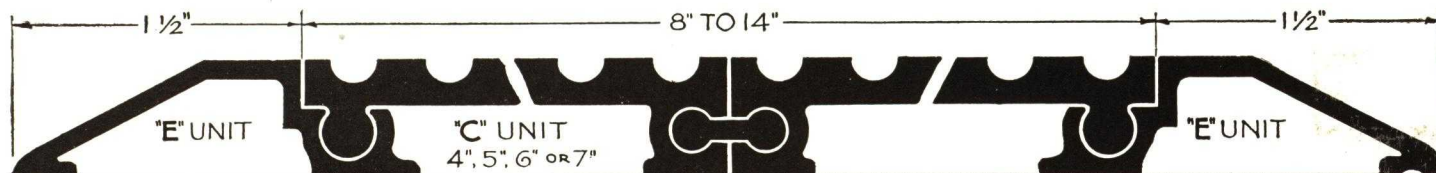


"ACCURATE" SECTIONAL UNIT FLAT SADDLES FOR COMMERCIAL BUILDINGS



TYPE "F" UNIT SADDLE

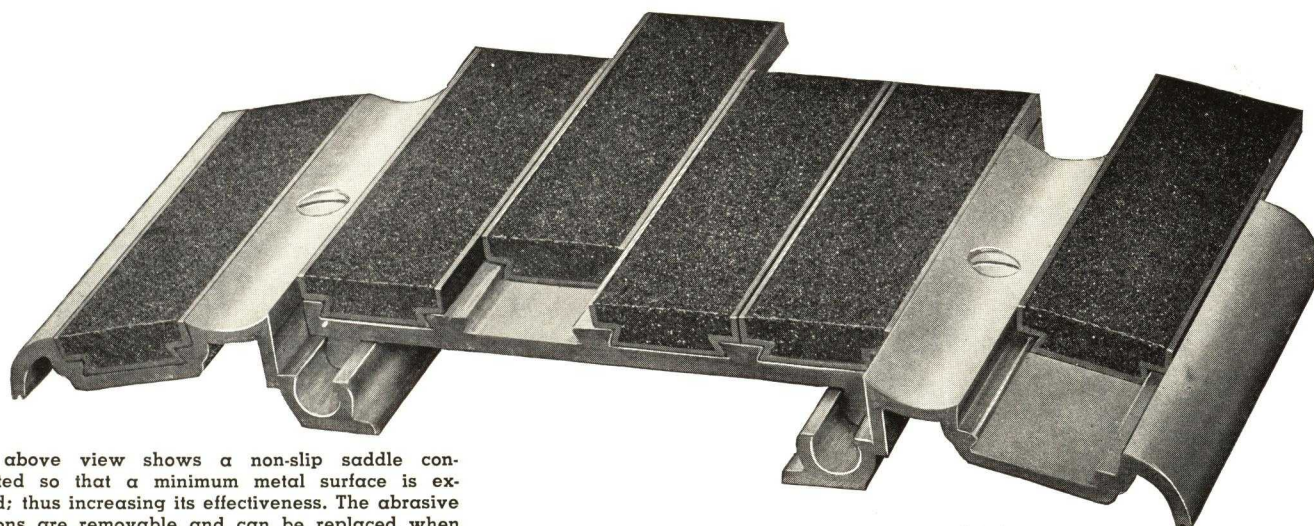
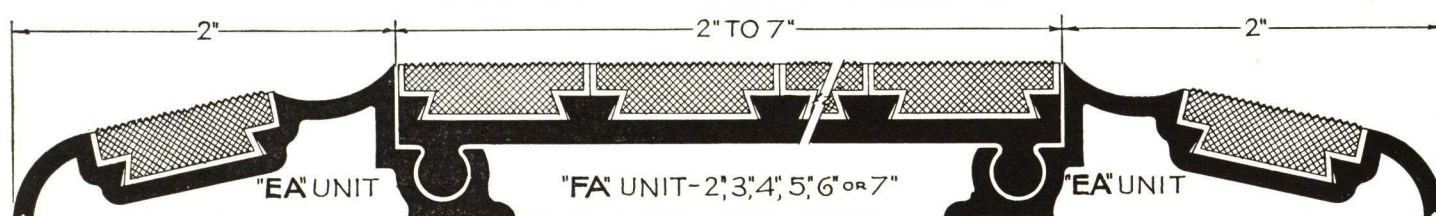
Maximum width for this combination 10"



TYPE "C" UNIT SADDLE

This Saddle can be furnished to any width desired

"ACCURATE" REFILLABLE ABRASIVE TYPE SADDLE FOR COMMERCIAL BUILDINGS



The above view shows a non-slip saddle constructed so that a minimum metal surface is exposed; thus increasing its effectiveness. The abrasive sections are removable and can be replaced when worn.

SPECIAL WEATHERSTRIPPING PROBLEMS

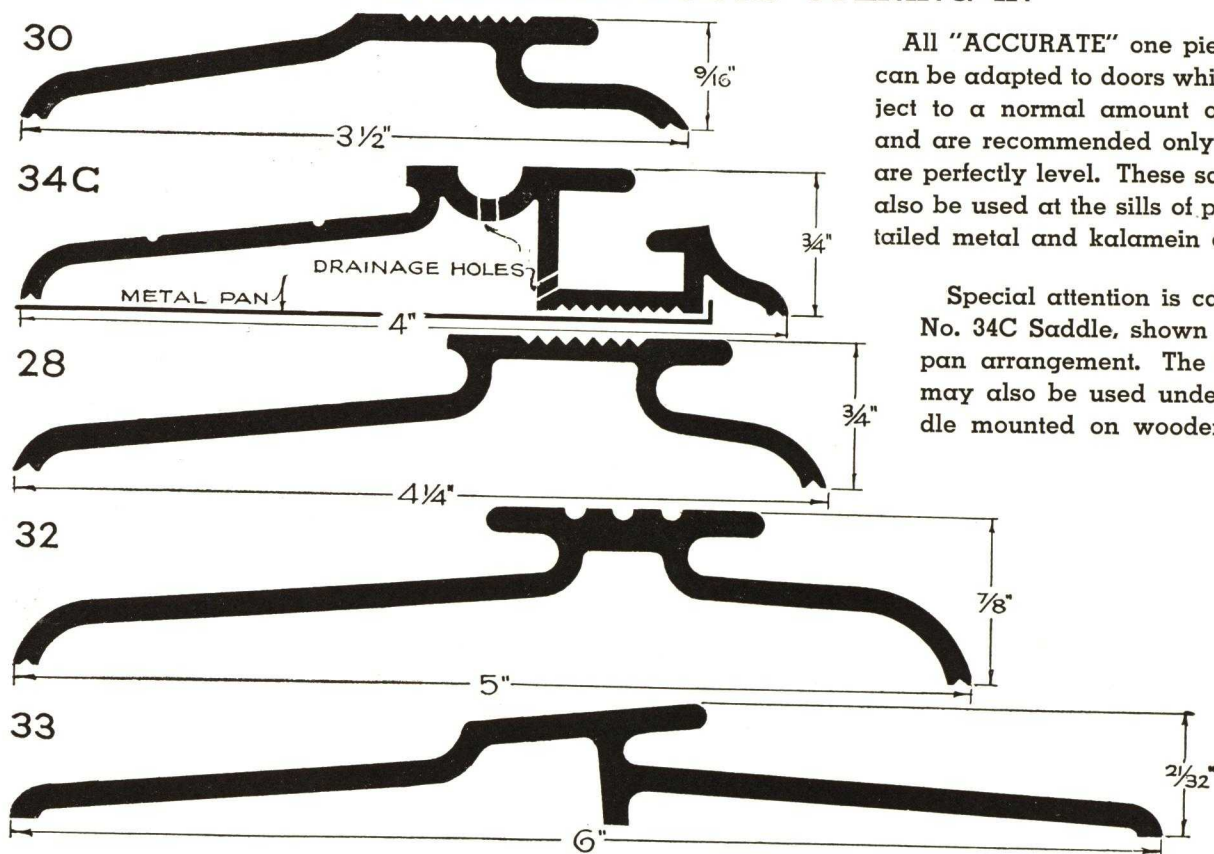
We will be glad to submit our suggestions for the weatherstripping of unusual door conditions on receipt of details. Our experience of many years in solving all types of weatherstripping problems is at the service of the architect.

Odd floor and sill conditions may require special treatment. Send details to us for study and we will furnish shop drawings. Changing sill details slightly, before frames and sash are made, often lessens the cost of construction and produces a better job.

"ACCURATE" (One-Piece) EXTRUDED SADDLES FOR EXTERIOR DOORS OPENING IN

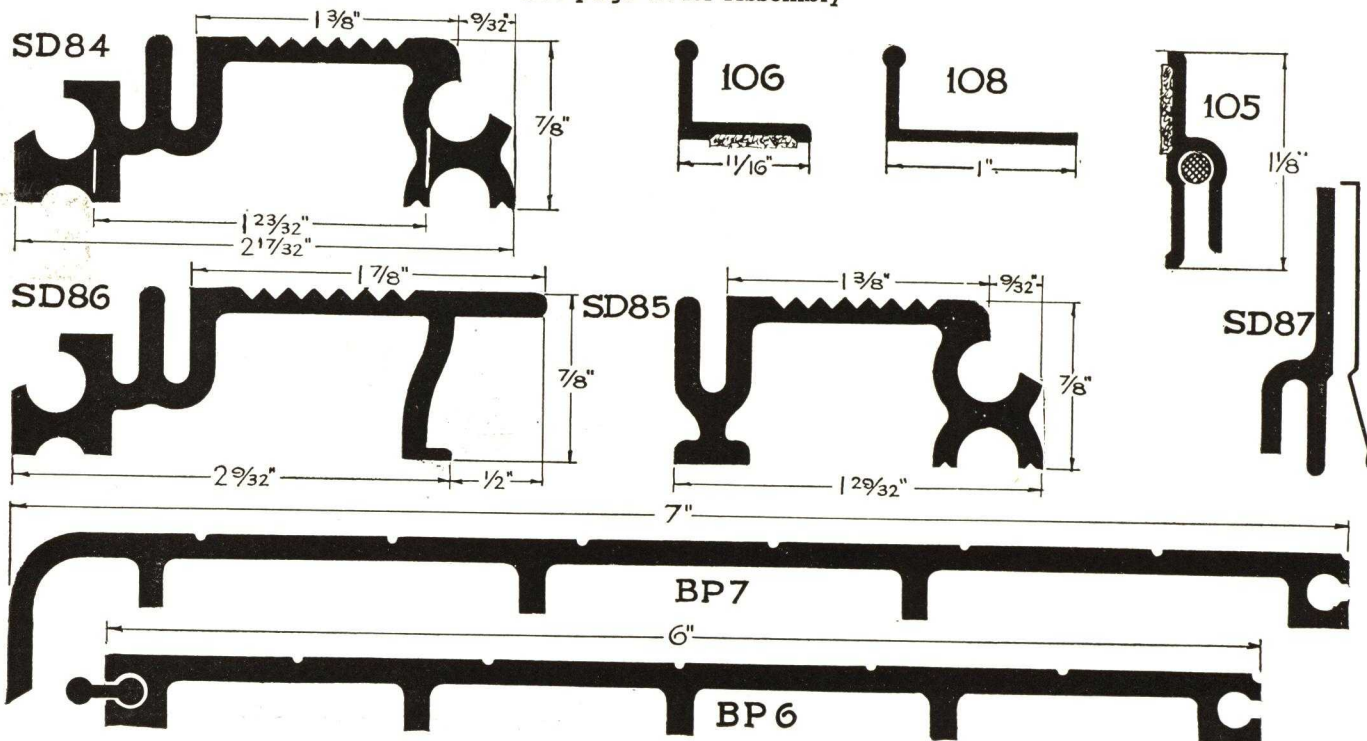
All "ACCURATE" one piece saddles can be adapted to doors which are subject to a normal amount of exposure and are recommended only when sills are perfectly level. These saddles may also be used at the sills of properly detailed metal and kalamein doors.

Special attention is called to our No. 34C Saddle, shown with water pan arrangement. The water pan may also be used under any saddle mounted on wooden sills.



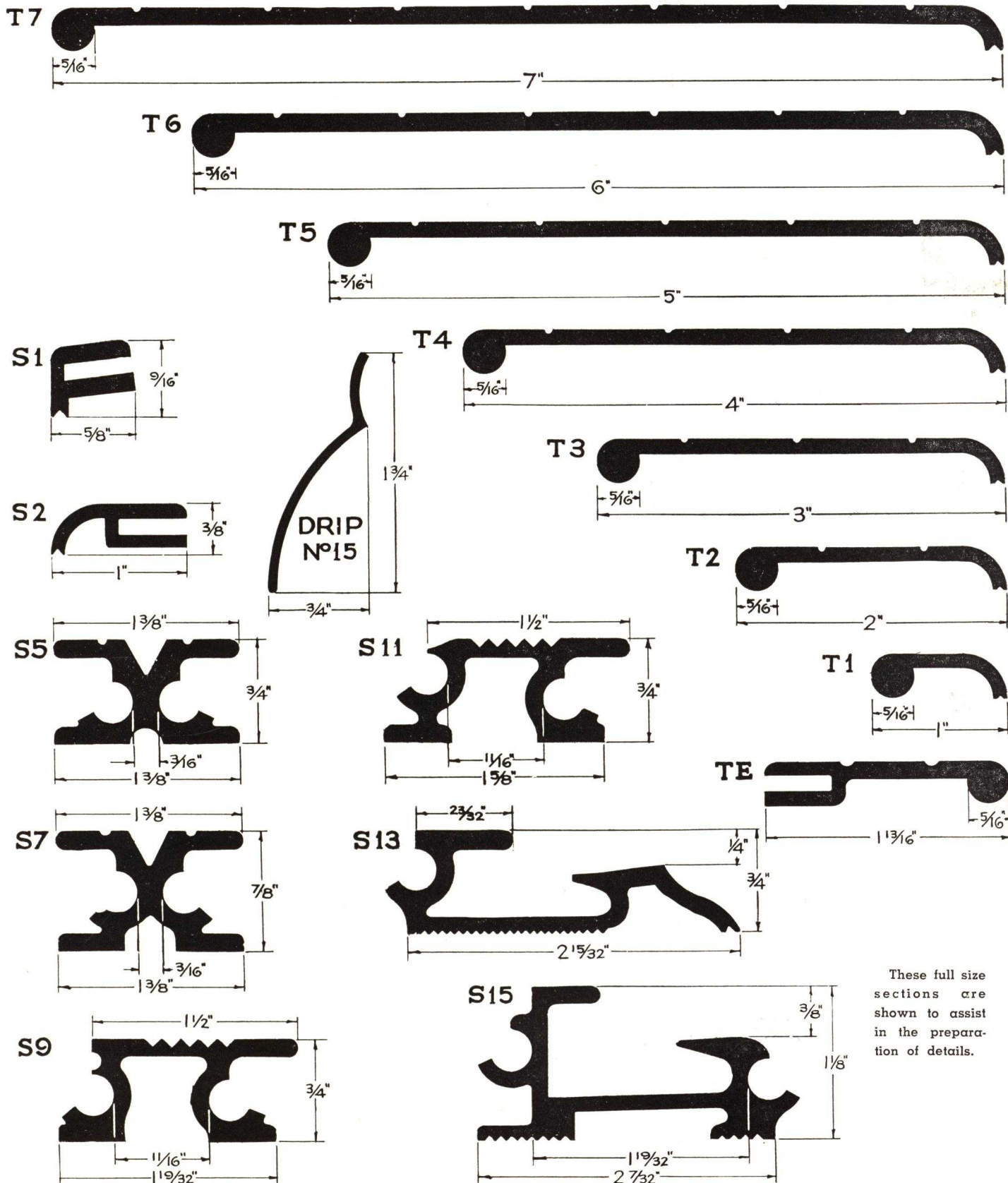
FULL SIZE TEMPLATE SECTION OF EXTRUDED MEMBERS FOR WEATHER STRIPPING EXTERIOR SLIDING DOORS

See page 12 for Assembly



FULL SIZE TEMPLATE SECTION OF EXTRUDED SECTIONAL UNIT DOOR SADDLES . . .

See pages 10 and 11



These full size sections are shown to assist in the preparation of details.



METAL WEATHER STRIPS

**Representatives in Principal Cities of the
United States and Canada :- :- :-**

THE COMPANY—The ACCURATE Metal Weather Strip Co. has been manufacturing equipment of this kind for thirty-five years, starting in a very modest way and successfully building the business until today it is among the outstanding in the industry.

MANUFACTURING FACILITIES—Due to unusually efficient manufacturing facilities making possible personal supervision and complete control of every step in fabrication, purchasers of all ACCURATE Metal Weather Strips are assured of dependable workmanship and prompt service. All departments are located under one roof in a completely equipped modern seven story fireproof building which is owned by the company.

ARCHITECTURAL SERVICE—Satisfactory results from weather strip depends upon three major factors—(1) quality of equipment; (2) selection of equipment designed to meet the individual conditions and requirements and (3) proper installation. Where time permits, we strongly urge that you permit us to submit complete and specific recommendations.

ACCURATE METAL WEATHER STRIP CO.
216 East 26th Street, New York, N. Y.

ALLMETAL WEATHERSTRIP CO.

(Name "Allmetal" Copyrighted U. S. Pat. Off.)

Illinois and Franklin Streets
CHICAGO, ILL.

PRODUCTS

Allmetal Weatherstrip
Calking Compound

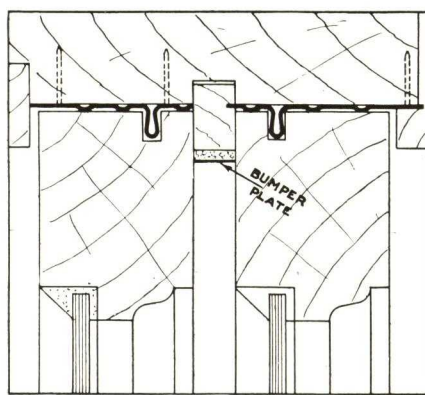
Thresholds and Saddles
Kickplates

Nosings and Edgings
Snap-on Mouldings

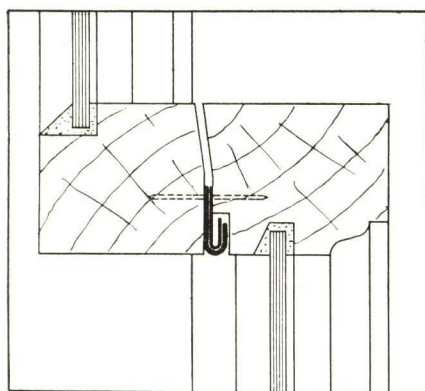
TIME TESTED DESIGN

Allmetal Weatherstrip for over twenty years has fulfilled every requirement for efficient protection against wind, rain, cold and dust. Scientifically correct in de-

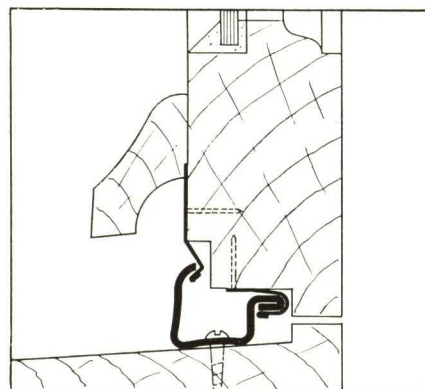
sign and durably made from wear-resisting and non-rusting metals. It will render dependable service year after year, free from adjustments or repairs.



Jamb of Double Hung Sash



Meeting Rails
Double Hung Sash



3-piece Trough Assembly for Sills of
In-opening Casement

Material Specifications

Allmetal products are made from sheet and ribbon zinc, cold rolled bronze, spring bronze, architectural bronze, brass, and aluminum — all non-ferrous metals — of sufficient gauge to insure adequate strength and long life.

Weatherstrip Installation Specifications

Double Hung Sash
Allmetal Equipment No. 100

Doors
Allmetal Equipment No. 300

Casement Sash
In-opening
Allmetal Equipment No. 200

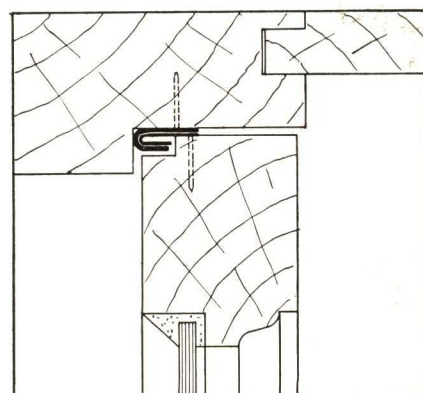
Out-opening (Flat Sill)
Allmetal Equipment No. 201

Out-opening (Rab. Sill)
Allmetal Equipment No. 202

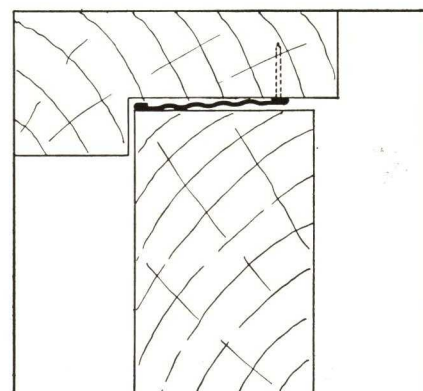
Architectural Details and Samples

Mounted samples and details showing standard weatherstrip installations furnished free upon request.

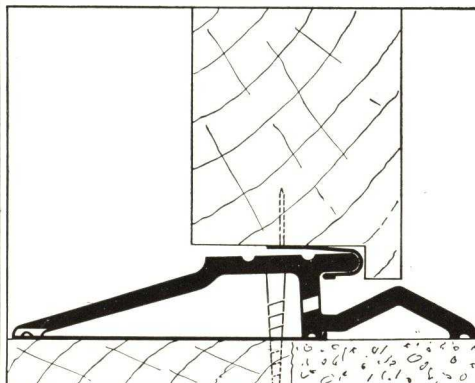
Complete information and samples of other products in our line will also be forwarded upon request.



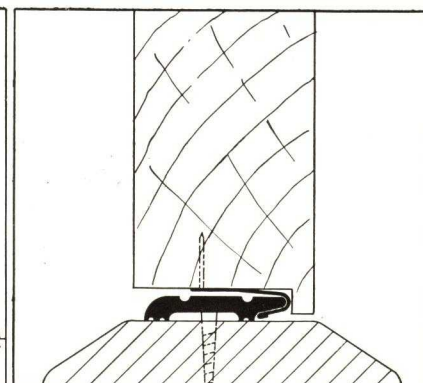
Concealed Interlocking for Sides and Top of
Casements and Doors



Double Hemmed Spring Bronze for Sides and
Top of Casements and Doors



Waterproof Door Bottom



Standard Door Bottom

ATHEY COMPANY

Cloth Lined Metal Weatherstrip—Sealtite Caulking Compound
6035-6045 West 65th Street, CHICAGO, ILL.

PRINCIPAL BRANCHES AND AGENCIES

ATLANTA, GA., Floyd Bros. Co., 535 Flat Shoals Avenue
BOSTON, MASS., Walsh-Spencer Co., 400 Boylston Street
BUFFALO, N. Y., H. T. Cary, 293 Voorhees Avenue
CASPER, WY., E. H. Fritchell, 163 No. Durbin Street
CHICAGO, ILL., W. L. Van Dame Co., 820 Tower Court
CLEVELAND, OHIO, Consolidated Screen Co., 202 Columbia Building
COLUMBIA, S. C., A. A. Bradford
DAYTON, OHIO, Glawe Manufacturing Co., 515 E. Herman Street
DECATUR, ILL., C. J. Gandy, 245 No. Westlawn
DETROIT, MICH., W. O. LeSage & Co., 1720 12th Street
HARTFORD, CONN., Hartford Wire Works, 90 Allyn Street
KNOXVILLE, TENN., Chas. M. Allen Corp., 2221 White Avenue
LOUISVILLE, KY., H. A. Bohn, 814 Baxter Avenue
MEMPHIS, TENN., Cheers Building Specialties Co., 884 Adams Street
MILWAUKEE, WIS., Willer Screen & Weather Strip Co., 1459 No. 40th Street
OMAHA, NEB., Lew Wentworth, 415 Karbeck Block

PHILADELPHIA, PA., Wolfe & Adams, 1000 Architects Building
PITTSBURGH, PA., Northern Screen & Weatherstrip Co., 3856 East Street
PUEBLO, COLO., Athey-Beaman Co., 711 W. 12th Street
ROANOKE, VA., J. C. Clemmer, 1114 Stewart Avenue
SHARON, PA., F. A. Leipheimer, 66 Wengler Avenue
SPOKANE, WASH., Ace Weatherstrip Co., 411 W. Sprague Avenue
SPRINGFIELD, ILL., A. H. Krebs Co., 2201 So. 8th Street
SPRINGFIELD, MASS., The Meyer Company, 100 Alderman Street
ST. LOUIS, MO., A. A. Klutho Co., Syndicate Trust Building
ST. PAUL, MINN., Metal Weatherstrip Co., 503 Minnesota Mutual Life Building
TORONTO, CANADA, Cresswell Pomeroy Co., 989 Bay Street
TULSA, OKLA., Merry Screen Co., 219 So. Madison Street
YAKIMA, WASH., B. F. Mann, 515 No. Naches Street
YOUNGSTOWN, OHIO, Youngstown Hardwood Floor Co., 100 W. Rayon Street

CANADIAN OFFICE AND FACTORY: Cresswell-Pomeroy Ltd., 604 De Courcelles Street, MONTREAL, QUE.

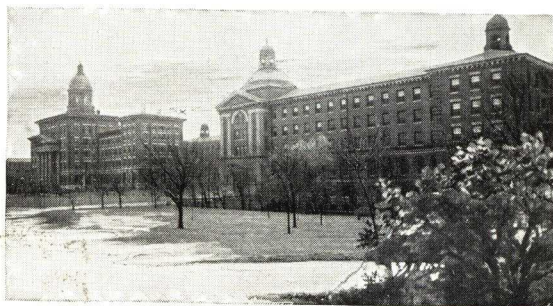
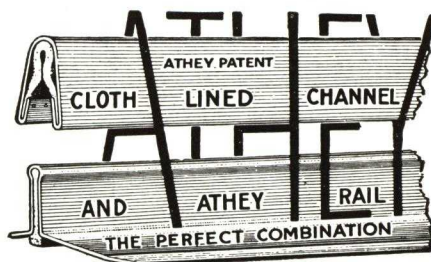
For our page on Window and Skylight Shades, see File Index

ATHEY CLOTH LINED METAL WEATHERSTRIP

Athey Cloth Lined Metal Weatherstrip, the only weatherstrip using the cloth to metal feature, has been on the market for nearly 30 years. It has been installed on many of the best buildings in the United States and Canada for owners and architects who desire the best, even though the initial cost is higher than for ordinary weatherstrip. Of our early installations we can point to the St. Anthony's Hospital of St. Louis and the Blackstone Hotel of Chicago, who are still obtaining the maximum in efficiency after twenty-six years of service, making the yearly cost lower in comparison with cheap, inferior weatherstrip.

Unlike the ordinary channel used in

many two-piece strip installations, the Athey channel is double the usual width and lined with a cloth made especially for this purpose, which not only prevents air leakage but is a dust preventive and soundproofing as well. Rail members are also backed with felt which prevents leakage at the jamb, a common weakness in weatherstrip installation due to infrequent nailing of



Department of Public Welfare CITY OF ST. LOUIS

OFFICE OF
DIRECTOR OF PUBLIC WELFARE
329 MUNICIPAL COURTS BLDG.



February 16, 1929.

The Athey Company,
Gentlemen:--

You will perhaps be glad to know that through the weather-stripping job handled by your people at the City Sanitarium recently, we were able to discontinue the use of one 350 horse-power boiler, a saving to the City of about \$1500.00 a month in coal. We were also able to cancel an order for about \$2000.00 worth of blankets, which had been requisitioned for use during the present winter.

Feeling that this information would be of interest to you, we gladly submit it.

Yours very truly,

H. H. Salisbury
Director of Public Welfare

the rail member. All cloth and felt used is chemically treated, guarding against rot or deterioration, so this part of the weatherstrip as well as the metal is guaranteed for the life of the building. All Athey Weatherstrip is made of sheet zinc cut across the grain, the most expensive but assurance against cracking.

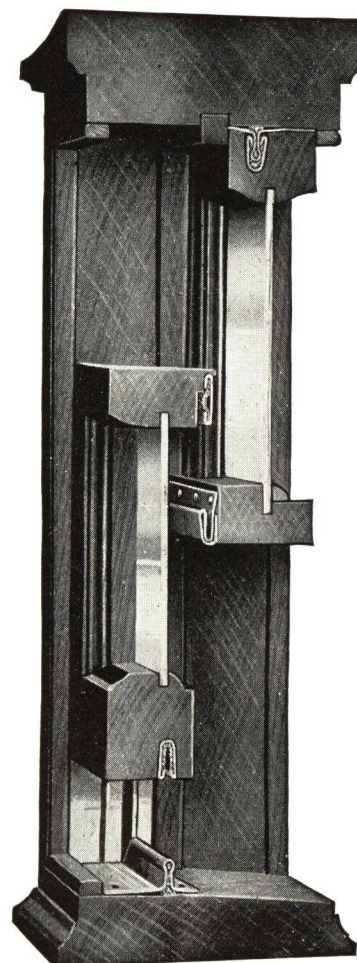
In using Athey strip a continuous contact is afforded all around the window, the strip being mitred at all corners, a result not obtained by many metal to metal contact strips where it is necessary to revert to a rib strip at the head and sill.

Athey Weather Strip is sold and installed by one hundred and twenty representatives, those in the larger cities listed above. Write to us for our latest catalogue, showing details of installation for every type of window or door, whether wood or metal. Samples of strip will be furnished when requested.

This Illustration at the Left

Shows the largest sanitarium in the United States which has been operated—the main building for sixty years, the wings for over twenty years—with this enormous waste of fuel.

The entire cost of the weatherstripping was absorbed by the savings in fuel, blankets and janitor service in the first winter. A \$30,000 boiler was eliminated—the cloth to metal contact accomplished it.



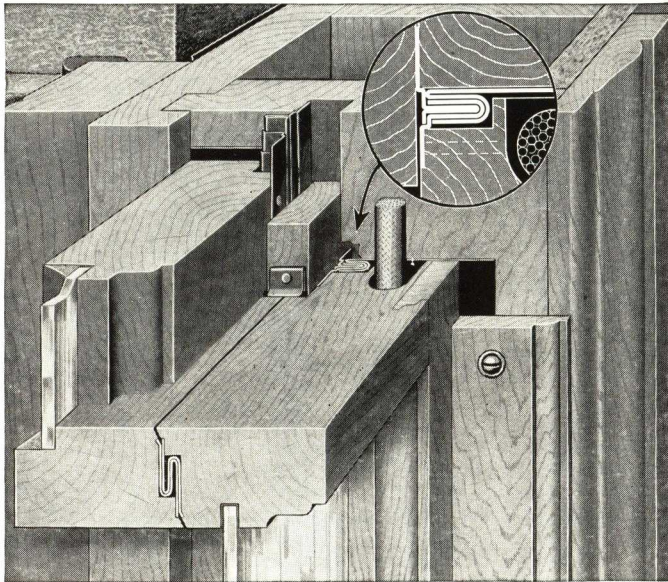
Double Hung Wood Sash

BARLAND WEATHERSTRIP MATERIAL CO.

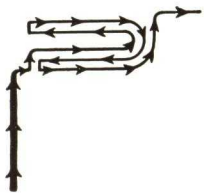
5600 Curtis Avenue, CLEVELAND, OHIO

KNIGHT TRIPLE-INTERLOCKING WEATHERSTRIP FOR DOUBLE HUNG WINDOWS

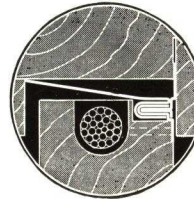
For Trouble-free, Easy Working Windows with Full Efficiency at the Pulley Cord Grooves of Each Sash



Triple Interlocking—Greater Efficiency



Showing the path and four complete reverses of direction that air would have to travel between accurate close fitting members before it could reach the inside of the building.



Left: Self-adjusting to expansion and contraction of sash with no loss of efficiency. Right: Easy removal of sash without damage to strip or cutting of parting bead.



Sliding metal to metal surfaces are completely enclosed, armored against paint and dirt.

Smooth metal sliding surface for the sash covers the entire runway eliminating wood to wood contact and need for paint, helping to insure easy working windows.

Strip is entirely concealed from the inside, when window is closed.

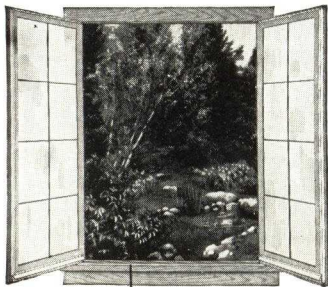
Bearing surfaces are equalized in all directions insuring long life and easy working sash.

Window cannot rattle, the strip holds the sash in proper place regardless of amount of clearance between sash and stops.

Made of free sliding cross grain sheet zinc for both strength and flexibility where needed.

Handled only by carefully selected dealers.

POSITIVE WATER PROTECTION FOR CASEMENTS WITH BARLAND SUPER-SEAL CHANNELS

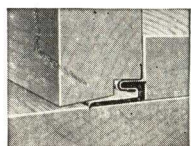
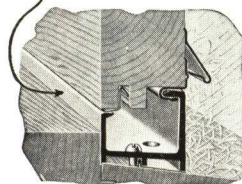


Durable and airtight. Aluminum alloy, heat treated.

For the ideal installation without cutting off and weakening the sash, remove the wood sash drip commonly used under the sash and replace it with the deep sloping base channel shown at the left.

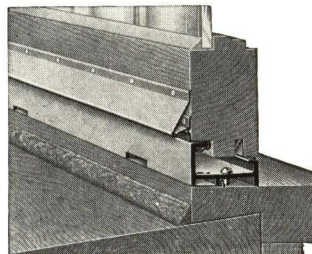
No. CA4—1 3/8" wide
No. CA5—1 3/4" wide

When sash construction will not permit installation shown at left, use channel shown below.

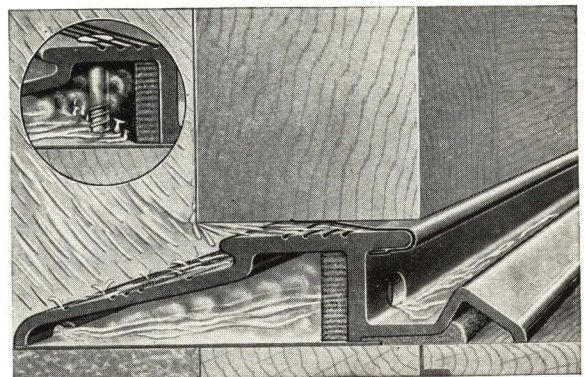


Outswing Casement Bar

Strong—Simple. Water cannot get back of bar because of sharp embedded edges



Horizontal Base Channel
No. CA1—1 3/8" wide
No. CA2—1 3/4" wide



SUPER-SEAL BEAUTY TREAD THRESHOLDS

Water can flow out but air cannot enter.

Should water be blown in around the hook or sides of the door under extreme weather conditions it is carried back outside through the weep holes and the concealed strip of special felt which prevents the entrance of cold air, dust or insects.

Sizes—3"x3/4", 4"x7/8", 5"x7/8" and 6"x1 1/4" (to clear heavy rugs).

There are also 30 other important sizes and styles.

Note: If you do not have our catalog filed under No. 35-P-6 in your architectural file, please let us send it to you.

16

65

CHAMBERLIN METAL WEATHER STRIP COMPANY, INC.

1254 Labrosse St., DETROIT, MICH.

BRANCH OFFICES THROUGHOUT THE UNITED STATES

Members of The Producers' Council, Inc.

For Catalog on Screens, see File Index

No. 100

For Double Hung in Residential Buildings

1 3/8" and 1 3/4" Sash

No. 100A

For Double Hung in Hotels, Schools, Institutions, Office Buildings

2 1/4" and Heavier Sash

During the 45 years the CHAMBERLIN METAL WEATHER STRIP COMPANY, INC. has been in the weather strip field, numerous changes in design and materials have been made, when practical experience found them more efficient and durable.

One example: Number 100-A equipment recommended for public buildings where larger clearances and careless usage usually exist.

Experienced Chamberlin Field Service Men will willingly assist you in specifying equipment requirements to insure satisfactory results.

General Specification for Number 100 Equipment — Double hung windows shall be equipped with Chamberlin weather strips (zinc or cold-rolled bronze). Type 100 installed in accordance with specific specifications and by mechanics in the employ of the CHAMBERLIN METAL WEATHER STRIP COMPANY, INC.

Note: Substitute Type 100-A in above specification when heavy duty equipment is desired.

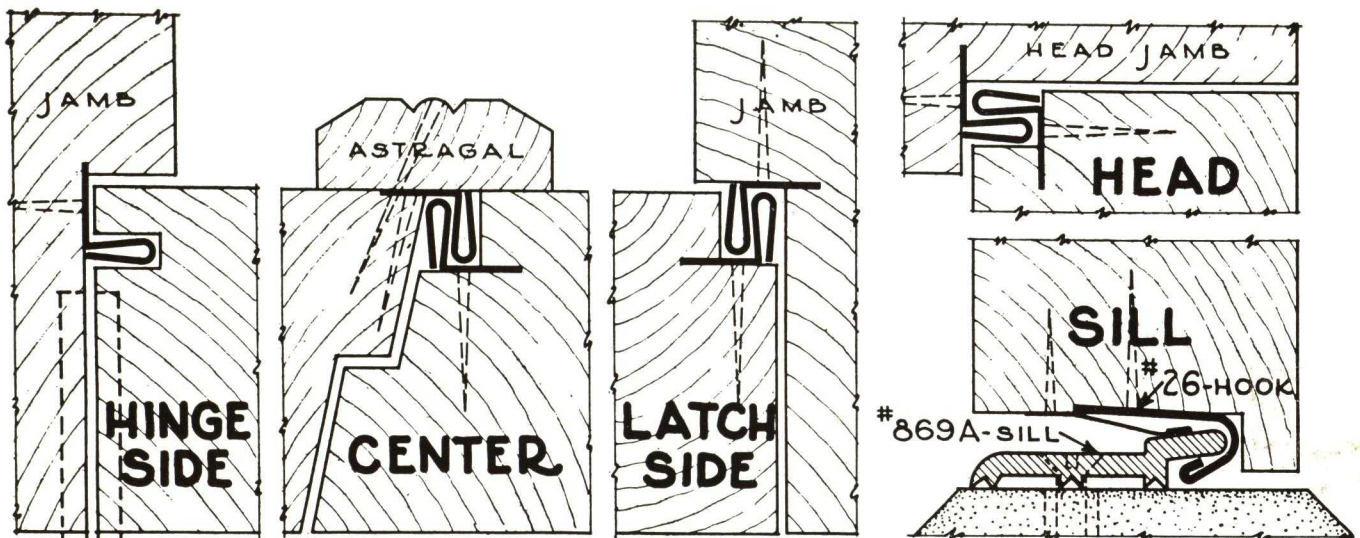
(Details Half-Size)

No. 100	Strip No.	Zinc		Bronze	
		Gauge, zinc std.	Thick-ness, in.	Gauge, B&S	Thick-ness, in.
Head	6	10	.020	25	.0179
Sill, 1 3/8" sash	7	10	.020	25	.0179
Sill, 1 3/4" sash	8	10	.020	25	.0179
Sides, upper, 1 3/8" sash	1A	9	.018	25	.0179
Sides, lower, 1 3/8" sash	1	9	.018	25	.0179
Sides, upper, 1 3/4" sash	2A	9	.018	25	.0179
Sides, lower, 1 3/4" sash	2	9	.018	25	.0179
Meeting rail, male	5	9	.018	25	.0179
Meeting rail, hook	5	8	.016	26	.0159

No. 100A	Strip No.	Zinc		Bronze	
		Gauge, zinc std.	Thick-ness, in.	Gauge, B&S	Thick-ness, in.
Head	76	12	.028	23	.0225
Sill	79	12	.028	23	.0225
Sides, upper	73A	10	.020	25	.0179
Sides, lower	73	10	.020	25	.0179
Meeting rail, male	75	12	.028	23	.0225
Meeting rail, hook	75	12	.028	23	.0225

Since 1907, the Company has operated on its present Branch Office System with centralized responsibility for service and installation. The personnel of each branch office consists of experienced representatives who are thoroughly familiar with Chamberlin Products and Chamberlin Service. Perhaps equally important as design of equipment is supervised installation in accordance with specific specifications. Chamberlin Weather Strip Installers are skilled mechanics, careful, accurate, and neat before they are permitted to do any actual installing "on the job." These combined factors are the controlling influence in establishing the maximum in efficiency and satisfaction from a weather strip installation.

CHAMBERLIN EQUIPMENT No. 800—OUTSIDE WOOD DOORS



General Specification—All outside wood doors shall be equipped on vertical sides and top with Chamberlin Weather Strips (zinc or cold-rolled bronze), Type 800, and at bottoms with interlocking brass thresholds (type number selected from Weather Strip Detail Catalog) installed in accordance with specific specifications and by mechanics in the employ of the CHAMBERLIN METAL WEATHER STRIP COMPANY, INC.

Handbook

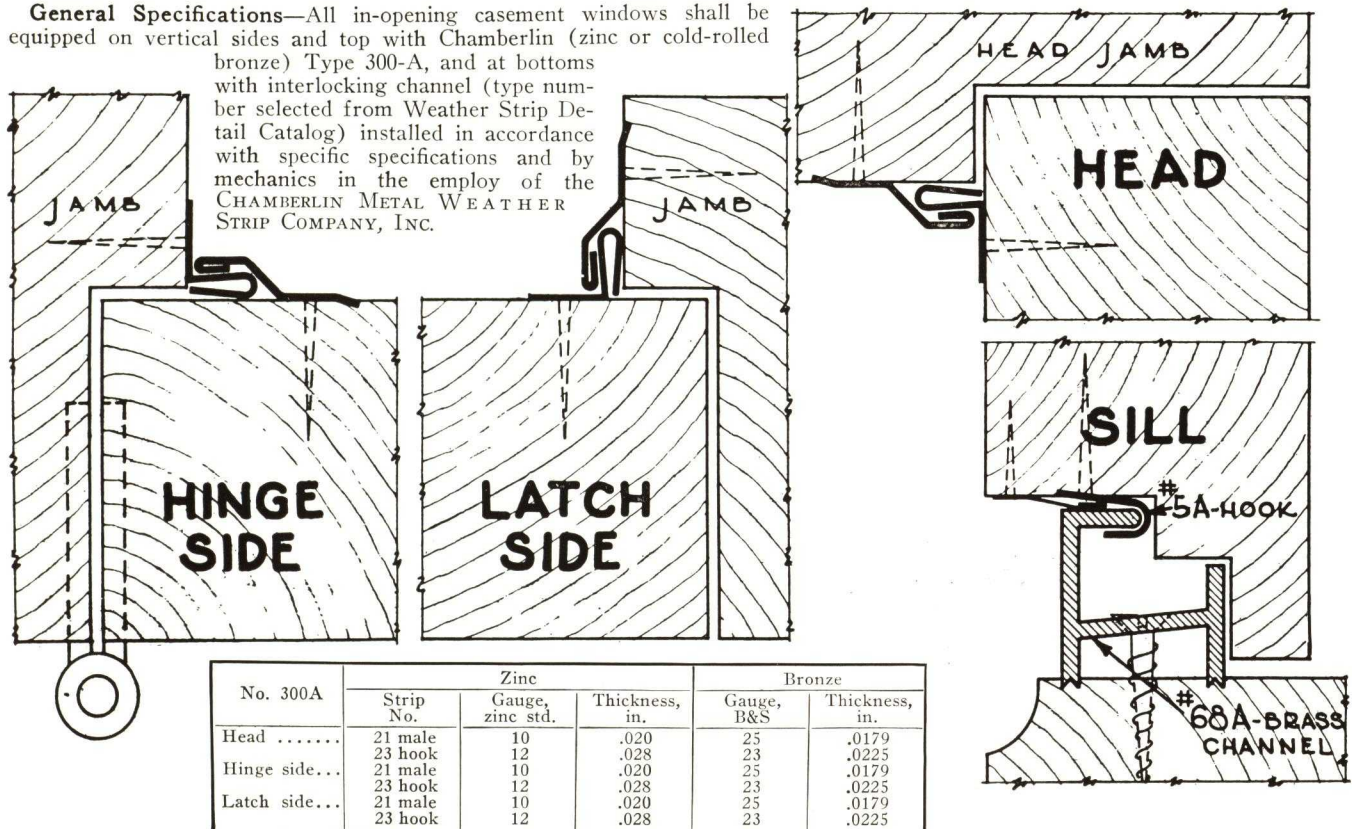
Architects' Handbook for Calculating Heat Losses Due to Air Leakage at Doors and Windows together with Weather Strip Detail Catalog containing 24 pages of details and specifications of various types of equipments, also thresholds and caulking, are available by communicating with our Main or Branch Offices.

No. 800	Zinc			Bronze	
	Strip No.	Gauge Zinc std.	Thickness, in.	Gauge, B&S	Thickness, in.
Head	21	10	.020	25	.0179
	21	10	.020	25	.0179
Center ...	21	10	.020	25	.0179
	21	10	.020	25	.0179
Hinge side	21	10	.020	25	.0179
	21	10	.020	25	.0179
Latch side	21	10	.020	25	.0179
	21	10	.020	25	.0179

(Office addresses shown on back of Screen Catalog in this issue of Sweets'.)

CHAMBERLIN EQUIPMENT No. 300-A—IN-OPENING CASEMENT WINDOWS

General Specifications—All in-opening casement windows shall be equipped on vertical sides and top with Chamberlin (zinc or cold-rolled bronze) Type 300-A, and at bottoms with interlocking channel (type number selected from Weather Strip Detail Catalog) installed in accordance with specific specifications and by mechanics in the employ of the CHAMBERLIN METAL WEATHER STRIP COMPANY, INC.

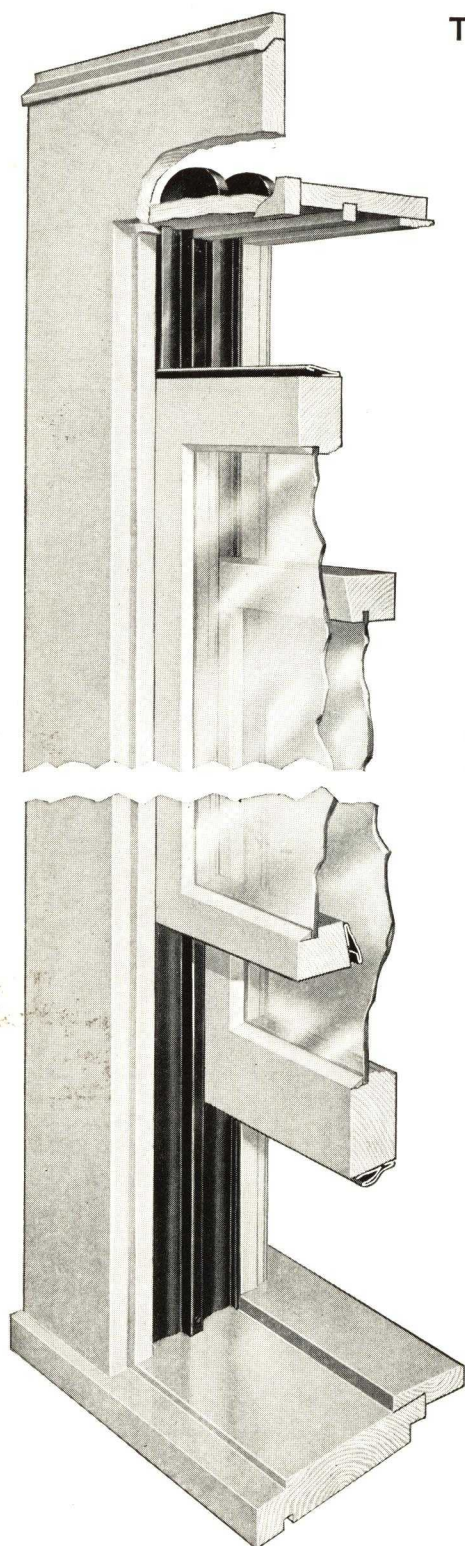


No. 300A	Zinc			Bronze	
	Strip No.	Gauge, zinc std.	Thickness, in.	Gauge, B&S	Thickness, in.
Head	21 male	10	.020	25	.0179
	23 hook	12	.028	23	.0225
Hinge side...	21 male	10	.020	25	.0179
	23 hook	12	.028	23	.0225
Latch side...	21 male	10	.020	25	.0179
	23 hook	12	.028	23	.0225

W. J. DENNIS AND COMPANY
2110-2120 West Lake Street, CHICAGO, ILLINOIS



THE MODERN WEATHER STRIP
For Standard Double Hung
Wood Windows



CAN BE
USED WITH
VARIOUS
MODERN
BALANCES

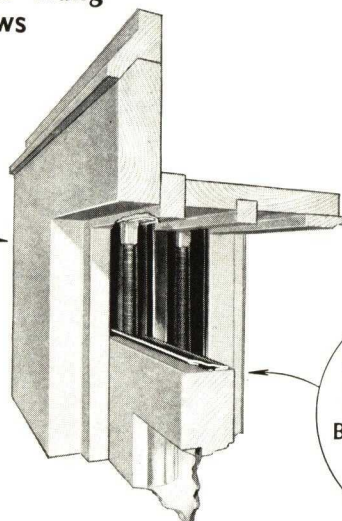
REDUCES
INFILTRATION
TO MUCH LESS
THAN AVERAGE
WEATHER-
STRIPPED
WINDOW

FULL
FLOATING
CONSTRUCTION
—NO WOOD
PARTING STOP
NECESSARY

AS APPLIED
TO PLAIN
CHECK RAIL

MAINTAINS
AIR SEAL BY
CONFORMING TO
EXPANSION AND
CONTRACTION OF
SASH AND
FRAME

WOOD
TO METAL
CONTACT
ELIMINATES
STICKING OR
BINDING

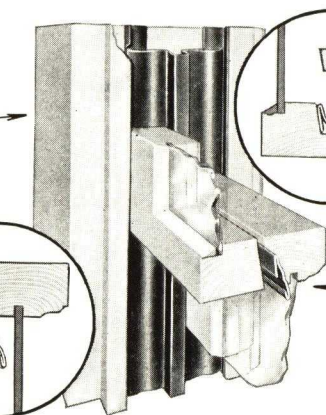


ALL PARTS
ARE PHOSPHOR
MIX SPRING
BRONZE AND
GUARANTEED
FOR LIFE OF
BUILDING

NO EXTRA
GROOVING OF
SASH—CAN
BE USED WITH
STANDARD
FRAMES

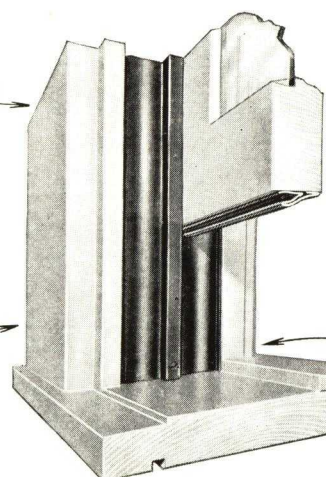
AS APPLIED
TO RABBETED
CHECK RAIL

PREVENTS
SASH RATTLING
—NO SINGING
OR
HUMMING



NO EXTRA
GROOVING OF
SASH . . . EASY
TO INSTALL . . .
EASY TO REMOVE
SASH

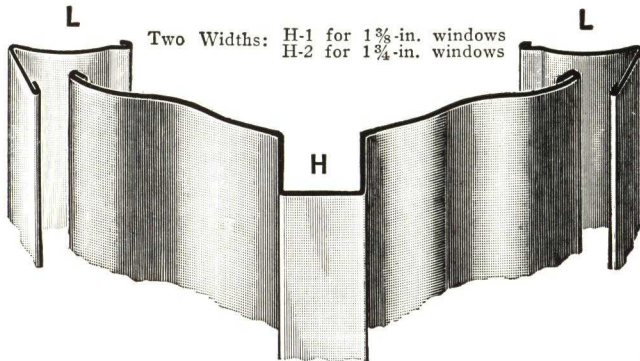
ONE SCREW
AT BOTTOM,
AND PARTING
STOP AT TOP,
HOLD ENTIRE
WEATHER STRIP
INSTALLATION
IN PLACE



For application with FLAT WEIGHTS and OVERHEAD PULLEYS, write for information.

DENNIS WING FLEX THE MODERN WEATHER STRIP

*Full Floating Construction Maintains 6-Point Contact
Makes Resilient, Impervious, Weatherproof Seal*

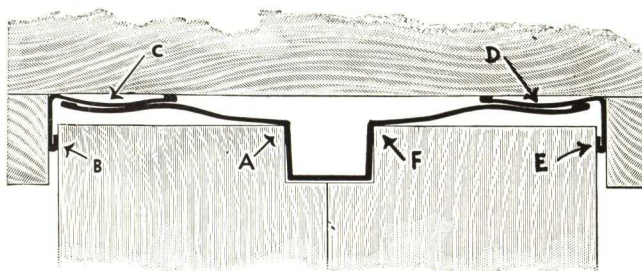


Patented and Other Patents Pending

This three-member, all-metal Weather Strip is made of finest quality phosphor mix spring bronze, a rust-proof metal that retains its resilience in any climate for the life of the building. All three members are double-hemmed for added strength and to provide smooth bearing surfaces.



Above illustration shows simple method of installing Style H-1 double-wing center strip, and Style L side strips, in frame. All members are at rest.



Note strips under compression, with A-B-C-D-E-F illustrating contact points that maintain air seal regardless of expansion or contraction of sash.

Full Floating Construction

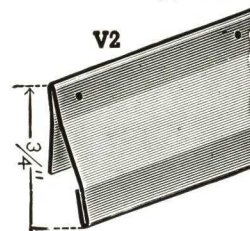
Note that the Style H Double Wing Center Strip forms a parting stop and, therefore, the usual wood parting stop is unnecessary. The L type strips are merely slipped under the wings on both sides of Type H.

The tension of these wings is sufficient to hold the L strips in place at all times. Completely covers unfinished jamb.

Easy to Install and Remove

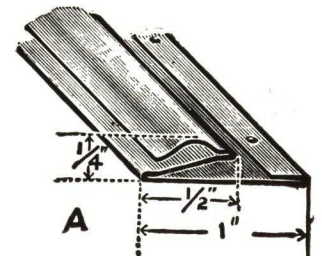
This three-member Weather Strip is installed on window frames at time sash are assembled, and since no nailing is needed, practically all labor is eliminated. No extra grooving of sash or frame is necessary. Metal requires no painting. Can be used on standard stock frames and sash as they need no extra preparation, and use any type of overhead balance. Weatherstripped sash can be removed as easily as though no weather strip were present.

Top, Bottom and Check Rail Strip



Type V2—Width $\frac{3}{4}$ in. for check rail and top of upper sash

Type A—Width 1 in. for bottom of lower sash



Highest Efficiency on Test

Air leakage tests conducted by the University of Wisconsin are reported as follows:

"Letter of May 22, 1937. The window unit (Dennis Wing Flex) tested here showed a leakage value of 7.43 cu. ft. per ft. of sash perimeter per hour at 15 miles per hour. This is a low leakage and might be compared with the guide figure of 23.6 for the average weatherstripped window. Signed D. W. Nelson."

Architectural Details and Samples

Mounted samples and details showing standard weather strip installations furnished free upon request. Complete information and samples of other products in our line will also be forwarded upon request

Dennis AA Combination

TRADE MARK

DOUBLE CUSHION SPRING BRONZE ALL METAL WEATHER STRIP AND PARTING STOP

For Low-Cost Houses and Housing Projects

The only efficient, economical and easy-to-apply weather strip accepted as standard equipment by some of the largest manufacturers of millwork in the country.

"S" SHAPE FOLD GIVES DOUBLE SPRING ACTION

Stops cold air leaks. Makes snug, weather-proof seal conforming to all warping, shrinkage and expansion of sash and doors. Made from phosphor mix spring bronze that lasts forever.

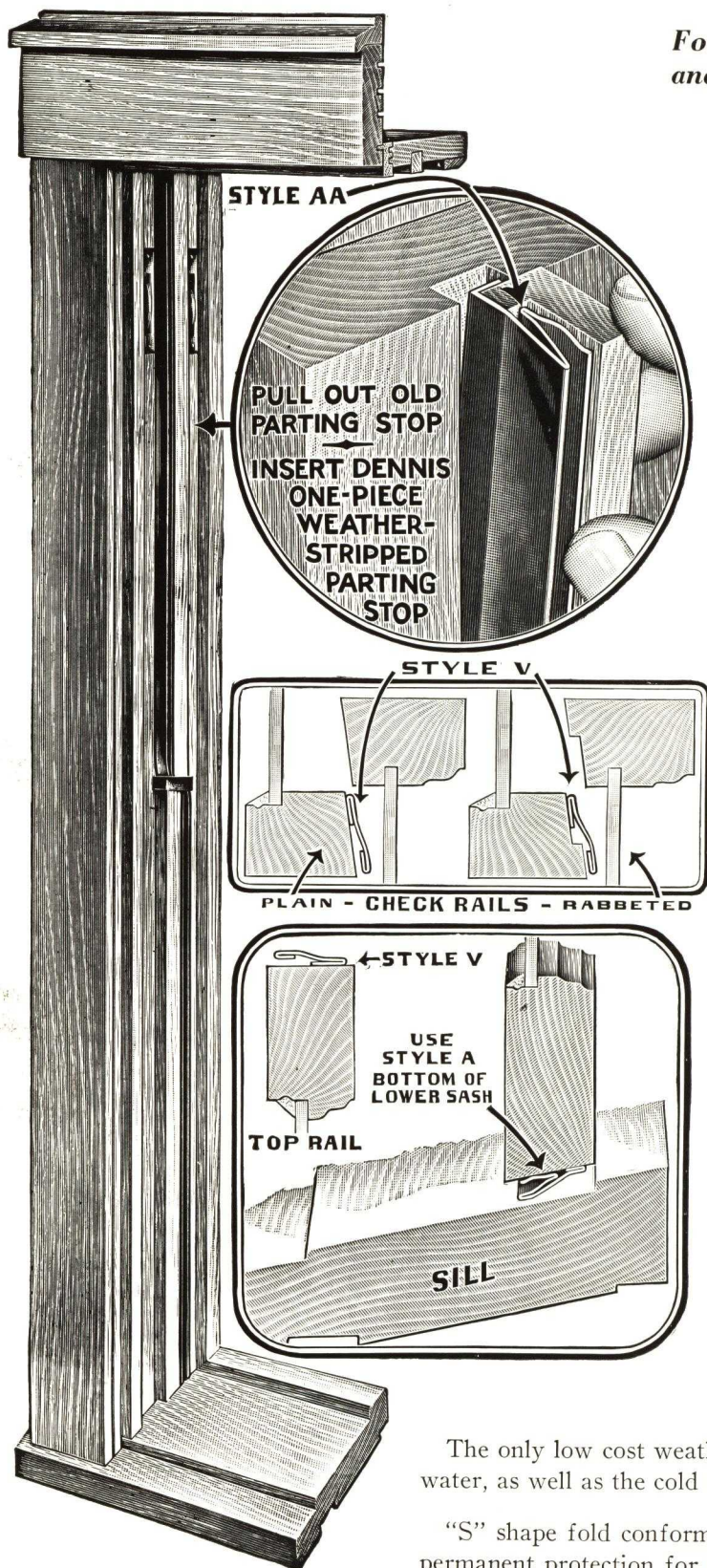
POINTS OF MERIT

- (1) Makes window sash dust, wind and water proof.
- (2) Stops rattling, silences the window.
- (3) No interference with sash pulley
- (4) No interference with sash pockets when it has to be opened to replace sash cord.
- (5) Sash easily removed for glazing without interference with weather strip.
- (6) Affords complete protection from sill to extreme top, passing the sash pulley.
- (7) Made from *phosphor mix bronze*. It will last forever.
- (8) The double cushion action in "S" shape fold takes care of all expansion or contraction of sash, giving permanent protection for the life of the building.
- (9) It is assembled at mill in new frame before sash is hung, at practically no additional cost of labor.
- (10) No nails to drive as it fits under parting stop and is held in place by the same.

Note

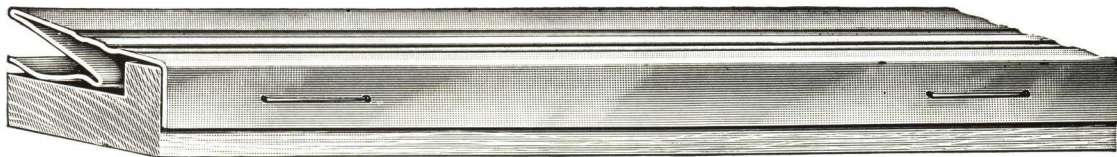
The only low cost weather strip made that will successfully stop dust and water, as well as the cold wind, and make window sash rattleproof.

"S" shape fold conforms to all expansion and contraction of sash, giving permanent protection for the life of the building.



DENNIS AA COMBINATION

DOUBLE CUSHION SPRING BRONZE ALL METAL WEATHER STRIP AND PARTING STOP



Style AA Spring Bronze Weather Strip is made from phosphor mix bronze and is designed for application under specially constructed wood parting stop at time

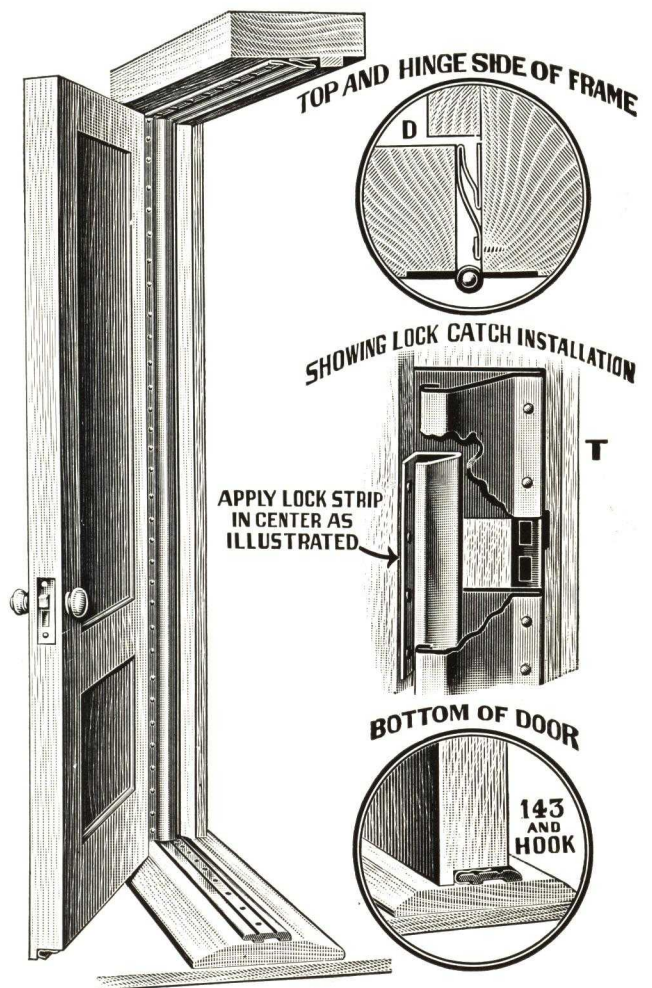
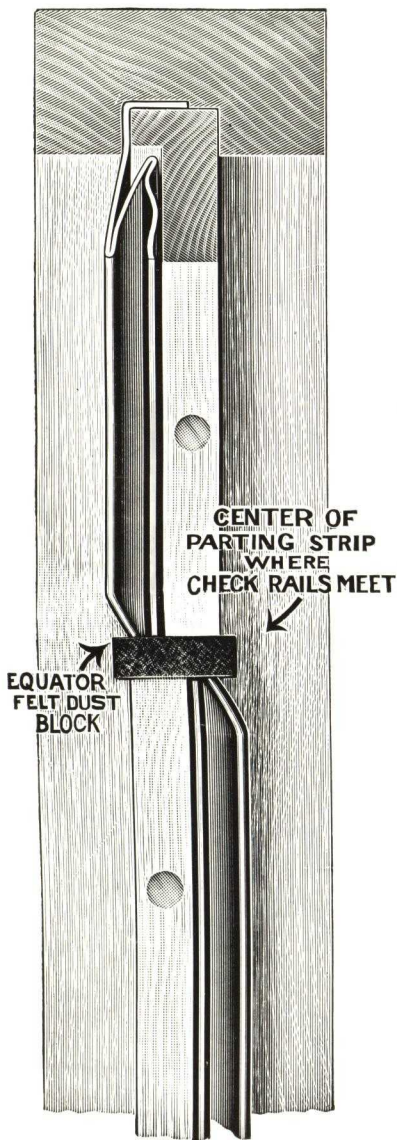
frames are manufactured (as per illustration above) avoiding interference with sash pulley and sash cord pocket. Strip is attached to the special parting stop.

LOW-COST HOUSING BENEFITS FROM GREATEST WEATHER STRIP IMPROVEMENT IN YEARS

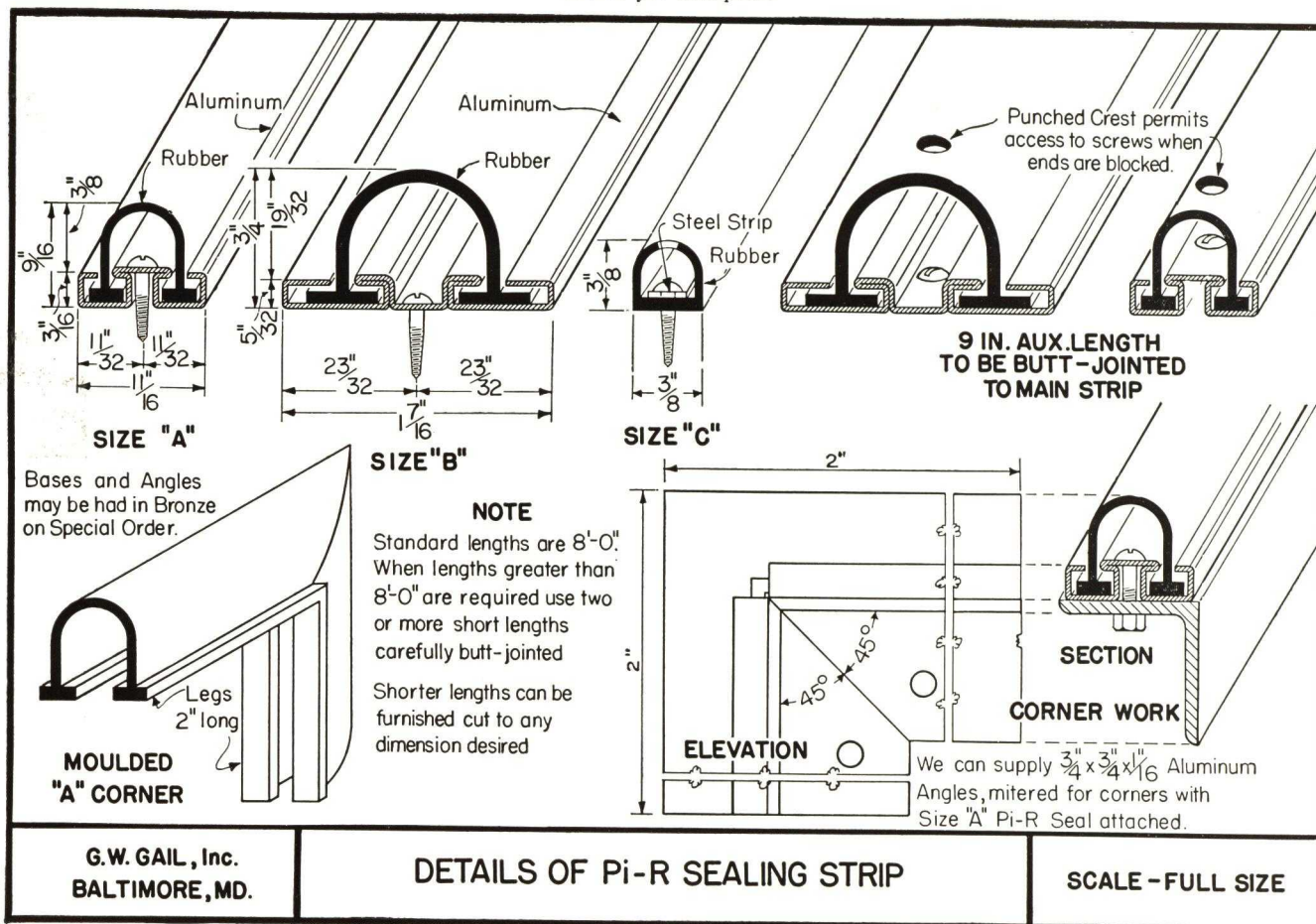
The ingenious "S" shape fold, designed and patented by Dennis after a quarter century of weather strip experience, has proved in thousands of applications to be the greatest advance in weather strip protection. Cold air, dirt and water that ordinarily leak past single leaf strips are caught and pocketed in the Dennis "S" fold. The double contact edges of spring bronze, in addition to making a weather-tight seal, also prevent vibration or humming—another reason why Dennis Style AA Bronze Weather Strip is most satisfactory and efficient for low-cost housing projects.

ARCHITECTURAL DETAILS AND SAMPLES

Mounted samples and details showing standard weather strip installations furnished free upon request. Complete information and samples of other products in our line will also be forwarded upon request.



The above illustrates proper method of application of Style D for hinge side and top; Style T for lock side and Style 143 Threshold with concealed hook for bottom.



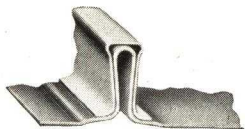


HIGGIN PRODUCTS, INC.

NEWPORT, KENTUCKY

AGENCIES AND DEALERS THROUGHOUT THE COUNTRY

For Metal Frame, Wood Frame and Rolling Screens, Lightproof Shades, Access Panels, Venetian Blinds, see our pages in File Index



HIGGIN ALL METAL WEATHERSTRIPS

Higgin Weatherstripping Equipment

Efficient metal to metal contact weatherstripping for wood windows in these days of air conditioning is more necessary than ever. Higgin more than twenty years ago pioneered the "metal to metal" principle in the rib track and spring bronze insert for double hung windows and today, we believe no more efficient weather-strip exists. This equipment is equally efficient on all sides which cannot be said for many strips with metal to metal side members but single strips at head and sill. The dovetail shape of the Higgin insert is such that the sides are always free to make contact with rib of track. A special shoulder at base of rib prevents edges of sash from "wiping" flat base of rib track. Double hung windows Higgin equipped slide easily.

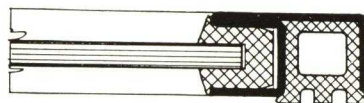
Ask the nearest Higgin representative to show you results of infiltration tests made at the University of Wisconsin.

In addition to the above equipment there are others for casements swinging in and out, for doors, transoms, etc. Complete information may be had for the asking.

Higgin No. 75-76 spring bronze strip for light-section steel outswinging casements are economical and effective. They are designed to grip fixed frame of sash tightly. Screws or rivets are not necessary.

For inswinging wood casements several effective troughs are available as well as interlocking strips for heads and jambs which are also used for outopening wood casements.

HIGGIN GLASS FRAME

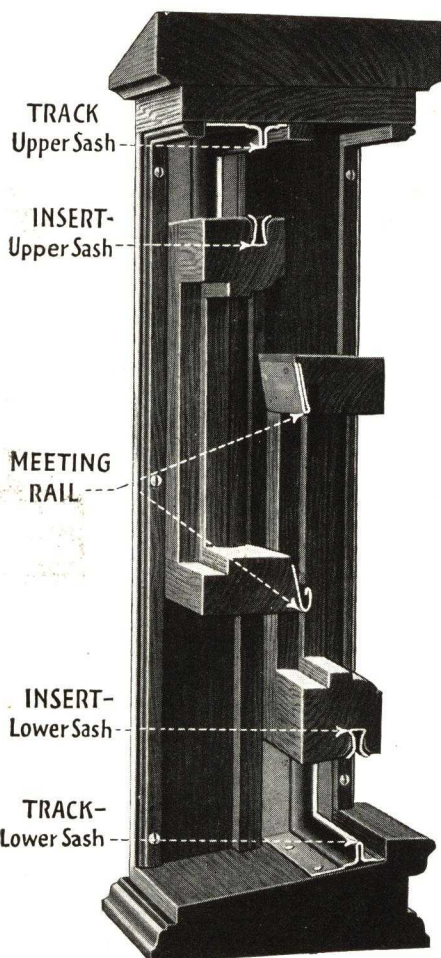


The above glass frame section is ideal for application directly to metal or wood casements, metal or wood double hung windows, where two thicknesses of glass are desired. For screened type casements this glass frame may take the place of the screen during winter months. Wood double hung windows may be detailed with rebate to receive the Higgin glass frame so that the benefits of double glazing may be enjoyed throughout the year in all climates. Glass frames are readily removable for cleaning. Glass is held firmly by specially shaped extruded rubber channel. A tight contact with sash or frame is assured by the tubular rubber pad illustrated. Write for full particulars.

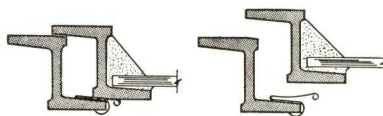
HIGGIN STORM SASH



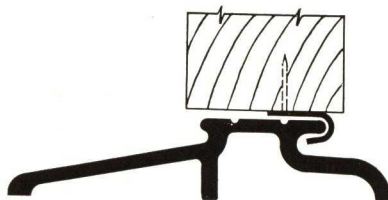
The Higgin Metal Frame storm sash is designed to be interchangeable with Higgin Tubular Metal Frame Screens. For horizontal sliding installations, screens may be slipped out in the fall and Higgin Storm Sash of same size put in. These storm sash are interchangeable with stationary, side or top hinged or horizontal sliding Higgin Screens. The frames are of electro-galvanized steel enamel finish. Frames are arranged for double strength glass. These may be glazed with or without putty. The above details are full size.



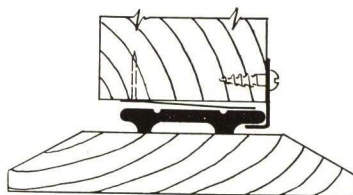
Section through a double hung window showing rib track and insert equipment.



Above: Higgin No. 75-76 weather-strip for light section steel casement windows opening out. Mitered at corners, this equipment is most inconspicuous yet the efficiency is excellent.



Above: 4 1/4 in. wide extruded brass threshold for important entrances. This threshold is 7/8 in. high and may be used with the hook shown or the "L" brass shown below.



Above: There are a number of 1/4 in. high extruded brass thresholds ranging from 1 1/8 to 1 7/8 in. wide. Either the hook or "L" may be used with them.

MASTER

C A T A L O G

METAL

WEATHERSTRIPS



MASTER

WEATHERSTRIPS

THRESHOLDS

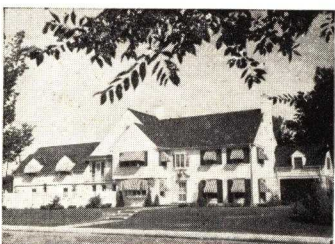
EDGINGS—NOSINGS

SPECIAL STRIPS

CALKING COMPOUNDS



BOOK-CADILLAC HOTEL, DETROIT, MICH.
(MASTER EQUIPPED)



TYPICAL INSTALLATIONS

DISTRIBUTION—Located in more than 300 cities of the United States, Master Weatherstrip contractors and dealers are reputable, thoroughly experienced and skilled in the installation of Master equipment. They can be depended on for first-class workmanship at reasonable prices and are capable of applying weatherstrips in a manner that will guarantee permanent, trouble-free service. Write us for the name of our dealer in your vicinity.

GENERAL INFORMATION—The prime essential of metals used for weatherstrips is rust resistance. Zinc, a non-ferrous metal, lends itself admirably to weatherstrip manufacturing, and its low price makes it most economical. Sheet and ribbon zinc are the two types in common use. Sheet zinc is the superior in tensile strength, durability, and the ability to withstand extremes of temperature. When used for Master Weatherstrips, this zinc is sheared and formed against the grain—known as cross-grain zinc.

Practically all Master Strips can be furnished in cold rolled bronze. The use of this material is advisable for weatherstrips to be installed in close proximity to the ocean or in an extremely corrosive atmosphere.

In addition to zinc and cold rolled bronze, many of our weatherstrips are supplied in a specially developed aluminum alloy known as "Masterloy." Chief among the properties which make this a superior metal for weatherstrips are high resistance to the corrosive action of the atmosphere, high tensile strength, exceptional wearing qualities, and a silvery lustrous finish that harmonizes well with white metal hardware, trim mouldings, etc.

MANUFACTURING FACILITIES—Nearly two decades of experience in the manufacture of high grade weatherstrips have contributed to make the Master line outstanding in its field. A spacious plant with finest available manufacturing equipment, highly trained personnel, large stocks of raw and finished material, central location and fine shipping facilities are factors that assure high quality products and prompt delivery. Our resources are ample for the largest metal strip job and no order is too small to receive our prompt and careful attention.

SERVICE—Our Engineering Staff is available for consultation at any time regarding your weatherstrip problems.

MASTER METAL  STRIP SERVICE

1720 N. KILBOURN AVENUE, CHICAGO, ILLINOIS

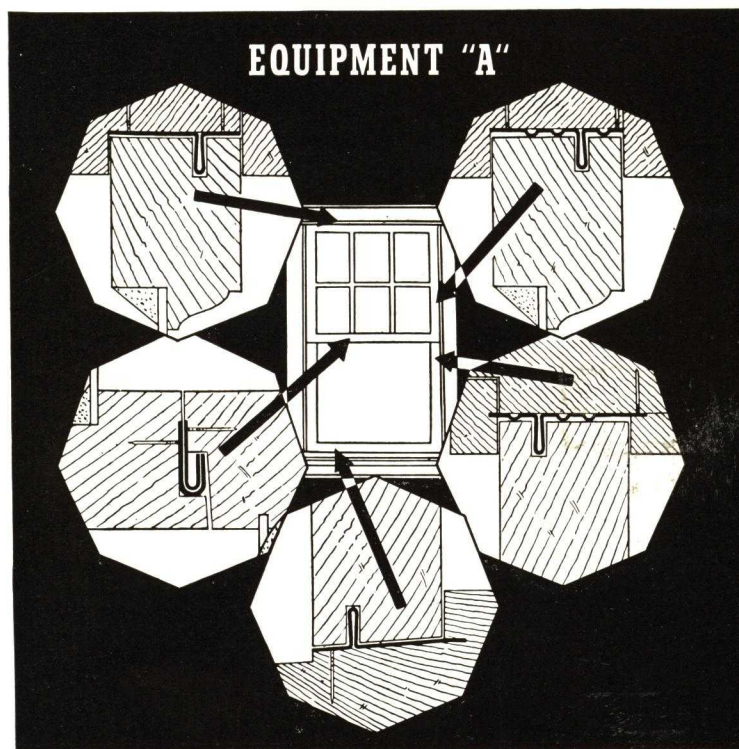
DOUBLE HUNG WINDOW WEATHERSTRIPS

MASTER EQUIPMENT "A"

For residential work where the equipment is subject to only moderate use, Equipment "A" is ordinarily specified. Here, of course, the lower cost also is a factor of importance.

Sash grooves are $\frac{9}{64}$ in. wide and $\frac{1}{2}$ in. deep, allowing a clearance of $\frac{1}{64}$ in. Experience has shown this clearance permits maximum efficiency and yet is sufficient to allow the sash to operate smoothly even though the wood may swell. Strips are wide enough to cover full width at head, sill, and pulley stiles. Height of rib strip is full $\frac{1}{2}$ inch, assuring positive contact regardless of sash shrinkage.

MASTER EQUIPMENT "A"					
Meeting Rail Strips 12 Gauge Zinc (.028) All Other Strips 9 Gauge Zinc (.018)					
Meeting Rail	Head Strip	Sill Strip	Lower Side Strips	Upper Side Strips	Thickness of Sash
Nos. 11 and 12	No. 4P	No. 6P	No. 6C	No. 4C	1 $\frac{3}{8}$ in.
Nos. 11 and 12	No. 6P	No. 7P	No. 7C	No. 6C	1 $\frac{3}{4}$ in.
Nos. 11 and 12	No. 8P	No. 9P	No. 9C	No. 8C	2 $\frac{1}{4}$ in.
ALSO AVAILABLE IN COLD ROLLED BRONZE					



TO SPECIFY—Equip Double Hung Wood Windows with Master Weatherstrip Equipment "A" (cross grain zinc) (cold rolled bronze).

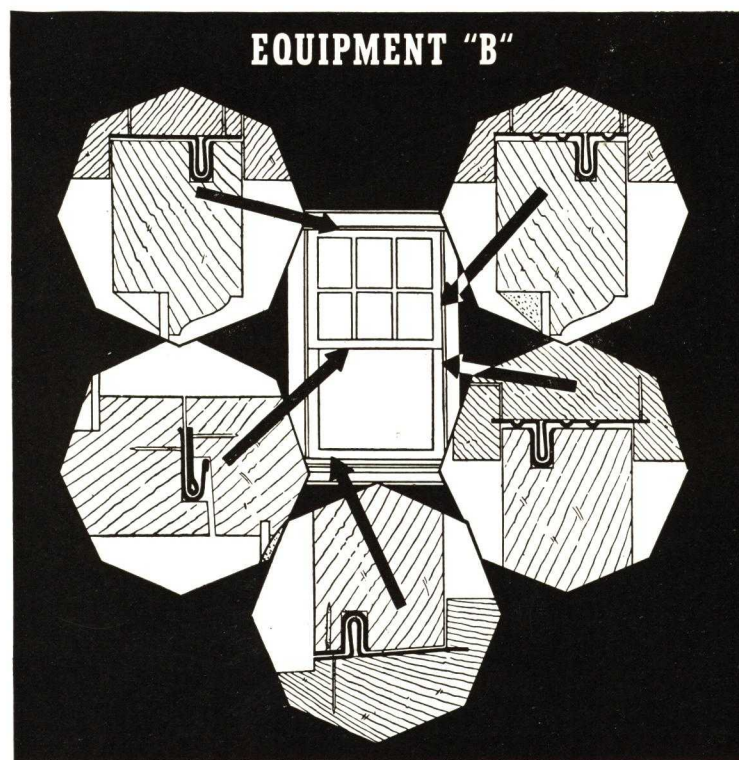
MASTER EQUIPMENT "B"

A practical, heavy duty equipment which conforms to Government specifications for post offices, schools, and other public buildings where abnormal usage is apt to be encountered.

All grooves are lined with metal liners, insuring smooth sliding windows at all times. Head strip and sill strip are of heavy 12 gauge zinc to withstand possible damage by window washers and others. Height of rib is full $\frac{1}{2}$ inch.

It is advisable to specify Equipment "B" for large windows and for sash thicker than 1 $\frac{3}{4}$ in.

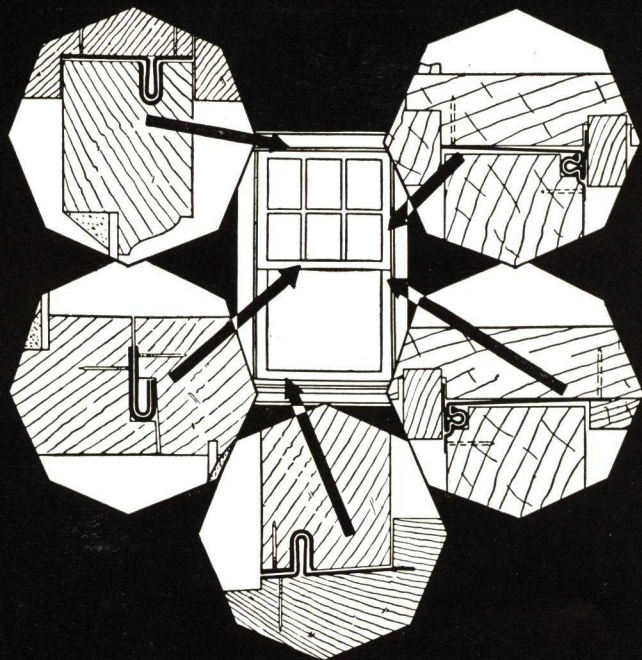
MASTER EQUIPMENT "B"					
Head, Sill and Meeting Rail Strips 12 Gauge Zinc (.028) Side Strips 9 Gauge Zinc (.018) Liner Strips 8 Gauge Zinc (.016)					
Meeting Rail	Head Strip	Sill Strip	Lower Side Strips	Upper Side Strips	Thickness of Sash
Nos. 11 and 12	No. 4S	No. 6S	No. 6C	No. 4C	1 $\frac{3}{8}$ in.
Nos. 11 and 12	No. 6S	No. 7S	No. 7C	No. 6C	1 $\frac{3}{4}$ in.
Nos. 11 and 12	No. 8S	No. 9S	No. 9C	No. 8C	2 $\frac{1}{4}$ in.
No. 16 LINER STRIP FOR ALL GROOVES					



TO SPECIFY—Equip D. H. Wood Windows with Master Heavy Duty Equipment "B" (cross grain zinc) (cold rolled bronze) with liners.

DOUBLE HUNG WINDOW WEATHERSTRIPS

EQUIPMENT NO. 260



TO SPECIFY—Equip D. H. Wood Windows with Master Tubular Equipment No. 260 (cross grain zinc) (cold rolled bronze).

MASTER EQUIPMENT No. 260

Master No. 260 Tubular Equipment for double hung windows is notable for its high efficiency, easy sliding action, and ability to adjust itself to changes in the sash caused by warpage or shrinkage. Metal to metal contact at all points is provided by the use of zinc interliners in all grooves.

The ideal weatherstrip equipment for either old or new work.

Furnished in cold rolled bronze or aluminum alloy, as well as the standard cross grain zinc.

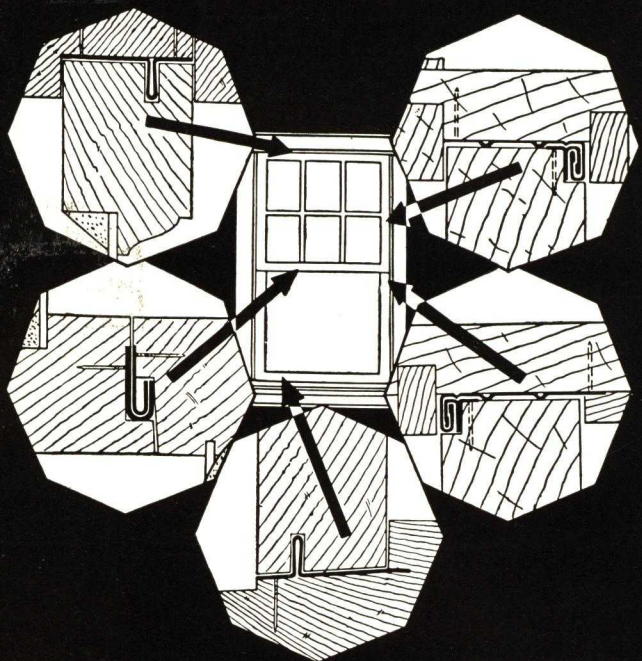
MASTER EQUIPMENT No. 260

Meeting Rail Strips 12 Gauge Zinc (.028)
Liner Strips 8 Gauge Zinc (.016)
All Other Strips 9 Gauge Zinc (.018)

Meeting Rail	Head Strip	Sill Strip	Lower Side Strips	Upper Side Strips	Thickness of Sash
Nos. 11 and 12	No. 4P	No. 6P	No. 261	No. 260	1 3/8 in.
Nos. 11 and 12	No. 6P	No. 7P	No. 262	No. 261	1 3/4 in.
Nos. 11 and 12	No. 8P	No. 9P	No. 264	No. 263	2 1/4 in.

No. 16 LINER STRIP FOR ALL GROOVES

EQUIPMENT NO. 270



TO SPECIFY—Equip D. H. Wood Windows with Master Weatherstrip Equipment No. 270 (cross grain zinc) (cold rolled bronze).

MASTER EQUIPMENT No. 270

Master Equipment No. 270 for double hung windows has many of the good features of the Master Tubular Equipment, including the ability to adjust itself to expansion and contraction of the sash.

While the action is flexible, the strips themselves are made of substantial 9 gauge cross grain zinc and are designed to endure.

This equipment is particularly well adapted to sash equipped with special sash balances, such as Unique, Pullman, etc. where the ordinary type of weatherstrip cannot be used.

MASTER EQUIPMENT No. 270

Meeting Rail Strips 12 Gauge Zinc (.028)
All Other Strips 9 Gauge Zinc (.018)

Meeting Rail	Head Strip	Sill Strip	Lower Side Strips	Upper Side Strips	Thickness of Sash
Nos. 11 and 12	No. 4P	No. 6P	No. 271	No. 270	1 3/8 in.
Nos. 11 and 12	No. 6P	No. 7P	No. 272	No. 271	1 3/4 in.
Nos. 11 and 12	No. 8P	No. 9P	No. 273	No. 272X	2 1/4 in.

LINER STRIPS OPTIONAL FOR HEAD AND BOTTOM GROOVES

MASTER EQUIPMENT No. 200-J

(Patent Pending)

This new sill equipment is especially designed to overcome the problem of condensation forming on the glass of inswinging casements. Such condensation as may form runs into the channel and is carried off through the weep holes. The drip cap, which is an integral part of the channel, prevents water being forced directly through, and also is a protection against clogging up the weep holes when painting is being done. The interlocking hook and the spring tension strip are both made from "Masterloy" aluminum alloy to conform to the channel itself. This is probably the most watertight casement channel on the market.

MASTER EQUIPMENT No. 300-L

This is a very satisfactory equipment for weatherstripping inswinging wood casements.

The capacity of the trough is ample to permit a considerable amount of water to drain off through the weep holes.

For the sides and tops of casements, the same equipments used on doors are also applicable. In this case we show heavy zinc interlocking strips at the heads, sides, and centers.

The bottom equipment requires very little rabbeting and can be used on thin sash as well as sash of standard thickness.

In conjunction with the heavy channel is a tightly interlocking hook and a flexible bronze tension strip to provide complete protection in sealing out cold air and dust as well as moisture.

MASTER EQUIPMENT No. 70-K

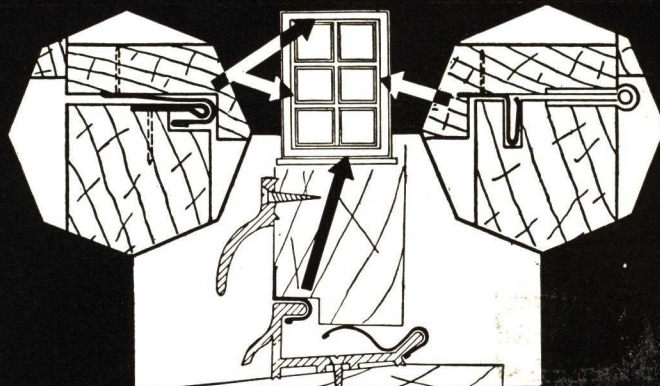
Undoubtedly more inswinging casement windows have been weatherstripped with No. 70-K Equipment than any other type.

It consists of three members, a heavy zinc channel, a flexible bronze front member, and an interlocking zinc rear hook.

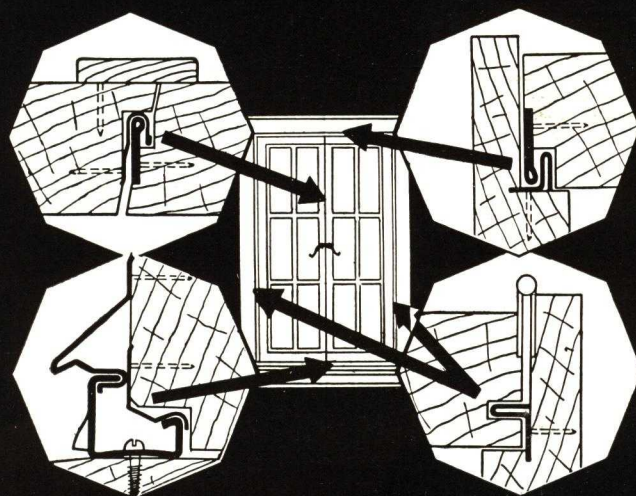
Weep holes are provided to allow water to drain out. Calking compound is used under this channel as well as others shown on this page to prevent water seeping through at that point.

Where exposure is not unduly severe, spring bronze weatherstrips can be substituted at the sides and top with satisfactory results.

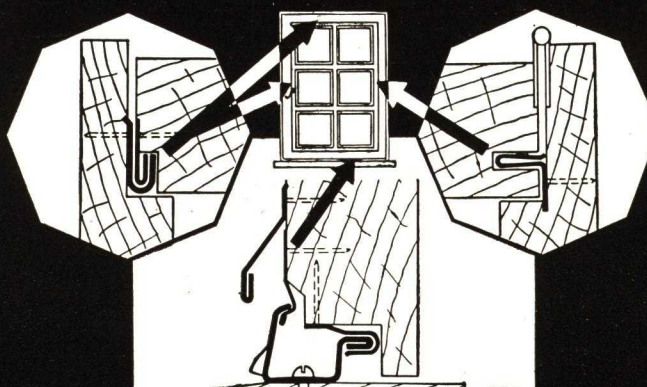
EQUIPMENT NO. 200 "J"



EQUIPMENT NO. 300 "L"

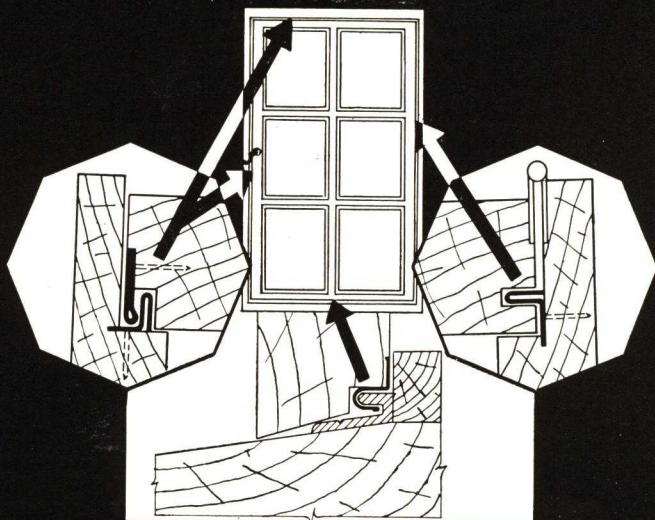


EQUIPMENT NO. 70 "K"



OUTSWINGING CASEMENT AND STEEL SASH WEATHERSTRIPS

EQUIPMENT NO. 80 "L"



TO SPECIFY—Outswinging wood casements shall be equipped with Master Weatherstrip Equipment No. 80-L with special extruded aluminum alloy sill bar, (interlocking strips) (spring bronze weatherstrip) for the sides and top.

MASTER EQUIPMENT No. 80-L

Master Equipment No. 80-L is a thoroughly practical and efficient equipment for outswinging casement windows.

The sill member is made from extruded "Masterloy" aluminum metal with Alumilite finish, and interlocks with a heavy aluminum alloy hook fastened to the sash. The sill member is closely fitted to the wood and so designed that water cannot get back of it.

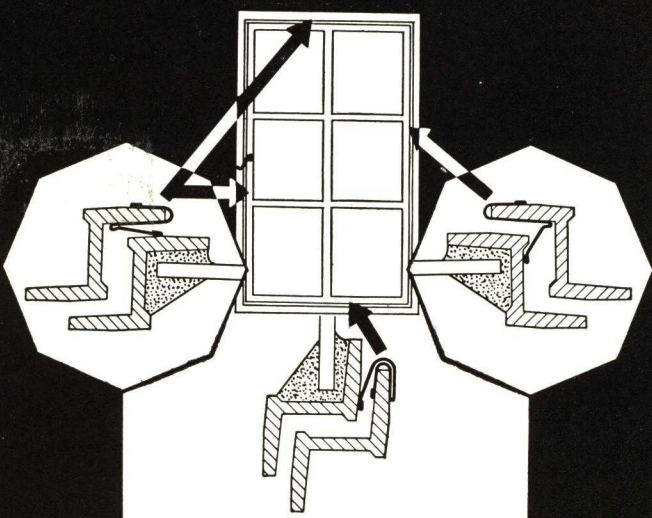
Interlocking strips are shown for the sides and top, and are recommended for severe exposures; although spring bronze tension weatherstrips are optional for the sides and top and are quite satisfactory where exposure is not too severe.

Due to the simplicity of the bottom equipment, it is easily installed with a minimum cutting of the sash.

MASTER EQUIPMENT No. 80-L

Sill	No. 180 Equipment
Top and Lock Side	No. 87 Zinc Double Flat No. 17 Zinc "L"
Hinge Side	No. 17 Zinc "L"

EQUIPMENT NO. 500



TO SPECIFY—Steel Casements shall be equipped with Master Weatherstrip Spring Bronze Equipment No. 500 securely fastened to all corners with Parker-Kalon screws. Installation shall be in accordance with manufacturer's details.

MASTER EQUIPMENT No. 500

While there are many varieties of steel casements, it will be found that this equipment is applicable to all standard and many custom built steel casements.

These strips are made of highly flexible spring bronze and so designed as to permit the windows to close tightly with a minimum of effort. While the strips clamp onto the flanges of the frame, the corners are neatly mitered and fastened with small Parker-Kalon screws.

The No. 507 Strip at the sill is so installed as to eliminate the possibility of dirt or water collecting in the contacting flange.

Thousands of installations throughout the country have shown this equipment to be highly successful in eliminating water and air leakage.

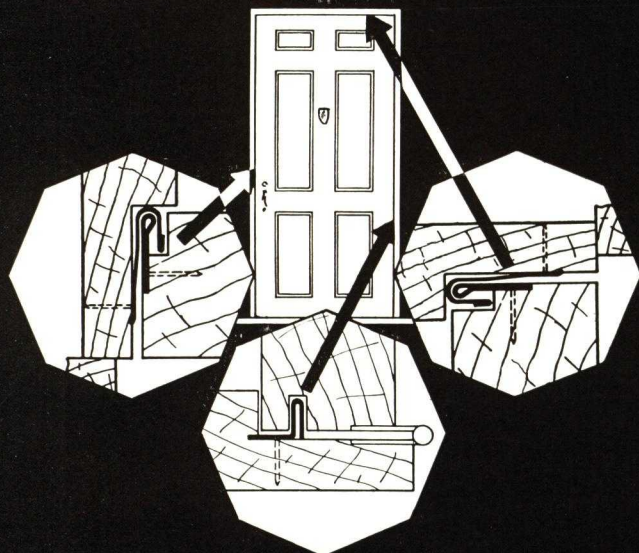
MASTER EQUIPMENT No. 500

Sill	No. 507 Strip
Top and Lock Side	No. 505 Strip
Hinge Side	No. 506 Strip

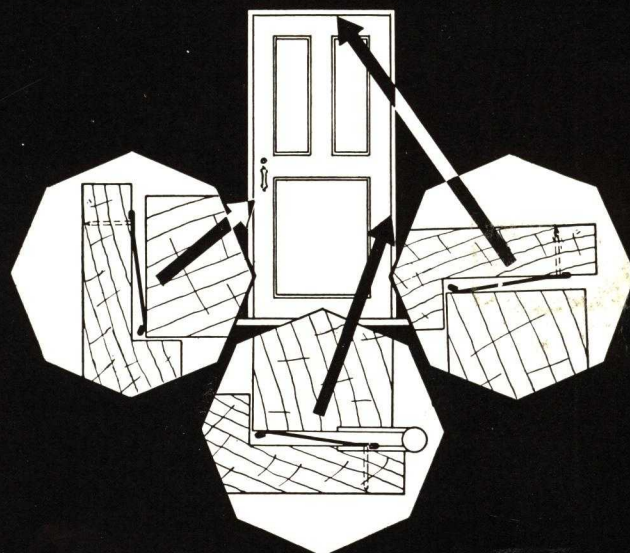


DOOR WEATHERSTRIPS THRESHOLD EQUIPMENT

INTERLOCKING EQUIPMENT "J"



SPRING BRONZE EQUIPMENT "P"



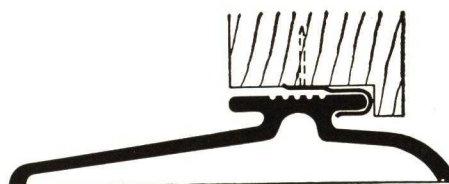
Equipment shown above is especially designed to adjust itself to shrinkage or swelling of the door up to $\frac{1}{4}$ in. All members are bronze, hook strip being of spring temper.

Master spring bronze weatherstrips for doors are made from highly tempered metal, rolled and formed to exacting standards. Edges are double hemmed to eliminate humming.

Shown below are installation details (half size) of several representative sill assemblies. All of these thresholds are available in extruded brass (architectural bronze) or aluminum alloy with Alumilite finish.



AT LEFT—No. 42, $1\frac{1}{8}$ in. Brass Threshold with brass concealed hook.

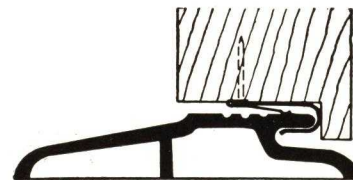


AT LEFT—No. 52, $4\frac{1}{2}$ in. Brass Threshold with brass concealed hook.

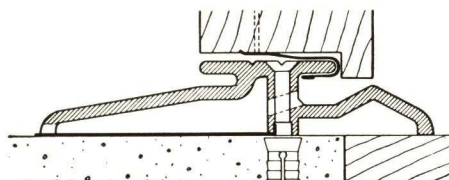
AT RIGHT—No. 43, $1\frac{1}{2}$ in. Brass Threshold with heavy surface hook and spring bronze insert.



AT RIGHT—No. 55, $4\frac{1}{4}$ in. Brass Threshold with heavy brass hook and insert strip.

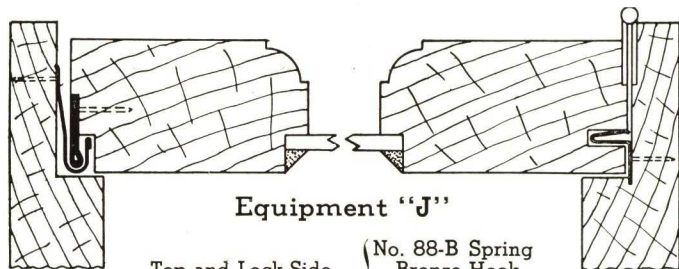


AT LEFT—No. 45, $1\frac{3}{8}$ in. Brass Threshold with flexible bronze hook.



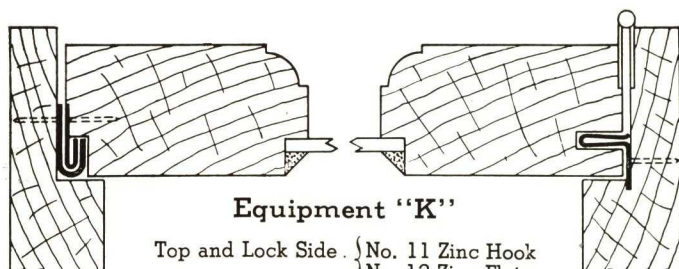
AT LEFT—No. 354, 4 in. Water-proof Type Threshold with flexible bronze hook.

SIDE, TOP AND CENTER EQUIPMENTS FOR DOORS AND WINDOWS



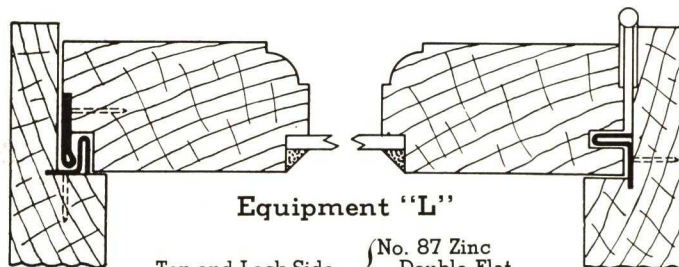
Equipment "J"

Top and Lock Side.. { No. 88-B Spring
Bronze Hook
No. 187 Bronze
Double Flat
Hinge Side. No. 17-B Spring Bronze "L"



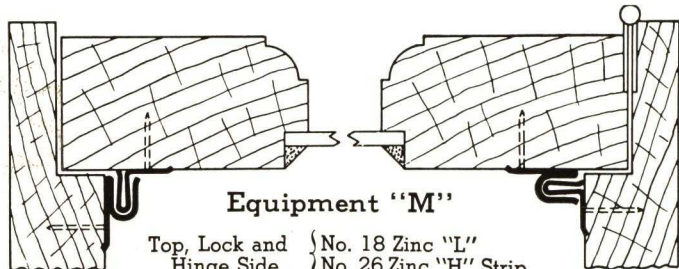
Equipment "K"

Top and Lock Side.. { No. 11 Zinc Hook
No. 12 Zinc Flat
Hinge Side..... No. 18 Zinc "L"



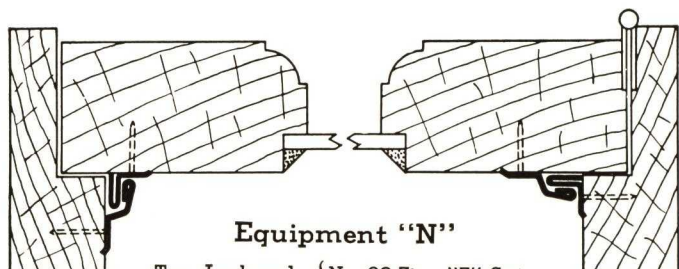
Equipment "L"

Top and Lock Side.. { No. 87 Zinc
Double Flat
No. 17 Zinc "L"
Hinge Side..... No. 17 Zinc "L"



Equipment "M"

Top, Lock and { No. 18 Zinc "L"
Hinge Side.. { No. 26 Zinc "H" Strip



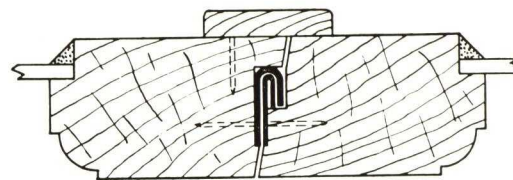
Equipment "N"

Top, Lock and { No. 28 Zinc "Z" Strip
Hinge Side.. { No. 17 Zinc "L"



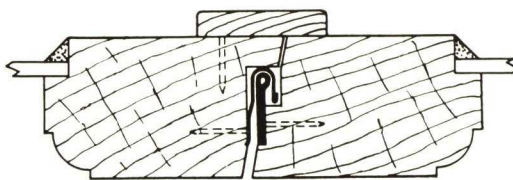
Equipment "V"

No. 79-A Aluminum Astragal
No. 320 Cushion Bronze (or Aluminum)



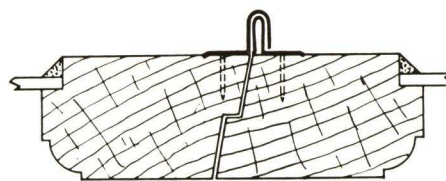
Equipment "R"

No. 11 Zinc (or Bronze) Hook
No. 12 Zinc (or Bronze) Flat



Equipment "S"

No. 74 Spring Bronze Hook
No. 187 Bronze Double Flat



Equipment "T"

No. 27 Zinc (or Bronze) Hook
No. 18 Zinc (or Bronze) "L"



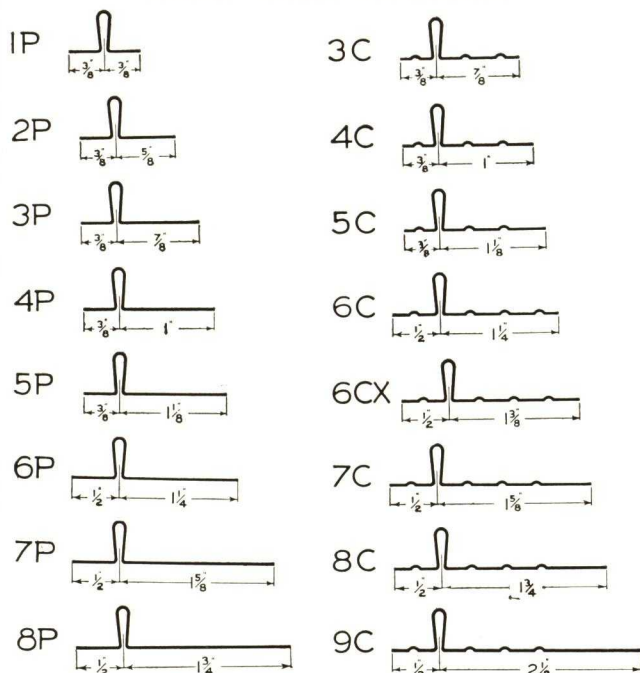
Equipment "U"

No. 160 Extruded Brass Hook
No. 161 Extruded Brass Flat

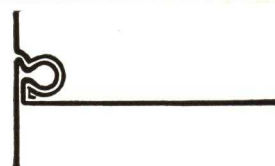


MASTER WEATHERSTRIP SECTIONS

RIB STRIP CHART HALF SIZE DETAILS



HEIGHT OF RIB IS FULL $\frac{1}{2}$ INCH



No. 260 TUBULAR



No. 270 FLEXIBLE

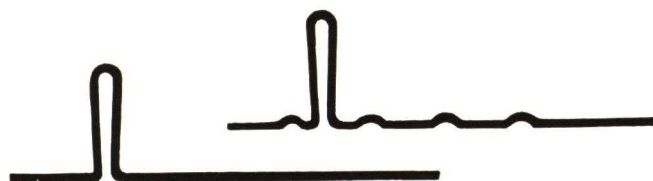


No. 206 SLIDE-EZY



No. 206-S SLIDE-EZY

FOLLOWING STRIPS SHOWN FULL SIZE



MASTER HY-RIB STRIPS



No. 16



No. 15



No. 114B



No. 17



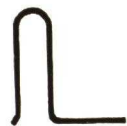
No. 18



No. 28



No. 16H



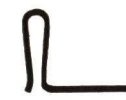
No. 15H



No. 114



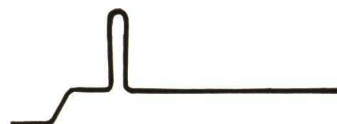
No. 26



No. 18S



No. 19



No. 10



No. 10S



No. 27



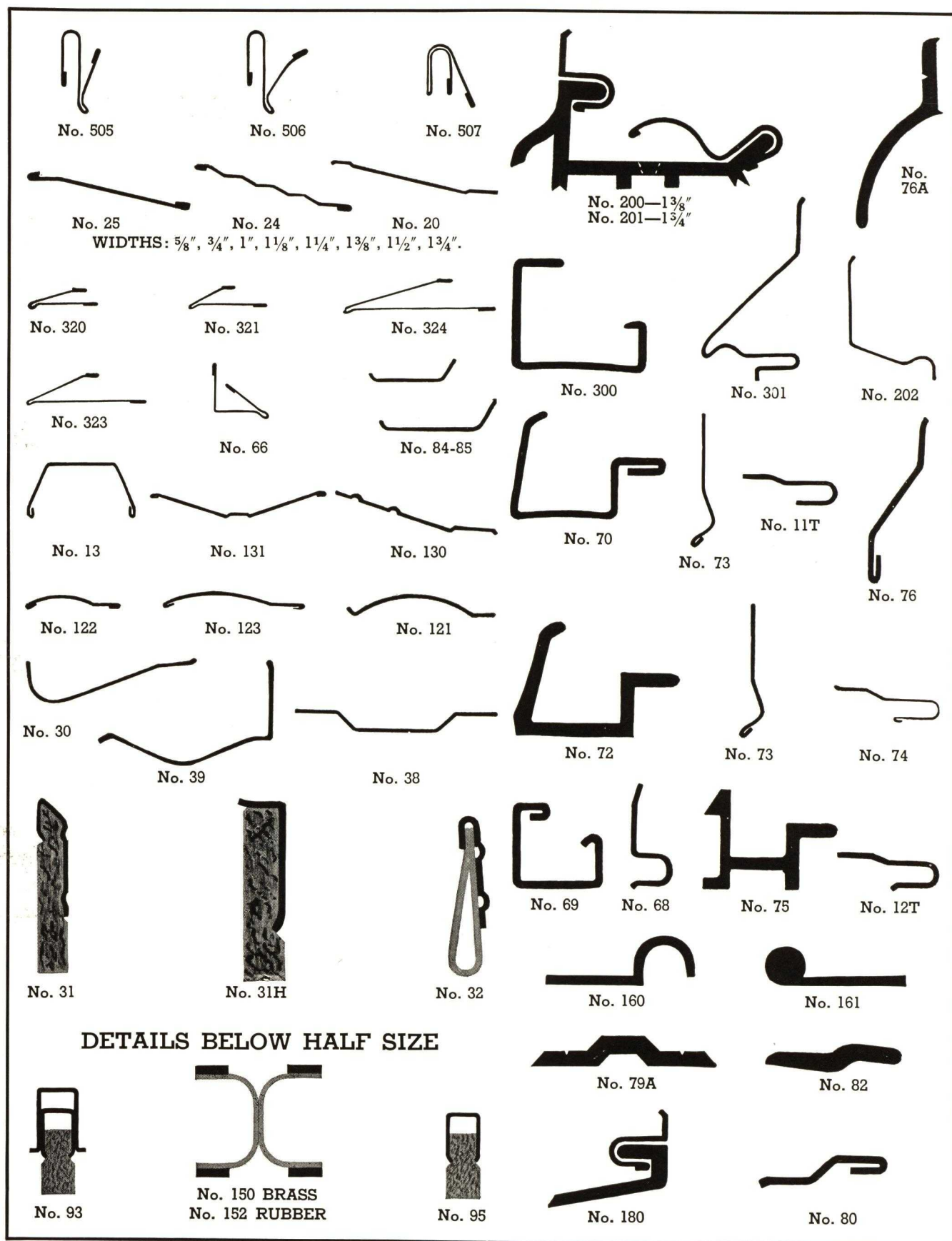
No. 37



No. 17B



MASTER WEATHERSTRIP SECTIONS



MASTER WEATHERSTRIP SECTIONS

DETAILS SHOWN BELOW
ARE FULL SIZE



No. 42



No. 43



No. 45



No. 46

THRESHOLDS SHOWN BELOW
ARE HALF SIZE DETAILS



No. 54—3½" Wide



No. 54B—3½" Wide



No. 55—4¼" Wide



No. 56—4½" Wide



No. 50—3½" Wide
No. 49—4¼" Wide
No. 52—4½" Wide
No. 51—5½" Wide



No. 350—2" Wide
No. 351—2½" Wide
No. 352—3" Wide
No. 353—3½" Wide
No. 354—4" Wide
No. 355—4½" Wide
No. 356—5" Wide
No. 357—5½" Wide
No. 358—6" Wide



No. 67—5" Wide

DETAILS SHOWN BELOW
ARE HALF SIZE



No. 361



No. 363



No. 53—2¼" Wide
No. 53A—2½" Wide
No. 57—3" Wide

No. 58—4" Wide
No. 59—5" Wide
No. 60—6" Wide



No. 61—4" Wide
No. 62—5" Wide
No. 63—6" Wide



No. 710



No. 720



No. 700



No. 780



No. 790

THE FOLLOWING ITEMS
ARE SHOWN FULL SIZE



No. 74



No. 35



No. 88B



No. 33



No. 36



No. 36 With 113 Insert



No. 34S



No. 191
Screen Channel

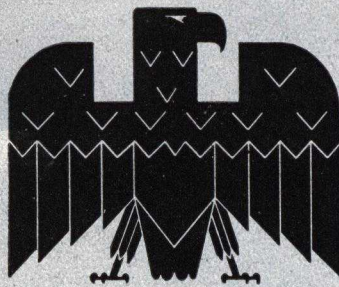


No. 192-195
Screen Guides



M A S T E R

M E T A L



S T R I P

S E R V I C E

SECTION 16

CONTINUED 

MEMORANDA

MONARCH METAL WEATHERSTRIP CORPORATION

Manufacturers of Weatherstrip Made of MetaLane Material

OFFICE AND FACTORY
6333 Etzel Avenue ST. LOUIS, MO.
Member of Producers Council

MATERIAL

MetaLane is registered in the United States Patent Office as a trade-mark for a special metal out of which Monarch Weatherstrips are made. MetaLane is processed aluminum having special alloys to give it strength, high yield and resiliency. It is produced in long rolled sheets, which is necessary in order to process it in our plant and convert it into the trade-marked MetaLane material.

PROCESS

This special aluminum alloy in coil sheets is passed through a series of tanks containing solutions of various kinds. All oil, greases and foreign substances are removed. While the aluminum alloy is in an acid solution, it receives an electrical charge of high energy, then all acid is removed from the sheet by rinsing in clear water.

The process up to this point, creates a very hard surface which makes it highly resistant to atmospheric attacks, such as occur in salt air, sulphurous gases and alkalis. As a result of

weatherstrip—in strength, resistance to corrosion and have a low coefficient of friction. A material with all these requirements could not be found. The materials available at that time had to be accepted. Not until the discovery of MetaLane was it possible to manufacture weatherstrips out of a material that would not have one or more objections, either corrosion, oxidation, discoloring, staining and even complete disintegration. MetaLane completely and satisfactorily overcomes any or all of these objections.

SERVICE

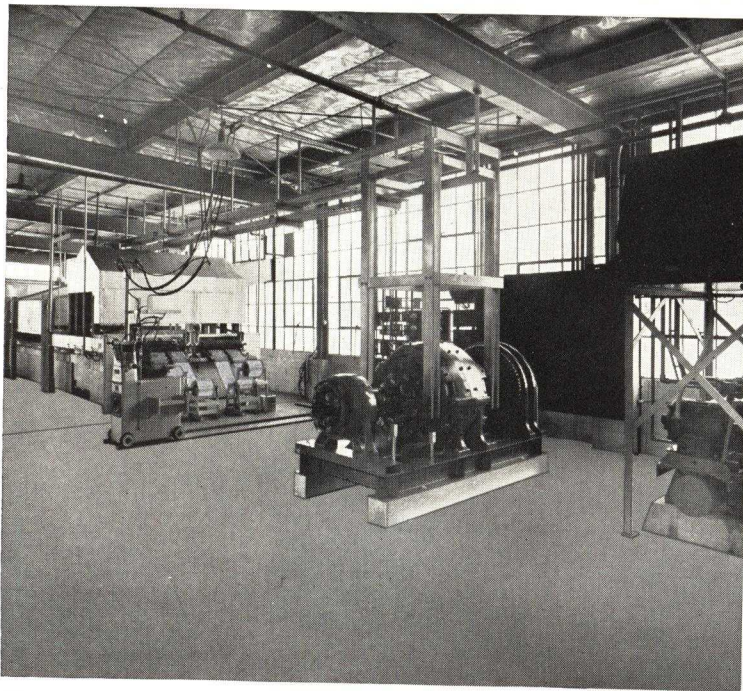
MetaLane Weatherstrips of several designs, according to the preference of the architect or builder, can now be ordered through many sources, such as, (1) manufacturers of factory assembled and weatherstripped units complete, ready for delivery; (2) standard equipment No. 428 for windows and No. 624 for casements, fitted to windows assembled in the plant of the sash and door jobbers; (3) all equipments shown on pages 4 and 5 of this catalog, installed by specially trained organization of licensees.

DISTRIBUTION

MetaLane Weatherstrips are offered to architects and builders through (a) manufacturers of assembled weatherstrip units; (b) sash and door jobbers; (c) authorized licensees; and (d) lumber dealers. MetaLane Weatherstrips cannot be purchased through any other source than these four classifications.

EFFICIENCY

Every MetaLane Weatherstrip illustrated in these pages has a rate of efficiency in preventing the infil-

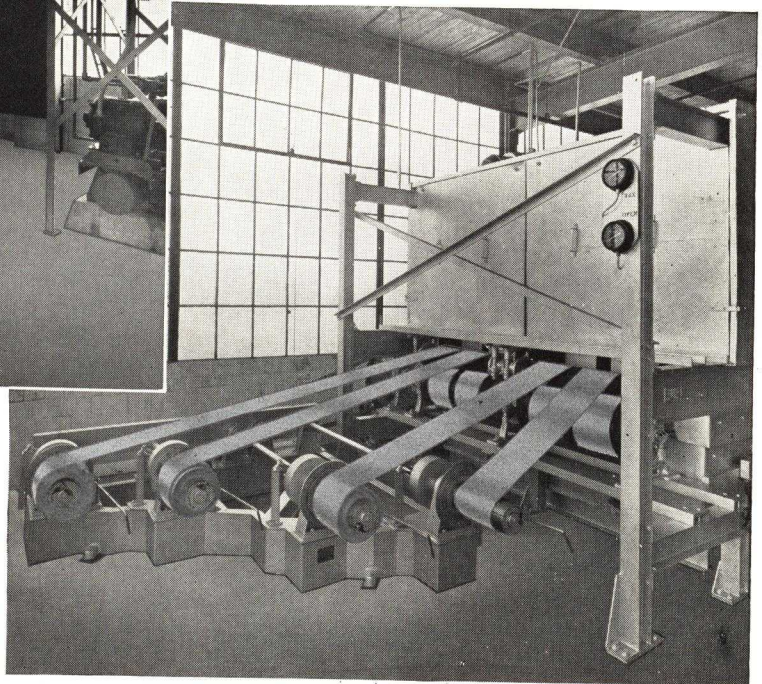


this coating, it will not corrode, become pitted, discolor or stain. Because of this oxide coating, it cannot be brought into frictional contact with itself or with any other metal or wood, otherwise it would gall and become scored, or if in contact with other metal or wood, will wear either very rapidly. To overcome this condition, the material is processed further.

It is passed through a highly heated chamber, so that all particles of moisture are evaporated and the sheet is absolutely dry. While at a high temperature, it is passed through a bath of hot, inorganic greasy material that will not melt below a temperature of 130 degrees and will not flow at a temperature below 150 degrees. The oxide coating becomes saturated with this greasy substance. When the sheets are exposed to temperature below 130 degrees, the greasy substance is congealed in the pores of the oxide coating. This process gives it a smooth, oily surface that makes it an ideal frictionless metal. This process, which is very necessary for a suitable weatherstrip metal, is patented under U. S. Patent No. 2,052,032.

HISTORY

For two years before the Monarch Company actually engaged in the manufacture of weatherstrips (in 1906) a very diligent search was made for a material that would be suitable for a



tration of air, dust and moisture that justifies its acceptance at prices quoted for its installation. Assurance of this is the continuance of the responsibility for service and satisfaction which the Monarch Company has maintained during the past 32 years.

ENGINEERING

The facilities, training and experience of the engineering staff of the MONARCH METAL WEATHERSTRIP CORPORATION are available to architects, engineers and manufacturers of wood and metal windows alike. The experience of our engineers in designing, planning and manufacturing is offered gratis to anyone interested in or seeking information about weatherstrips.

METALANE WEATHERSTRIPS OF SPECIAL SHAPES ON MILL ASSEMBLED UNITS

Left:
Anderson "Narroline"
Window Unit

Right:
Curtis "Silentite"
Window Unit

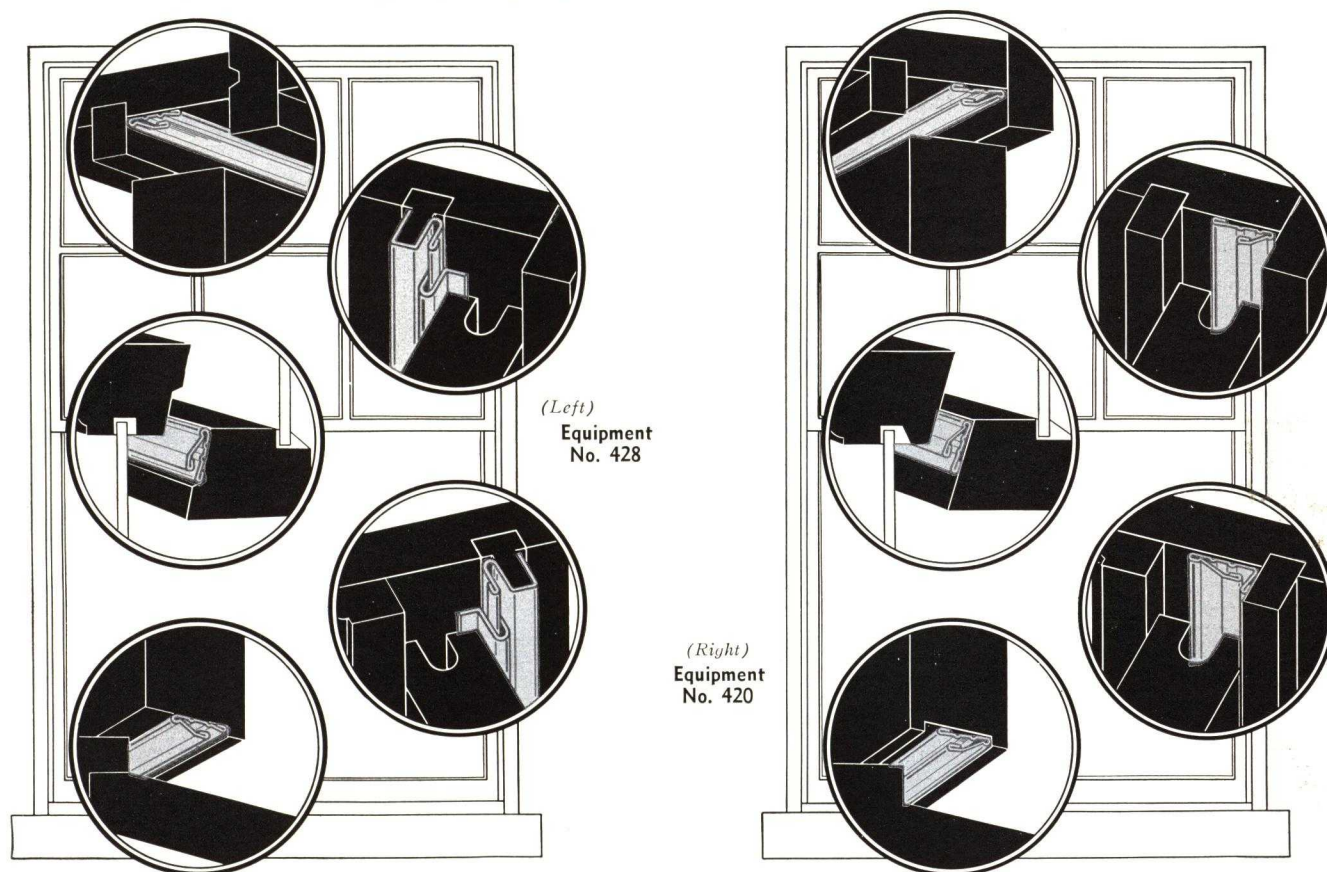
NOTE

Weatherstrips illustrated have been made according to the exclusive patents or specifications of the several manufacturers.

Left:
Morgan "Weather Seal"
Window Unit

Right:
S & K "New Era"
Window Unit

METALANE WEATHERSTRIPS OF STANDARD SHAPES ON MILL ASSEMBLED UNITS



Mills Using One or Both of Above on Their Mill Assembled Units

Iroquois Millwork Corp.
Albany, New York

The Radford Company
Oshkosh, Wisconsin

Huttig Sash & Door Co. Inc.
Louisville, Kentucky

Huttig Sash & Door Co. Inc.
Knoxville, Tennessee

Huttig Sash & Door Co.
Roanoke, Va.

The Wearn Lumber Co.
Charlotte, N. C.

Huttig Sash & Door Co.
Jacksonville, Fla.

Birmingham Sash & Door Co.
Birmingham, Ala.

Memphis Sash & Door Co.
Memphis, Tenn.

Southwestern Sash & Door Co.
Joplin, Missouri

The Radford Company
Duluth, Minnesota

Chicago & Riverdale Lumber Co.
Chicago, Illinois

Iroquois Door Co.
Syracuse, N. Y.

Builders Woodwork Co.
Burlington, Iowa

Huttig Sash & Door Co.
Dallas, Texas

Huttig Sash & Door Co.
St. Louis, Missouri

Huttig Sash & Door Co.
Columbus, Ohio

Rounds & Porter Company
Wichita, Kansas

Huttig Sash & Door Co.
Charlotte, N. C.

Williams & Hunting Co.
Cedar Rapids, Iowa

While the Monarch Company was perfecting this new weatherstrip material, other factors in the building industry were at work, which affected not only manufacturing methods of building equipment producers, but the requirements and demands of builders and home owners. Units that formerly were assembled, built or fitted on the job began to come from the factories and mills so completely fabricated that little more was required than to set them in place. Ways were sought to concentrate labor and material, to achieve manufacturing economy and apply the advantages of mass production.

Weatherstrip, being an integral necessary part of a complete window or door, was eventually involved in this process. Weatherstrip itself was already being produced economically and in mass production, but it was applied on the job as a separate operation. It was inevitable that if the manufacturers were to keep step with the demand for complete units, some way would have to be found to apply the strip in the mill.

After considerable experimentation, certain changes and improvements were inaugurated, and today it is common practice to buy windows that are fitted, assembled and weatherstripped as a complete finished unit. They are turned out along lines of mass production and manufacturing economy, are chemically treated to resist moisture, are termite-proofed, and no work is required on the job other than setting in the wall and giving them the final painting. They are better made, and the machine fitting is more accurate and more uniform than if done by hand.

This unquestionably is progress, but it has of necessity changed the policies and sales plans of weatherstrip manufacturers. They have been forced to meet these new and different conditions and requirements, but they have done so with the knowledge that progress is inevitable and requires "Keeping step."

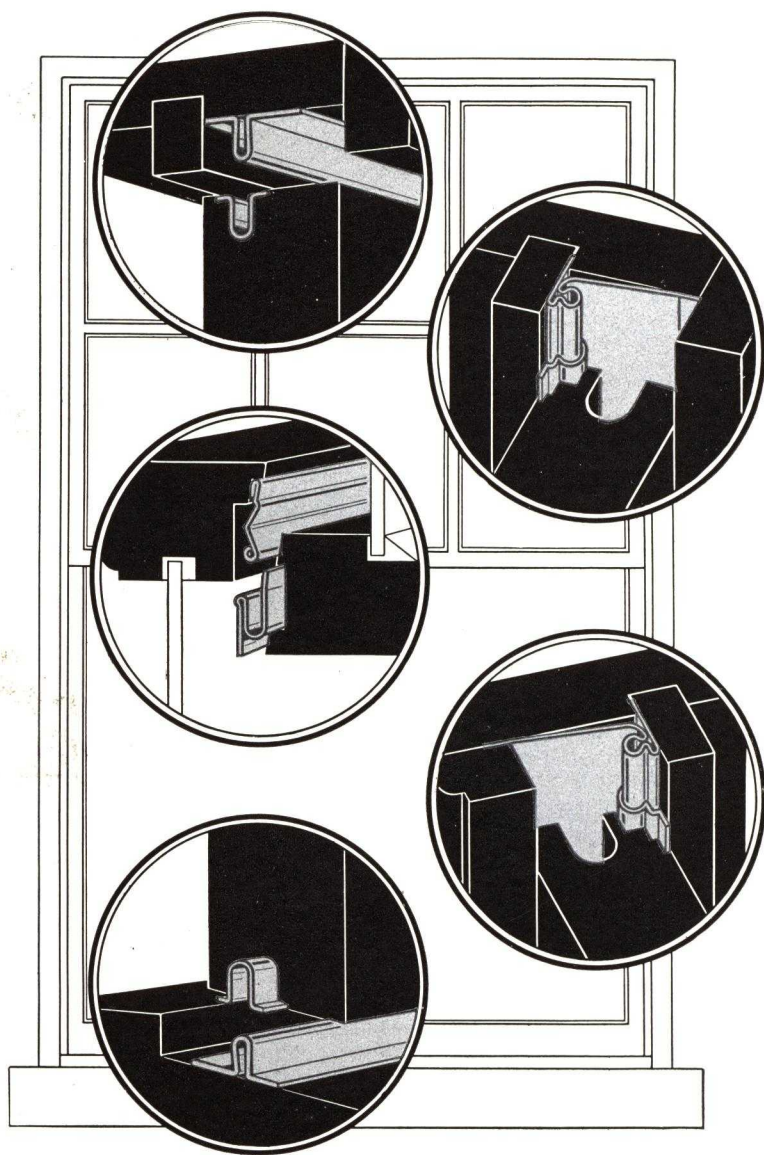
The Monarch Company has kept step, not only in designing weatherstrip shapes applicable to this new need of the sash manufacturers, but in contributing this improved weatherstrip material—MetaLane alloy.

MATERIAL

Monarch MetaLane Weatherstrips are now made of MetaLane material, a new metal having an aluminum base and special alloys to give it strength, durability and long life. MetaLane material will not oxidize, corrode or discolor. It is highly resistant to salt air and sulphurous gases. MetaLane material is electro chemically treated, resulting in a hard, smooth surface that will not wear and is practically frictionless. Casement hardware and door closers operate better with Monarch MetaLane Weatherstrip.

EFFICIENCY

The efficiency of Monarch MetaLane Weatherstrip has been determined by various unbiased authorities. Air leakage tests have proven Monarch Weatherstrips have no superior in efficiency for windows and doors. Based on these accurate scientific tests, Monarch Weatherstrips are sold on a definite maximum leakage expressed in terms of cubic feet of air per hour, per foot of crack, per mile of wind velocity.



Equipment No. 412

DOUBLE HUNG WINDOWS

Head—Groove in sash is lined to protect the wood which would otherwise be exposed by removing paint. Member on frame fits snugly into the liner.

Check Rail—A two-member equipment (1) three-way spring contact attached to lower sash engages (2) a double nailed hook member on upper sash. Warping or shrinking does not affect the efficiency of the check rail equipment.

Sides—Upper and lower sash are treated the same at the jamb. Sashes are rabbeted at corner nearest the parting stop to receive the tubular member which interlocks with the floating member attached to frame. The two members cannot become disengaged by swelling or shrinking of either sash or frame. Yet sash can be raised and lowered easily without any grating or scraping sound. The flange between parting stop and groove in pulley stile prevents air getting in behind frame strip as sash shrinks.

SILL

Groove in sash is lined to protect the wood which would otherwise be exposed by removing paint. Member on sill fits snugly into the liner.

DOORS

Sides and Head

Monarch MetaLane Weatherstrip as applied to sides and head of doors, functions differently than any other design of strip. The fold-back construction with the tubular bead at the fold (patented) provides two advantages. First, the tubular fold transmits the strain of bending around the entire circumference of the bead, thereby adding long yielding life to the strip. Second, the strip is nailed against the stop—the fold-back prevents the air from passing through. As the wind velocity outside is increased the air pressure inside the fold is increased, causing the strip to expand between the door and jamb. Result: Greater contact and efficiency, no humming.

SILLS

Two sill plates are proposed. The narrow $1\frac{7}{16}$ -in. equipment No. 3821 is used in combination with wood saddles. The drain pan under the sill plate returns water to the outside. The guard strip attached to inside face of door is interposed between the curl on the drain pan and the lip on the sill plate, completely stopping any leakage at this point.

The wide sill or threshold—width 5-in.—equipment No. 3833, is designed for outside doors subjected to extreme weather conditions. A wide and deep trough is provided on the inside of the threshold to catch any water that may leak through the cor-

ners due to expansion and contraction of the door. Water is carried to the outside by weep holes.

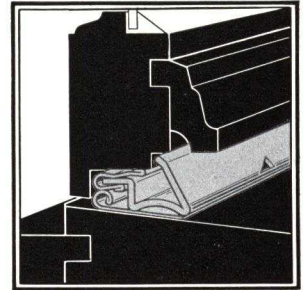
Both sills are extruded MetaLane material. The hard, smooth surface resists wear and will not oxidize, corrode or turn black. It will not discolor stone or paint, and can be cleaned easily with cleansing powder and water.

SERVICE TO ARCHITECTS AND ENGINEERS

Monarch Representatives are specially trained to give complete service on estimating, installation and consultation. This service to architects can be rendered at more than 165 points in the United States. See your classified telephone directory or write us.

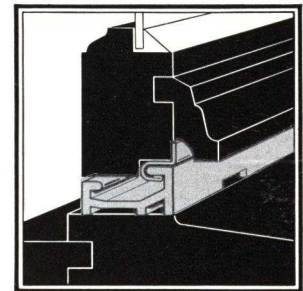
PATENTS

MetaLane material, as well as the design of Monarch Weatherstrips are protected by United States Patents. "MetaLane" is our trade-mark registered in United States Patent Office.



Sill of Metalane Casement
Equipment No. 3621

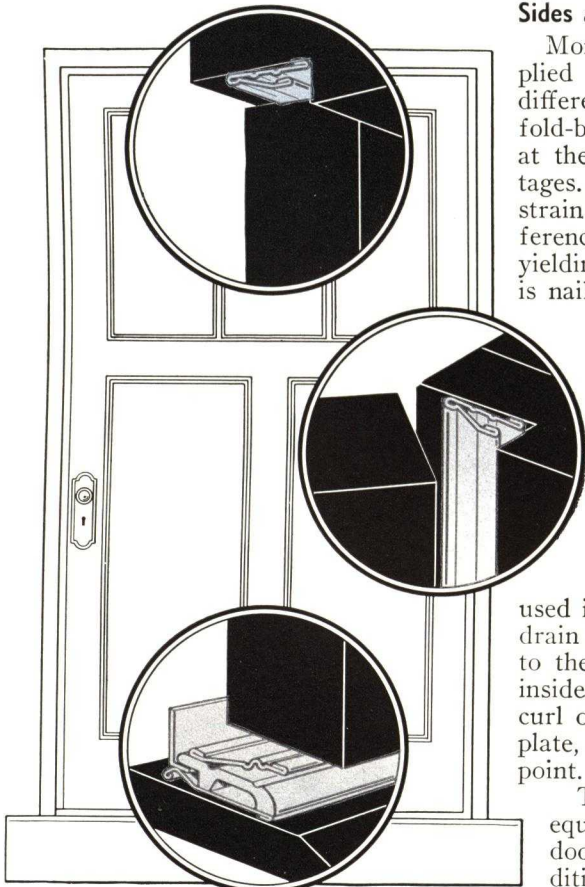
Casements are treated at sides and head the same as doors. The sill equipment functions similar to the sill plates of doors, with the exception that the hook attached to lower rail of sash engages the lip of the trough member.



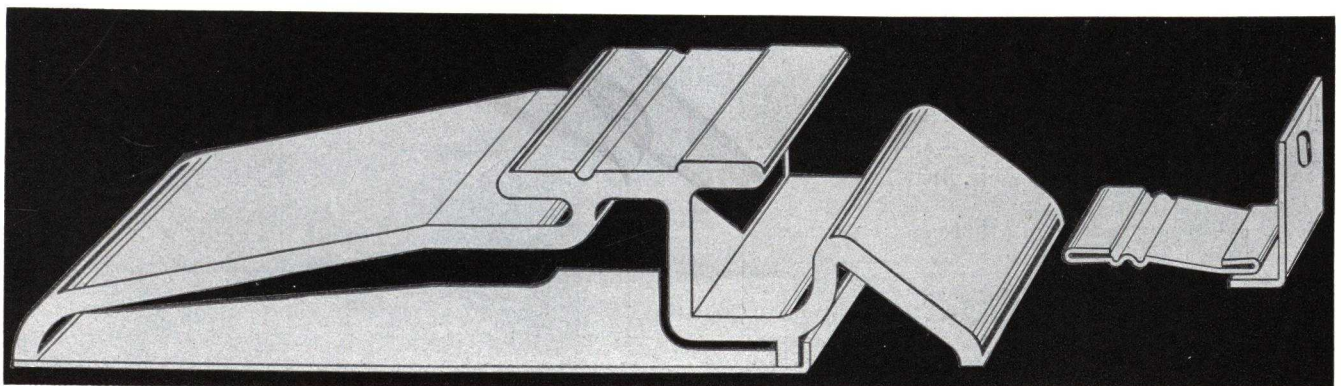
Sill of Metalane Casement
Equipment No. 3629

Monarch basin trough and seal at sill has hook attached to lower rail of sash which engages the outside lip of trough, making a perfect seal. Any water leakage through corners or tensions runs into trough and is carried to the outside by weep holes.

Vertical weatherstrips serve as air-retardants and down-spouts to carry water into trough on sill. This casement sill is made of extruded MetaLane material.



Equipment No. 3821



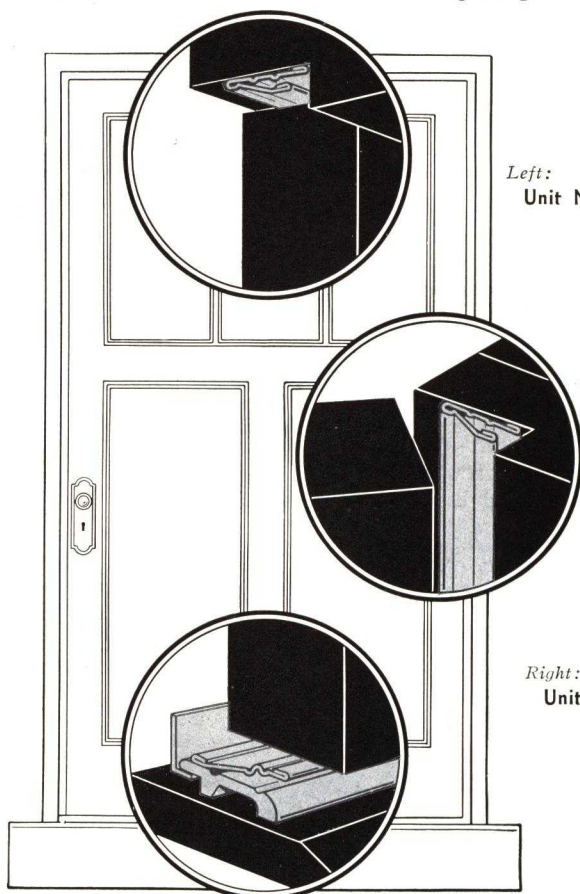
Sill on Equipment No. 3833

MetaLane Weatherstrip Sold Through Authorized Licensees—(See Classified Telephone Directories)

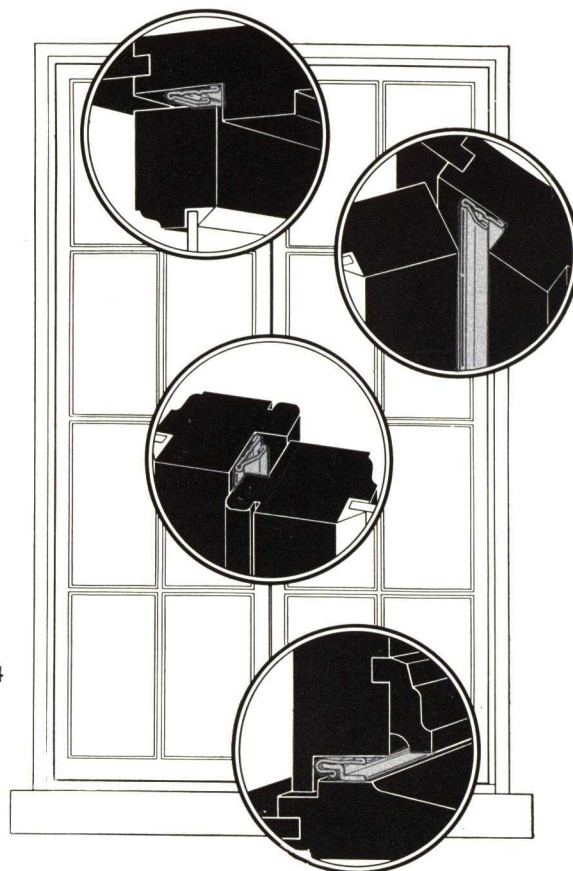
PACKAGED METALANE WEATHERSTRIPS SOLD BY SASH AND DOOR JOBBERS AND LUMBER YARDS

The weatherstrips shown on this page, and the No. 420 unit shown on page 3, are standard Monarch MetaLane Weatherstrip shapes that are supplied in convenient packaged form for easy and rapid installation. Each package contains all material needed for a single opening, cut to length and including nails and instructions. They are so designed that no cutting or groov-

ing of the sash is required and no special tools are needed to install. Made of MetaLane material, they will not rust, discolor, oxidize, be affected by salt air or sulphurous gases, and will not stain stone or woodwork. Thoroughly laboratory tested for efficiency and wear. Obtained direct from sash and door jobbers and retail lumber yards.



Left:
Unit No. 828



Right:
Unit No. 624

DOORS

Head and side strips of fold back design with a tubular bead on the folded edge. This bead spreads the strain of bending over the entire circumference of the fold, giving the strip extra long yielding life. Shape is such that pressure of the wind expands the fold between door and frame, thereby increasing the contact and efficiency. Lock strip continues contact edge of strip unbroken around keeper. Rigidity of folded edge prevents hum and permits nailing on 6 in. to 8 in. centers, thereby reducing installation time. Requires about one-fourth usual number of nails.

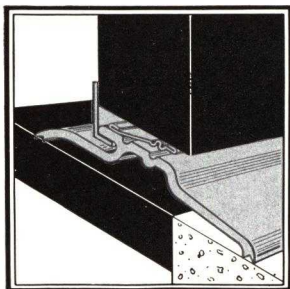
Three sills are available. The 1 $\frac{1}{8}$ in. sill shown on unit No. 828 above is for use on wooden saddle. A 4 $\frac{1}{8}$ in. sill as shown on unit No. 836 below is used without wooden

saddle and a metal and felt unit No. 850 is used on doors partially protected from the weather. The same head and side strips are used on all three units.

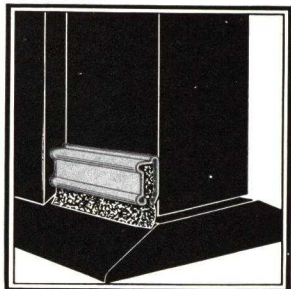
CASEMENTS

Head and sides are treated with fold back strip same as the door. An $\frac{1}{8}$ in. wide strip is used on in-opening units No. 624 and No. 628 and a 1 in. wide strip used on out-opening unit No. 630. An $\frac{1}{8}$ in. fold back strip is used for meeting stile. These strips have the same advantages as the door strip.

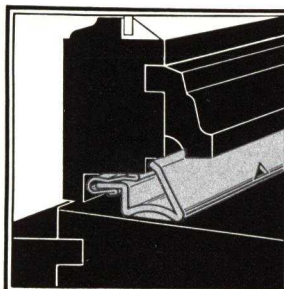
Three sill constructions are available and are shown below and above. Out-opening unit No. 630 has the same strip on sill as used on head and side. On units No. 624 and No. 628 a hook strip attached to bottom rail engages sill member giving positive wind and rain proof contact.



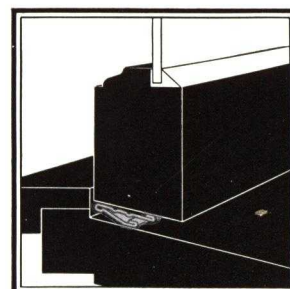
Sill on Unit No. 836



Sill on Unit No. 850



Sill on Unit No. 628



Sill on Unit No. 630

PROTEX

Weatherstrips



PROTEX WEATHERSTRIP MFG.CO.
CHICAGO • ILLINOIS

THE *Blue Book* OF WEATHERSTRIPS

PROTEX WEATHERSTRIP MANUFACTURING CO.

General Office and Factory . 2308 W. 69th St., Chicago, Ill.

Representatives and Sales Agents in all
Principal Cities in U. S. A. and Canada

THE COMPANY The Protex Weatherstrip Manufacturing Company is an organization of highly skilled technicians of long experience in the development, manufacture, production and installation of weathering equipment for doors and windows. Progressive and constantly alert to the increasingly exacting requirements of modern building construction, we are prepared to offer specialized service in whatever degree is required in this important phase of the insulation problem and to assist, upon request, in the preparation of details and specifications.

THE PRODUCT Protex equipment consists of Weatherstrips, Calking, Kick Plates, Edgings, Nosings, Thresholds, Double-Glazing Panes. Protex weathering materials adaptable to all types of metal or wood windows, are the result of test-proven development following scientific investigation at the University of Wisconsin and the R. W. Hunt Co. Laboratories. Protex equipment enjoys a quality reputation second to none and is designed and manufactured to give full investment value.

MATERIALS Protex metal weatherstrips are manufactured in ribbon, cross grain zinc, or commercial bronze. Some strips are formed in brass and aluminum. Thresholds and saddles are extruded in architectural bronze or aluminum to give greater accuracy to design than can be secured by casting.

INSTALLATIONS The use of Protex equipment in thousands of buildings both large and small across the country attest to the high standard of quality in materials and installation service maintained to meet rigid specifications. Following are a few of the many Protex equipped buildings of recent date:

Harvey S. Firestone Residence,
Akron, Ohio
John Carroll University Bldgs.,
Cleveland, Ohio
Department of Interior Bldgs.,
Washington, D. C.
State Office Bldg.,
Madison, Wis.
Signal Mt. Hotel,
Signal Mt., Tenn.
Aronomick School,
Philadelphia, Pa.

VETERANS FACILITIES

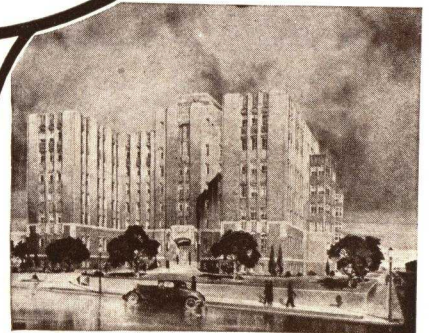
Danville, Ill., Detroit, Mich.
Ft. Lyon, Colo., Outwood, Ky.
Biloxi, Miss., Milwaukee, Wis.

U. S. FEDERAL HOUSING

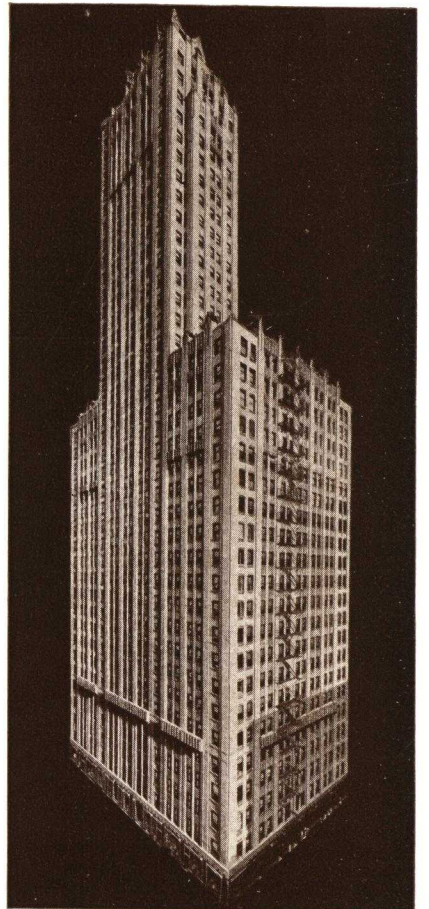
Will Rogers Courts,
Oklahoma City, Okla.
University Courts,
Columbia, S. C.
Lincoln Gardens,
Evansville, Ind.
Lakeside Terrace,
Cleveland, Ohio

BARRACKS BUILDINGS OR O.C. AND N.O.C. QUARTERS

Maxwell Field, Ala.
March Field, Cal.
Fort Sam Houston, Tex.
Fort Knox, Ky.
Fort Monroe, Va.
Fort Bragg, N. C.

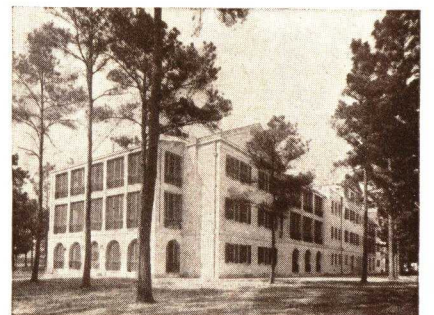


1200 Protex units are installed in this San Francisco Psychopathic Cancer Building



Pittsfield Building in Chicago with 2300 Protexed windows

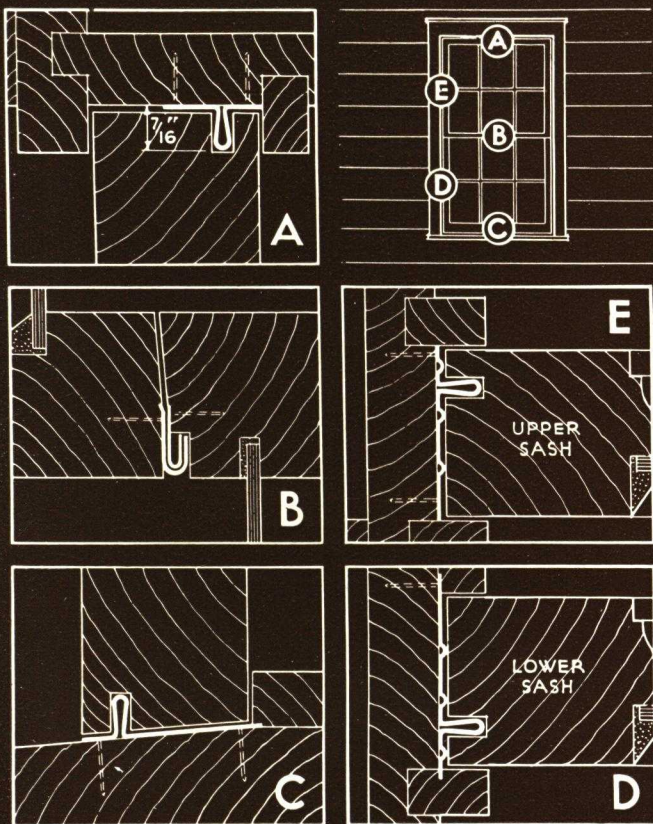
PROTEX



Veterans Hospital at Biloxi, Miss., has over 600 openings equipped with Protex

WEATHERSTRIPS DH • 200 • 201 DOUBLE HUNG WINDOWS

Rib Type—This type of equipment is standard for ordinary residential and commercial construction. The tongue or rib, mitered at corners, operates in accurately plowed groove in the sash. Strong concealed interlocking members are provided at meeting rails. Sash grooves can be lined with metal liners for metal to metal contact. Tests on this equipment at the University of Wisconsin Laboratories show 90% infiltration reduction.



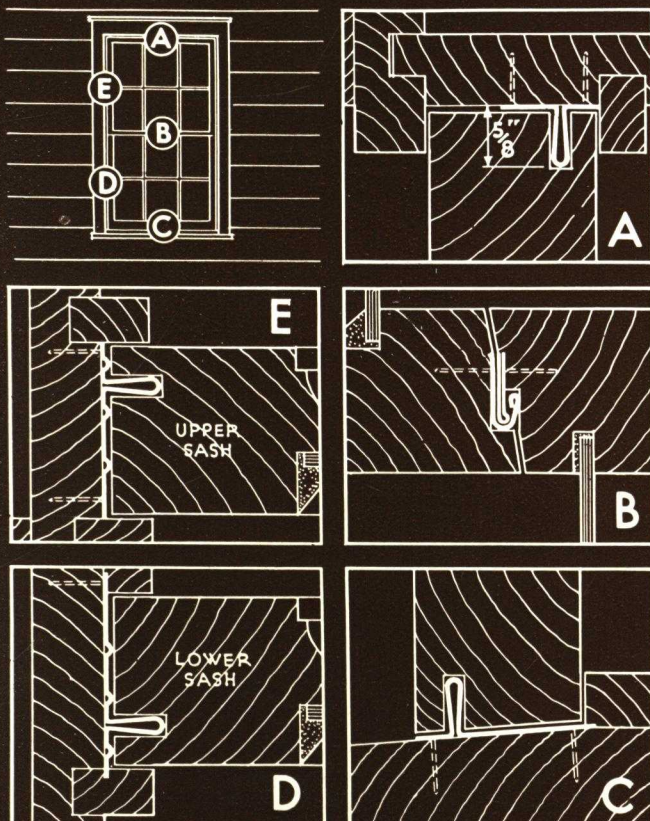
EQUIPMENT DH-200—ZINC				
Location	1 3/8" Sash	1 3/4" Sash	2 1/4" Sash	Ga.—In.
Head	2R	2R	2R	9—.018
Sill	4R	6R	8R	9—.018
M.R. Hook	11	11	11	12—.028
M.R. Flat	12	12	12	10—.020
Upper Sides	4C-3/8	6C-3/8	7C-3/8	9—.018
Lower Sides	6C-1/2	7C-1/2	8C-1/2	9—.018

EQUIPMENT DH-201—BRONZE				
Head	2RB	2RB	2RB	25—.0179
Sill	4RB	6RB	8RB	25—.0179
M.R. Hook	11B	11B	11B	22—.0253
M.R. Flat	12B	12B	12B	24—.020
Upper Sides	4CB-3/8	6CB-3/8	7CB-3/8	25—.0179
Lower Sides	6CB-1/2	7CB-1/2	8CB-1/2	25—.0179

Alternate No. 1—Substitute Heavy Sills
Alternate No. 2—Kerf upper sides to Blind Stop

WEATHERSTRIPS DH • 220 • 221 DOUBLE HUNG WINDOWS

High Rib Type—Extremely large double hung window openings requiring heavy sash and glass should have heavier weatherstripping members. Note the 5/8 inch rib height of equipment DH-220 and 221, which allows for greater shrinkage and expansion in the sash with no loss of efficiency. All of the members are of extra heavy gauge to withstand severe strain and usage. Do not specify this equipment for sash less than 1 3/4 inch thick.



EQUIPMENT DH-220—ZINC				
Location	1 3/8" Sash	1 3/4" Sash	2 1/4" Sash	Ga.—In.
Head	Use	2RH	2RH	10—.020
Sill	DH-200	6RH	8RH	10—.020
M.R. Hook	in	111	111	12—.028
M.R. Flat	10 ga.	112	112	9—.018
Upper Sides	Zinc	6CH-1/2	7CH-1/2	10—.020
Lower Sides		7CH-5/8	8CH-5/8	10—.020

EQUIPMENT DH-221—BRONZE				
Head	Use	2RBH	2RBH	24—.020
Sill	DH-201	6RBH	8RBH	24—.020
M.R. Hook	in	11B	11B	22—.0253
M.R. Flat	25 ga.	12B	12B	24—.020
Upper Sides	Bronze	6CRH-1/2	7CRH-1/2	24—.020
Lower Sides		7CRH-5/8	8CRH-5/8	24—.020

Alternate No. 1—Substitute Heavy Sills
Alternate No. 2—Kerf upper sides to Blind Stop

WEATHERSTRIPS **DH • 240 • 241** **DOUBLE HUNG WINDOWS**

Surety Type—Adapted to all types of sash hung on weights or spring or spiral balances. Absence of side grooves and application to parting bead eliminates pulley and cord interference. The concealed, interlocking action allows for a full 1/4 inch shrinkage with no loss of efficiency. Tests at University of Wisconsin Laboratories show 95% infiltration reduction with finger tip operation. They are covered by U. S. Pat. No. 1,928,948.

EQUIPMENT DH-240—ZINC AND BRONZE

Location	1 3/8" Sash	1 3/4" Sash	2 1/4" Sash	Ga.—In.
Head	2R	2R	2R	9—.018
Sill	4R	6R	8R	9—.018
M.R. Hook	11-BI	11-BI	11-BI	12—.028
M.R. Flat	112	112	112	9—.018
Upper Sides	1X-2X	1X-2X	1X-2X	32—.008
Lower Sides	1X-2X	1X-2X	1X-2X	32—.008

EQUIPMENT DH-241—BRONZE

Head	2RB	2RB	2RB	25—.0179
Sill	4RB	6RB	8RB	25—.0179
M.R. Hook	11-B—BI	11-B—BI	11-B—BI	22—.0253
M.R. Flat	112-B	112-B	112-B	25—.0179
Upper Sides	1X-2X	1X-2X	1X-2X	32—.008
Lower Sides	1X-2X	1X-2X	1X-2X	32—.008

Alternate No. 1—Substitute Heavy Sills

Note—Give parting bead depth for 2X members

WEATHERSTRIPS **DH • 260 • 261** **DOUBLE HUNG WINDOWS**

Surety Type—DH-260 and 261 are identical in design with DH-240 and 241, with the exception that the side members of the strip form full jamb sash runway coverage. Note that the weathering points are at the outermost points of air or water ingress which prevents the elements from reaching any part of the otherwise exposed frame or sash. Metal operating on and in metal provides perfect sliding areas and reduces friction to a minimum.

EQUIPMENT DH-260—ZINC

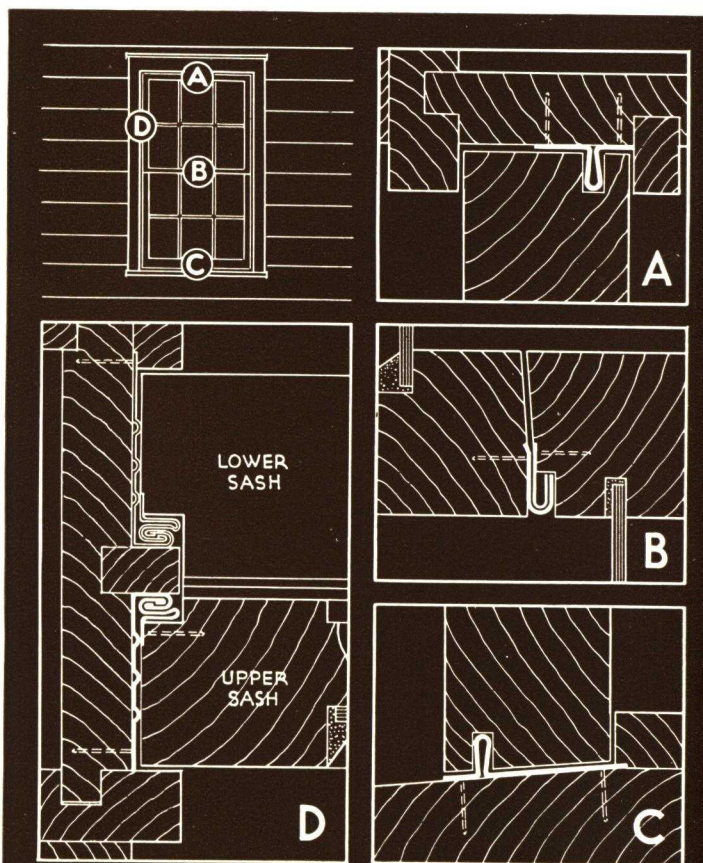
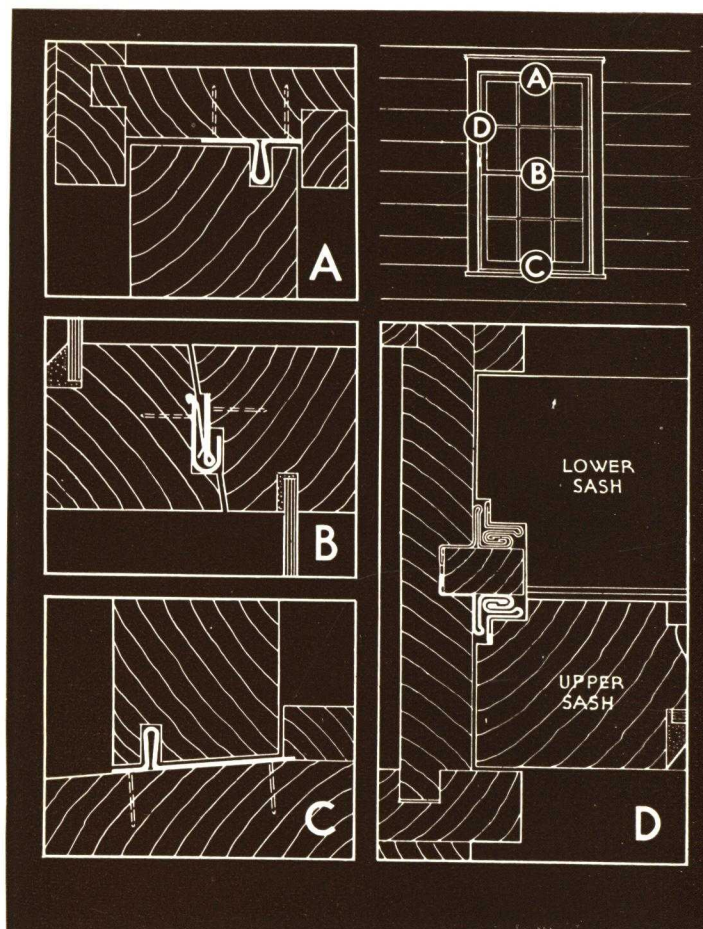
Location	1 3/8" Sash	1 3/4" Sash	2 1/4" Sash	Ga.—In.
Head	2R	2R	2R	9—.018
Sill	4R	6R	8R	9—.018
M.R. Hook	11	11	11	12—.028
M.R. Flat	12	12	12	10—.020
Upper Sides	6X-5X	7X-5X	8X-5X	9—.018
Lower Sides	7X-5X	8X-5X	9X-5X	9—.018

EQUIPMENT DH-261—BRONZE

Head	2RB	2RB	2RB	25—.0179
Sill	4RB	6RB	8RB	25—.0179
M.R. Hook	11B	11B	11B	22—.0253
M.R. Flat	12B	12B	12B	24—.0200
Upper Sides	6XB-1X	7XB-1X	8XB-1X	25—.0179
Lower Sides	7XB-1X	8XB-1X	9XB-1X	25—.0179

Alternate No. 1—Substitute Heavy Sills

Alternate No. 2—Kerf upper sides to Blind Stop



WEATHERSTRIPS DH • 250 DOUBLE HUNG WINDOWS

Surety Type—DH-250 is similar in interlocking principles with other Surety designs. In addition to the full runway jamb member and the interlocking hook rabbeted to the sash, it has a third auxiliary angle member set loose to operate freely into a kerfed slot in the parting bead and a working slot integral with and adjacent to interlocking edge of jamb strip. This eliminates possibility of leakage behind frame strip when sash has shrunk considerably. Third member is primarily a wind stop and does not interfere or increase friction in window operation. Formed only in cross grain zinc. 1-x Spring Bronze Sash Strip may be alternated for zinc No. 5-x if preferable, allowing a greater degree of flexibility for sash expansion and contraction. Head and sill liners optional.

EQUIPMENT DH-250—ZINC

Location	1 $\frac{3}{8}$ " Sash	1 $\frac{3}{4}$ " Sash	2 $\frac{1}{4}$ " Sash	Ga.—In.
Head	2-R	2-R	2-R	9—.018
Sill	4-R	6-R	8-R	9—.018
M.R. Hook	11	11	11	12—.028
M.R. Flat	12	12	12	10—.020
Upper Sides	6X-5X-3X	7X-5X-3X	8X-5X-3X	9—.018
Lower Sides	7X-5X-3X	8X-5X-3X	9X-5X-3X	9—.018

Alternate No. 1—Substitute Heavy Sills

Alternate No. 2—Kerf upper sides to Blind Stop

WEATHERSTRIPS DH • 270 DOUBLE HUNG WINDOWS

Tubular Type—DH-270 manufactured in cross grain is a 2 member interlocking design, having a tubed flange on the full runway strip—operating and sliding in a similar tubed member rabbeted and fastened to sash. Frame member has additional flange which operates in a kerfed slot formed in window frame adjacent to parting bead eliminating possible leakage behind strip; still maintaining a free give and take action with sash shrinkage or expansion. Standard interlocking meeting rails Nos. 11 and 12 are detailed. Heavier gauged designs—double nailing type or interlocking with additional spring bronze safety contact member may be alternated. Head and sill members are usual standard. Metal liners may be added to further reduce infiltration.

EQUIPMENT DH-270—ZINC

Location	1 $\frac{3}{8}$ " Sash	1 $\frac{3}{4}$ " Sash	2 $\frac{1}{4}$ " Sash	Ga.—In.
Head	2-R	2-R	2-R	9—.018
Sill	4-R	6-R	8-R	9—.018
M.R. Hook	11	11	11	12—.028
M.R. Flat	12	12	12	10—.020
Upper Sides	6T-1T	7T-1T	8T-1T	9—.018
Lower Sides	7T-1T	8T-1T	9T-1T	9—.018

Alternate No. 1—Substitute Heavy Sills

Alternate No. 2—Kerf upper sides to Blind Stop

WEATHERSTRIPS DH • 210 DOUBLE HUNG WINDOWS

Channel Type—A strong and effective installation for all types of Double Hung Windows. Extra heavy channel member fitting into grooves in sash forms a regular double rib installation. Inner member operating closely in frame channel allows frictionless metal to metal operation. Installation of frame member by screws permits easy sash installation and removal without damage to strips or sash. Design permits inner leg of channel to be coped into center of cross metal Rib Strips at Head and Sill—giving effective closures at all corners. Channel legs same length as height of Rib Strips allow for equal expansion without loss of efficiency. Metal liners of insert or nailing type for rib grooves at Head and Sill are selective at all sash perimeters.

EQUIPMENT DH-21—ZINC				
Location	1 $\frac{3}{8}$ " Sash	1 $\frac{3}{4}$ " Sash	2 $\frac{1}{4}$ " Sash	Ga.—In.
Head	2R	2R	2R	9—.018
Sill	4R	6R	8R	9—.018
M.R. Hook	11	11	11	12—.028
M.R. Flat	12	12	12	10—.020
Upper Sides	26-27	26-27	26-27	9—.018
Lower Sides	26-27	26-27	26-27	9—.018

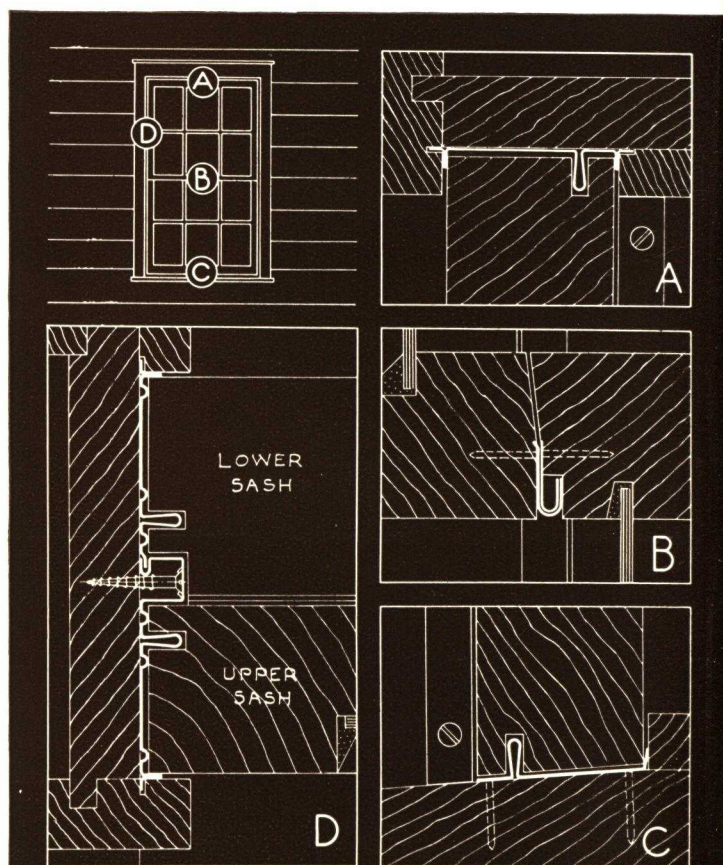
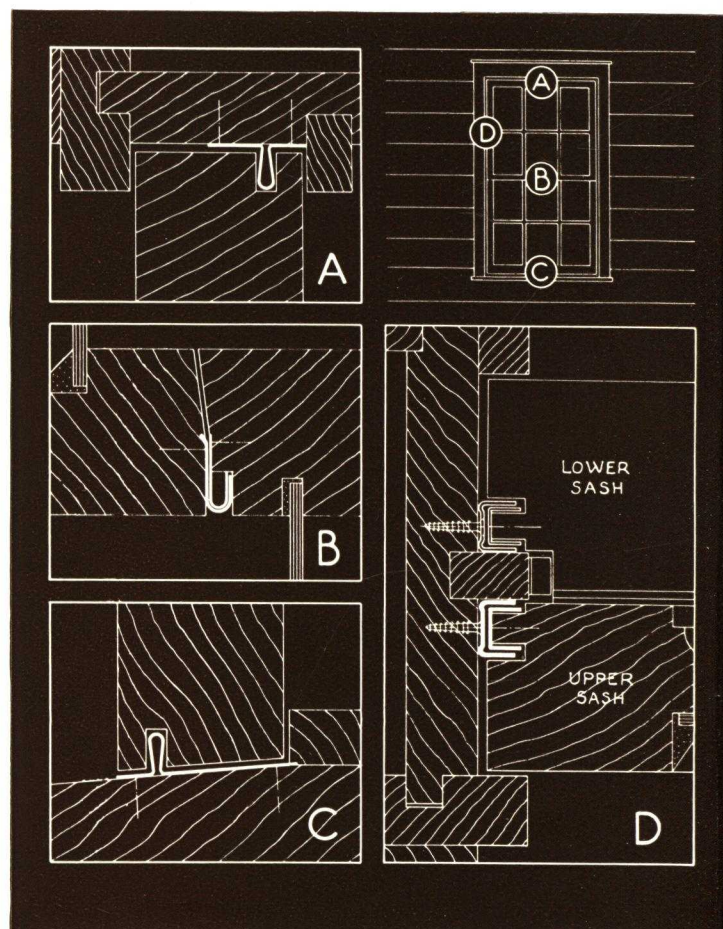
Alternate No. 1—Substitute Heavy Sills
No. 27—16 Ga. Channel Countersunk for Screws

WEATHERSTRIPS DH • 300 DOUBLE HUNG WINDOWS

Full Opening—This installation permits use of plank or stud frames—narrow trim and mullions. Jamb members complete with integral metal parting stop. Installed full opening height of unit. Guides sash in operation by head or side spring balances. Eliminates considerable frame painting and effects a complete metal frame appearance at economical cost. Inner side guide kerfs into metal parting bead of outer guide for easy sash removal without damage to runways. Held at edges by kerfing edge to eliminate nailing. Four screws hold strips in position. Flanged sill and head members complete metal perimeters. Flanges selective, either single requiring nailing or double requiring kerfing, but eliminating all nailing, covering frame cracks.

EQUIPMENT DH-300—ZINC				
Location	1 $\frac{3}{8}$ " Sash	1 $\frac{3}{4}$ " Sash	2 $\frac{1}{4}$ " Sash	Ga.—In.
Head	4-HF	6-HF	Not stocked	9—.018
Sill	4-RF	6-RF	Not stocked	9—.018
M.R. Hook	11	11	Not stocked	12—.028
M.R. Flat	12	12	Not stocked	10—.020
Outer Guide	2-M	3-M	Not stocked	9—.018
Inner Guide	4-M	6-M	Not stocked	9—.018

Outer Guide has integral parting bead—countersunk for F. H. Screws



WEATHERSTRIPS A • 280 • A • 281 • AUSTRAL WINDOWS •

Interlocking Type—Heads and sills are weatherstripped with rib type strips. Because of the rotating sash movement, the sides are weatherstripped with interlocking metal to metal contacts. The weatherstripping members are so designed and installed as to eliminate all hardware interference and permit installation from inside the building. The equipment is in exact accordance with the Austral Window Co.'s standards for easy operation.

EQUIPMENT A-280—ZINC

Location	Strip	Ga.—In.	Strip	Ga.—In.
Head	1R	9—.018	....	....
Sill	2R	9—.018	....	....
Meeting Rail	17	11—.024	18	9—.018
Upper Sides	15	9—.018	112	9—.018
Lower Sides	112	9—.018	19	9—.018
*Groove Liners	16	9—.018	....	....

EQUIPMENT A-281—BRONZE

Head	1RB	25—.0179	....	....
Sill	2RB	25—.0179	....	....
Meeting Rail	17B	23—.0225	18B	25—.0179
Upper Sides	15B	26—.016	112B	25—.0179
Lower Sides	112B	25—.0179	19B	22—.0179
*Groove Liners	16B	26—.016	....	....

Alternate No. 1—Substitute Heavy Sills

*Alternate No. 2—Add Groove Liners Head and Sill

WEATHERSTRIPS P • 290 • P • 291 WILLIAMS PIVOT WINDOWS

Rib Type—The equipment members and their installation is identical with equipment DH-200 and 201 (see page 2). Sash operating hardware is installed in the face of the side filler members which are plowed to receive the weatherstripping rib which prevents air or moisture infiltration between the filler strip and frame. The interlocking corrugations between the filler strip and the sash proper prevent air leakage at these points.

EQUIPMENT P-290—ZINC

Location	1 3/8" Sash	1 3/4" Sash	2 1/4" Sash	Ga.—In.
Head	2R	2R	2R	9—.018
Sill	1R	1R	1R	9—.018
M.R. Hook	11	11	11	12—.028
M.R. Flat	12	12	12	10—.020
Upper Sides	4C-3/8	6C-3/8	7C-3/8	9—.018
Lower Sides	6C-1/2	7C-1/2	8C-1/2	9—.018

EQUIPMENT P-291—BRONZE

Head	2RB	2RB	2RB	25—.0179
Sill	1RB	1RB	1RB	25—.0179
M.R. Hook	11B	11B	11B	22—.0253
M.R. Flat	12B	12B	12B	24—.020
Upper Sides	4CB-3/8	6CB-3/8	7CB-3/8	25—.0179
Lower Sides	6CB-1/2	7CB-1/2	8CB-1/2	25—.0179

Alternate No. 1—Substitute Heavy Sills

Alternate No. 2—Kerf upper sides to Blind Stop

WEATHERSTRIPS DH • 520 • 521 HOLLOW METAL DOUBLE HUNG

Interlocking Type—Standard manufacturing tolerances in fabrication together with expansion and contraction require that hollow metal or Kalamein double hung windows be weatherstripped with perfect interlocks that will not increase sliding friction. The strips are backed with specially treated felt to eliminate leakage under strips due to uneven surfaces. Note that H strips slide on EI members which eliminates side play, assuring easy operation. Where hardware interferes at meeting rails with the members detailed, it is necessary to substitute spring bronze between sections.

EQUIPMENT DH-520—ZINC				
Location	Strip	Ga.—In.	Strip	Ga.—In.
Head	18	9—.018	36	12—.028
Sill	18	9—.018	36	12—.028
Meeting Rail	17	11—.024	18	9—.018
Upper Sides	18	9—.018	36	12—.028
Lower Sides	18	9—.018	36	12—.028

EQUIPMENT DH-521—BRONZE				
Location	Strip	Ga.—In.	Strip	Ga.—In.
Head	18B	25—.0179	36B	22—.0225
Sill	18B	25—.0179	36B	22—.0225
Meeting Rail	17B	23—.0225	18B	25—.0179
Upper Sides	18B	25—.0179	36B	22—.0225
Lower Sides	18B	25—.0179	36B	22—.0225

Note—Strips backed with Waterproof Felt

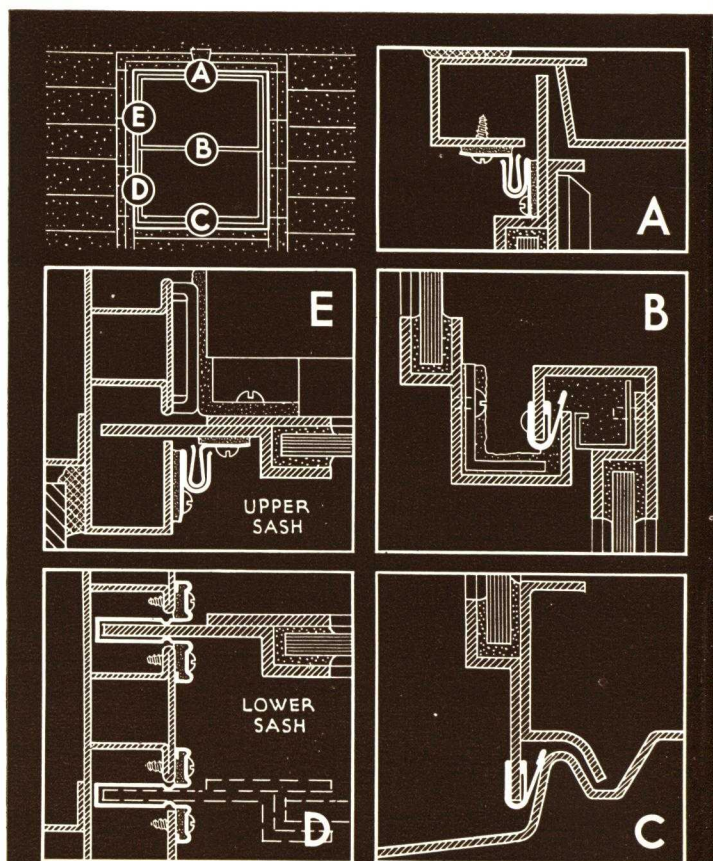
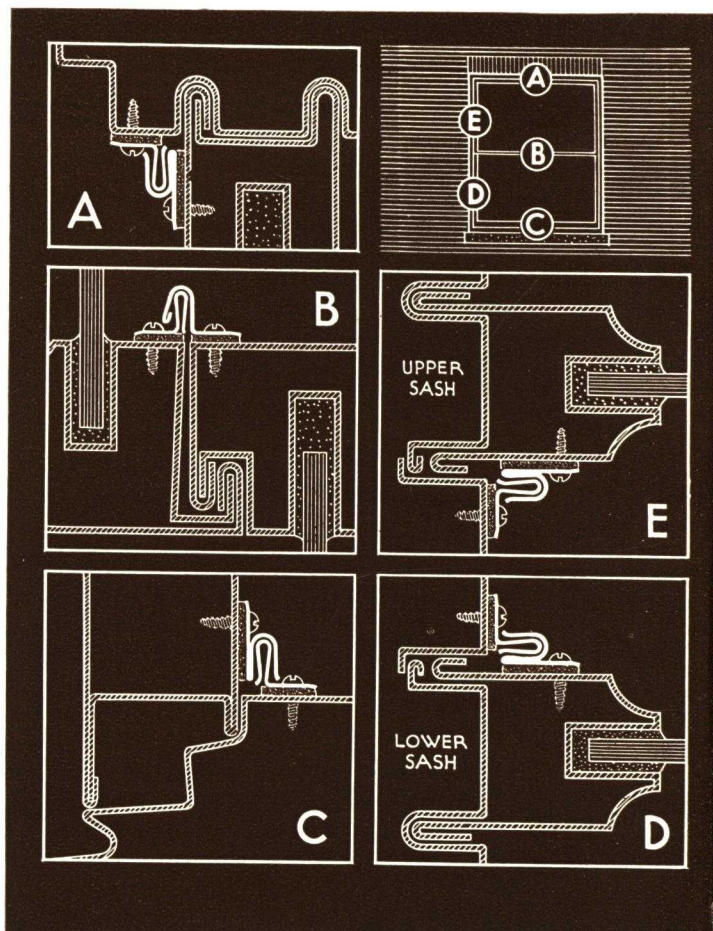
WEATHERSTRIPS DH • 530 • 531 PLATE TYPE DOUBLE HUNG

Channel Type—Plate type double hung windows require interlocking weatherstrip members located at the outermost points of air and water ingress. Because of the siphonage action at the lower sides, a special patented (U. S. Patent No. 2,050,369) channel strip is inserted in the jamb slots eliminating side play and wind and water entrance into the frame box and around the sash sections. All members are felt backed. Special stops and bumpers are furnished to complete the equipment. Tests at R. W. Hunt Laboratories show but .367 cu. ft. of air leakage per foot of sash perimeter infiltration loss.

EQUIPMENT DH-530—ZINC AND BRONZE				
Location	Strip	Ga.—In.	Strip	Ga.—In.
Head	18	9—.018	36	12—.028
Sill	501	34—.0063	..	.....
Meeting Rail	501	34—.0063	..	.....
Upper Sides	18	9—.018	36	12—.028
Lower Sides	506	10—.020	..	.....

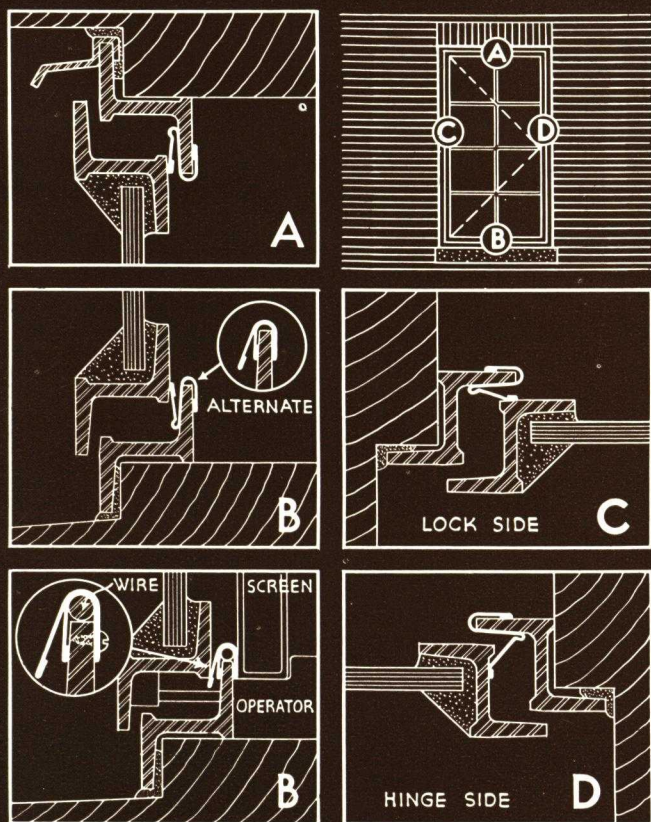
EQUIPMENT DH-531—BRONZE				
Location	Strip	Ga.—In.	Strip	Ga.—In.
Head	18B	25	36B	22—.0253
Sill	501	34	..	.....
Meeting Rail	501	34	..	.....
Upper Sides	18B	25	36B	22—.0253
Lower Sides	506B	25	..	.....

Note—Strips backed with Waterproof Felt



WEATHERSTRIPS ••• SC • 540 ••• STEEL CASEMENT WINDOWS

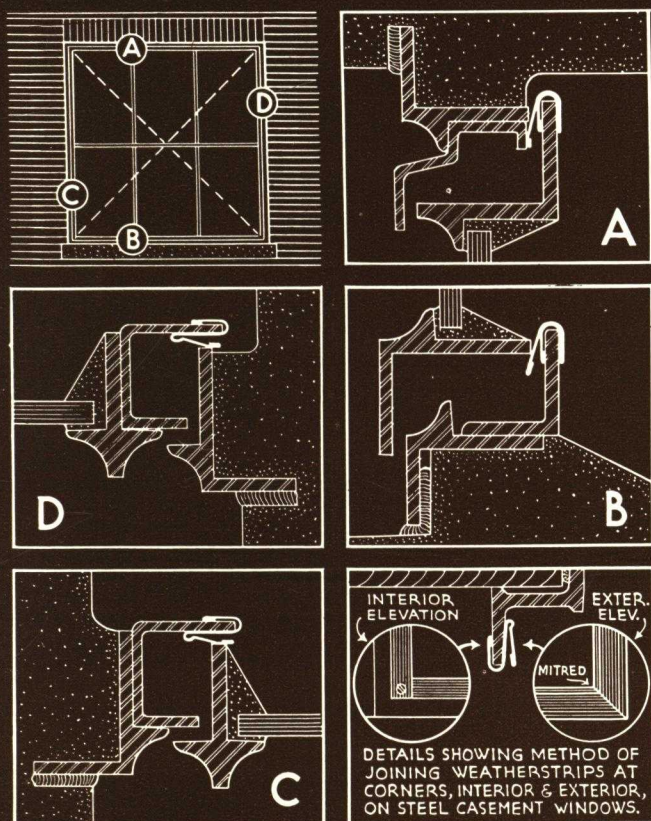
Spring Bronze Type—Actual experience in the weatherstripping of steel casements has developed this present 500 Series (U.S. Patent No. 2,117,-973). They require weatherstrips of high tempered spring bronze of the least thickness to eliminate binding, closure interference, and of design applicable to all makes of standard window units. This weatherstrip permits close clamping to the steel sections reinforced at corners with drive-ins to assure permanence and eliminate possible removal or misalignment. Alternate Detail B illustrates a method of elevating the sill strip to obviate interference with inside sash operators. It carries the strip and reinforces it over that part of the sash which is cut out for passage of operator arm. Strip 500-H is for hinge sides of casements having a sectional lap of not more than $\frac{3}{8}$ inch.



EQUIPMENT SC-540—BRONZE			
Location	Strip	Ga.—In.	Types
Head	500	34—.0063	Light and Medium Casements
Sill	500	34—.0063	
Centers	500	34—.0063	
Lock Side	500	34—.0063	
Hinge Side	500H	34—.0063	
Alternate No. 1—Substitute No. 501 at Sill Alternate No. 2—Add Elevator Wire at Sill			

WEATHERSTRIPS ••• IS • 550 ••• STEEL INDUSTRIAL WINDOWS

Spring Bronze Type—The same 500 series strips as used for Steel Casements are used for Steel Industrial Windows as indicated in the equipment schedule below. Strip 501 is used in all positions when there is a possibility of dirt or moisture interfering with the contact closures. Due to ventilator warpage, it is sometimes necessary to apply a supplementary $\frac{3}{8} \times \frac{3}{8}$ inch steel angle to the bottom of the ventilator section aligned with the frame member to form a perfect contact for the flange of the weatherstrip member. The standard strip will fit most of the various makes of solid steel section industrial windows. Because some windows depart from the customary standards, the flanged strip 501 is made, where so required, with extra wide flanges and additional distance between the sides to compensate for these manufacturing variances.



EQUIPMENT IS-550—BRONZE			
Location	Strip	Ga.—In.	Ventilators
Head	501	34—.0063	All types
Sill	501	34—.0063	All types
Sides	500	34—.0063	Project in
Sides	500	34—.0063	Project out
Sides	500	34—.0063	Center Pivoted
Alternate No. 1—Substitute No. 501 at Sides Alternate No. 2—Extra wide flange on No. 501			

WEATHERSTRIPS C • 403 • • 403 • B WOOD CASEMENT WINDOWS

Interlocking Type—Since there are no definite design standards established by woodworking mills in the manufacture of inswinging wood casement windows, weatherstripping for these units must be designed to be applicable to any variation. The detail below illustrates a strong, concealed metal to metal interlock with a most effective self-draining sill trough adaptable to sash 1 3/4 inch or greater in thickness. Moisture following down the side members collects in the trough and drains out through weep holes which are furnished with wind breaks.

EQUIPMENT C-403—ZINC				
Location	Strip	Ga.—In.	Strip	Ga.—In.
Head	19	9—.018	112	9—.018
Sill	70 detailed—others optional			15—.040
Center (Double)	19	9—.018	112	9—.018
Lock Side	19	9—.018	112	9—.018
Hinge Side	19 or 18	9—.018	...	...

EQUIPMENT C-403B—BRONZE				
Location	Strip	Ga.—In.	Strip	Ga.—In.
Head	19B	25—.0179	112B	25—.0179
Sill	71 detailed—others optional			18—.040
Center (Double)	19B	25—.0179	112B	25—.0179
Lock Side	19B	25—.0179	112B	25—.0179
Hinge Side	19B or 18B	25—.0179	...	...

Alternate No. 1—Add Metal or Wood Astragal
Alternate No. 2—Add Metal or Wood Dripcaps

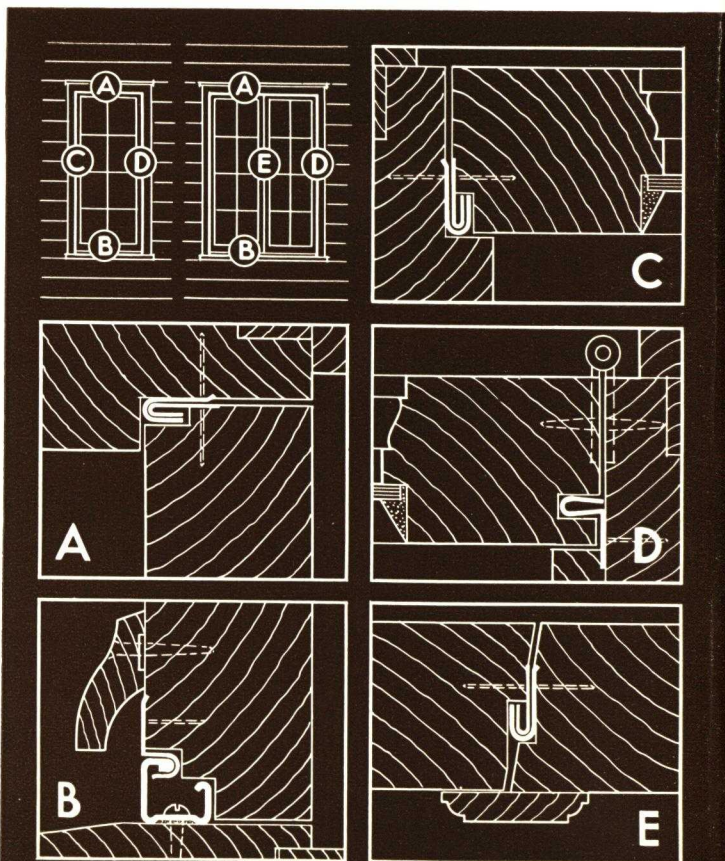
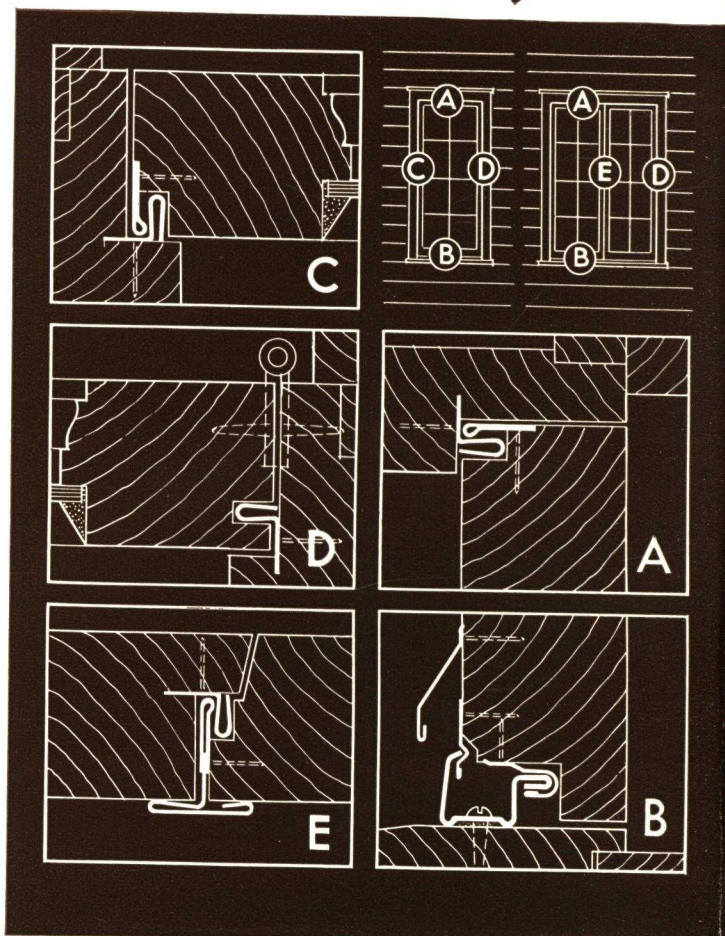
WEATHERSTRIPS C • 404 • • 404 • B WOOD CASEMENT WINDOWS

Interlocking Type—This alternate design of weatherstripping for inswinging wood casement windows is a metal to metal interlock in which one member is enclosed within the other. Air infiltration and moisture passage is in this type of interlock reduced to a minimum. The sill trough shown in the detail below is an alternate assembly particularly adaptable for sash 1 3/8 inch or less in thickness. Weatherstrip members on receiving jambs have turned edges to insure proper indenture in the wood to eliminate sharp, protruding edges.

EQUIPMENT C-404—ZINC				
Location	Strip	Ga.—In.	Strip	Ga.—In.
Head	11	12—.028	12	10—.020
Sill	070 detailed—others optional			15—.040
Center (Double)	11	12—.028	12	10—.020
Lock Side	11	12—.028	12	10—.020
Hinge Side	18	9—.018	...	...

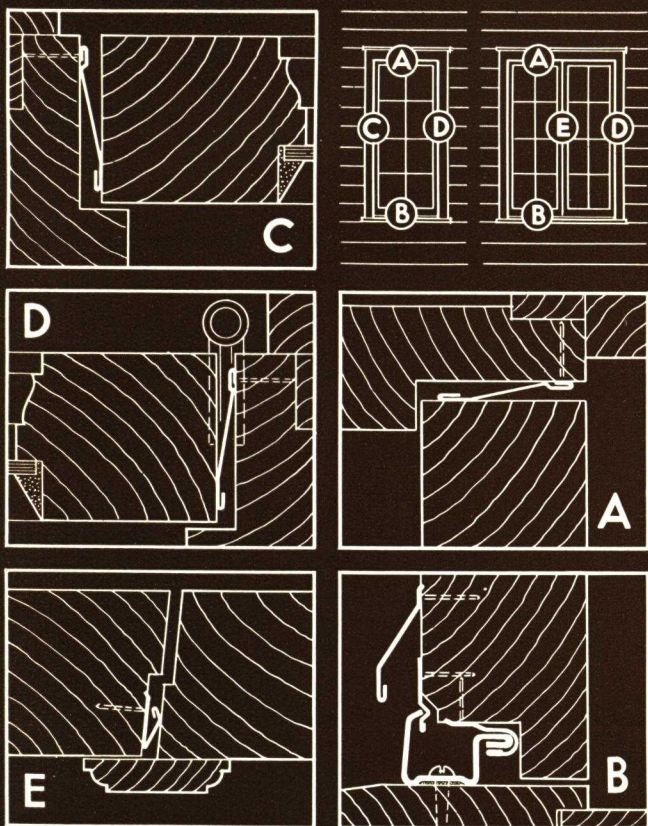
EQUIPMENT C-404B—BRONZE				
Location	Strip	Ga.—In.	Strip	Ga.—In.
Head	11B	...	12B	24—.020
Sill	071 detailed—others optional			18—.040
Center (Double)	11B	22—.025	12B	24—.020
Lock Side	11B	22—.025	12B	24—.020
Hinge Side	18B	25—.0179	...	...

Alternate No. 1—Add Metal or Wood Astragal
Alternate No. 2—Add Metal or Wood Dripcaps



WEATHERSTRIPS C • 405 • • 405 • B WOOD CASEMENT WINDOWS

Spring Bronze Type—For inswinging casements under normal conditions, spring bronze of correct gauge, temper, and hardness is equally as effective as the interlocking type of weatherstrip. It has the advantage that it is adjustable after installation to seal openings of as wide as $\frac{3}{8}$ inch. Edges are hemmed for added rigidity and to eliminate "humming." Requiring no rabbeting or plowing of the sash, the cost is less than the interlocking type. Sill weatherstripping is the same as required for the interlocking type of equipment.



EQUIPMENT C-405—ZINC AND BRONZE

Location	1 3/8" Sash	1 3/4" Sash	2 1/4" Sash	Ga.—In.
Head	1 1/4"-20	1 3/8"-20	1 3/4"-20	31—.009
Sill	70 detailed—others optional			18—.040
Center (Double)	83	83	83	32—.0079
Lock Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31—.009
Hinge Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31—.009

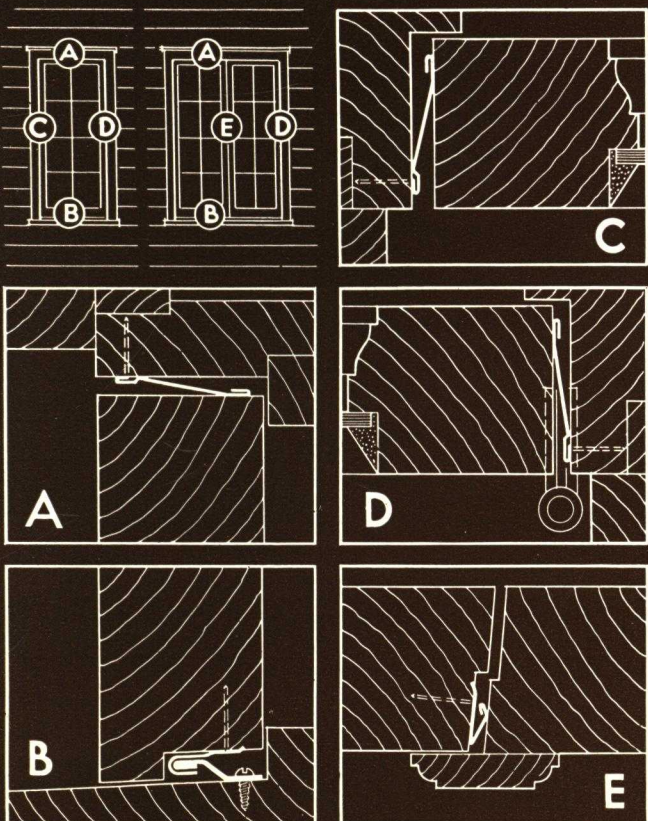
EQUIPMENT C-405B—BRONZE

Location	1 3/8" Sash	1 3/4" Sash	2 1/4" Sash	Ga.—In.
Head	1 1/4"-20	1 3/8"-20	1 3/4"-20	31—.009
Sill	71 detailed—others optional			18—.040
Center (Double)	83	83	83	32—.0079
Lock Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31—.009
Hinge Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31—.009

Note—Select desired sill in specifying equipment

WEATHERSTRIPS C • 406 • • 406 • B WOOD CASEMENT WINDOWS

Spring Bronze Type—Since outswinging casement sash close against an inside rabbeted jamb or stop, they are less susceptible to moisture and air leakage under normal conditions than are inswinging casements. In the average installation, this spring bronze type of weatherstripping together with this strong, flexible hook type of sill equipment is entirely adequate. For severe exposures, use either of the interlocking types of weatherstripping illustrated on page 9, set in a reverse position for head and side jambs.



EQUIPMENT C-406—ZINC AND BRONZE

Location	1 3/8" Sash	1 3/4" Sash	2 1/4" Sash	Ga.—In.
Head	1 1/4"-20	1 3/8"-20	1 3/4"-20	31—.009
Sill	80 detailed—others optional			15—.040
Center (Double)	83	83	83	32—.0079
Lock Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31—.009
Hinge Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31—.009

EQUIPMENT C-406B—BRONZE

Location	1 3/8" Sash	1 3/4" Sash	2 1/4" Sash	Ga.—In.
Head	1 1/4"-20	1 3/8"-20	1 3/4"-20	31—.009
Sill	81 detailed—others optional			18—.040
Center (Double)	83	83	83	32—.0079
Lock Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31—.009
Hinge Side	1 1/4"-20	1 3/8"-20	1 3/4"-20	31—.009

Note—Select desired sill in specifying equipment

WEATHERSTRIPS

D • 404 • • 404B

• WOOD DOORS •

Interlocking Type—Since the construction of door frames is similar to frames for casement windows, the head and side jamb weatherstripping for doors is practically the same as that required for casements. Because the door sill is the point of maximum leakage and must take severe traffic abuse, only the best heavy-duty equipment is advocated. The bottom of the door should have sufficient clearance over heavy carpets, mats, etc., to avoid conflict with the door bottom hook. See also pages 12 and 13 for alternate sill equipment.

EQUIPMENT D-404—ZINC

Location	Strip	Ga.—In.	Strip	Ga.—In.
Head	11	12—.028	12	10—.020
Sill	50 detailed—others optional			
Center	11	12—.028	12	10—.020
Lock Side	11	12—.028	12	10—.020
Hinge Side	18	9—.018	..	.....

EQUIPMENT D-404B—BRONZE

Head	11B	22.. ..	12B	24—.020
Sill	50 detailed—others optional			
Center	11B	22.. ..	12B	24—.020
Lock Side	11B	22.. ..	12B	24—.020
Hinge Side	18B	25—.129	...	.....

Note—Select desired sill in specifying equipment

WEATHERSTRIPS

D • 407 • • 407B

• WOOD DOORS •

Interlocking Type—The interlocking equipment illustrated below is a sturdy door equipment especially designed to allow for at least a 1/4 inch shrinkage without binding. The lip of the door member is guided into a flexible jamb member, assuring a positive closure at varying crack widths. Alternate equipment C substitutes a non-flexible El jamb member adaptable to doors in less exposed locations. Various widths and heights of interlocking door sill equipment are provided to fulfill a wide variety of conditions (see pages 12 and 13).

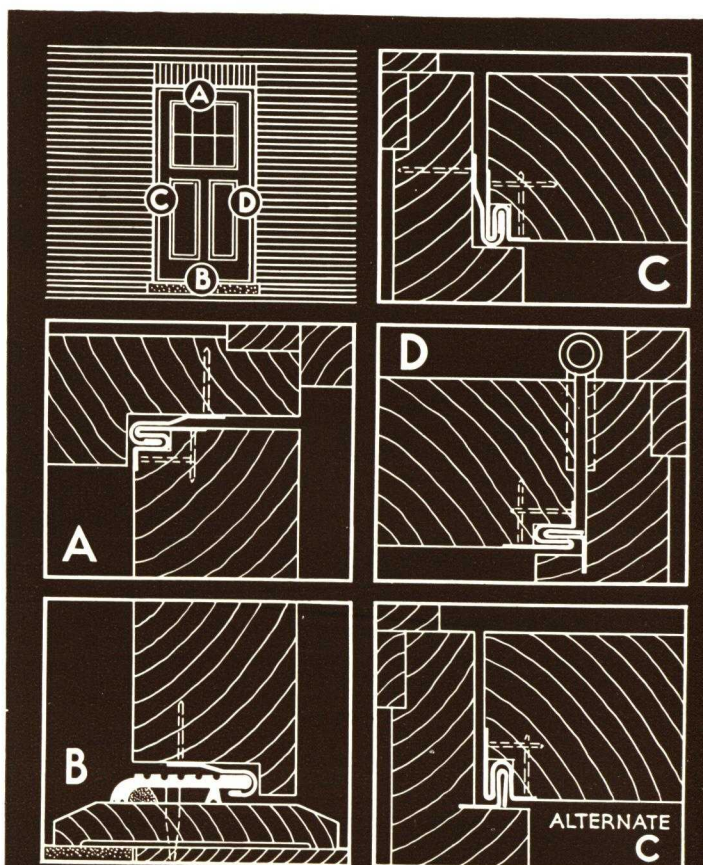
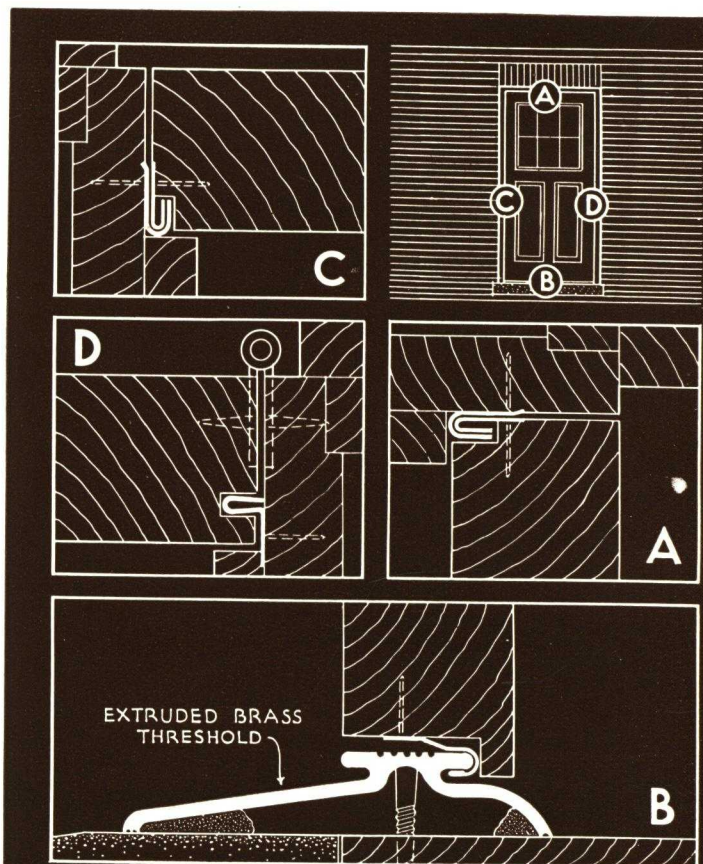
EQUIPMENT D-407—ZINC

Location	Strip	Ga.—In.	Strip	Ga.—In.
Head	109	9—.018	110	31—.009
Sill	41 detailed—others optional			
Center	109	9—.018	110	31—.009
Lock Side	109	9—.018	110	31—.009
Hinge Side	109	9—.018	19	9—.018

EQUIPMENT D-407B—BRONZE

Head	109B	25—.0179	110	31—.009
Sill	41 detailed—others optional			
Center	109B	25—.0179	110	31—.009
Lock Side	109B	25—.0179	110	31—.009
Hinge Side	109B	25—.0179	19B	25—.0179

Alternate No. 1—Substitute No. 19 for 110 Strip
 Note—Select desired sill



EDGINGS • BINDINGS • NOSINGS

EXTRUDED BRASS AND WHITE METAL



No. 790 BRASS
No. 790W WHITE METAL



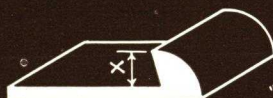
No. 780 BRASS



No. 770 BRASS



No. 760 BRASS



No. 740 BRASS
No. 741 BRASS
No. 742 BRASS
No. 740W WHITE METAL
No. 741W WHITE METAL
No. 742W WHITE METAL



No. 750 BRASS
No. 751 BRASS
No. 750W WHITE METAL
No. 751W WHITE METAL



No. 721 BRASS
No. 721W WHITE METAL
FOR 3/16" COVERING



No. 710 BRASS
No. 711 BRASS
No. 712 BRASS
No. 710W WHITE METAL
No. 711W WHITE METAL
No. 712W WHITE METAL



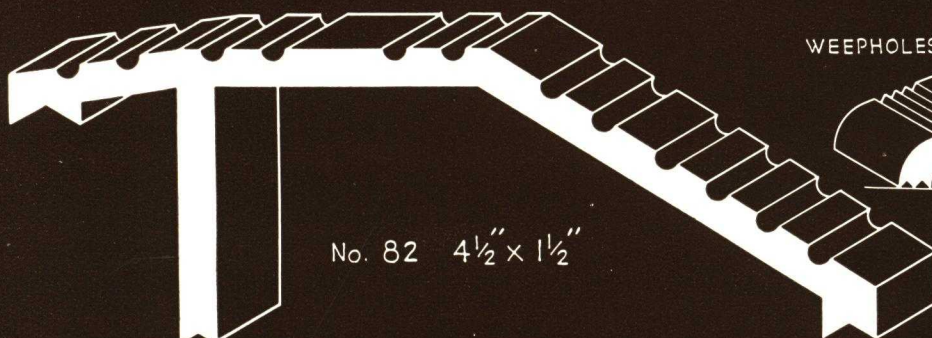
No. 700
COLD ROLLED
BRASS NOSING
20 B & S GAUGE



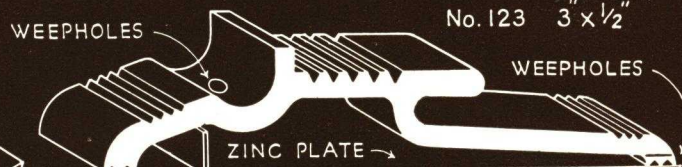
No. 122 6 1/8" x 1/4"
SILL PLATE EXTRUDED BRASS

BRASS THRESHOLDS

USE WITH INTERLOCKING SILLS
TO SECURE COVERAGE IN EXCESS
OF PRESENT STANDARD WIDTHS

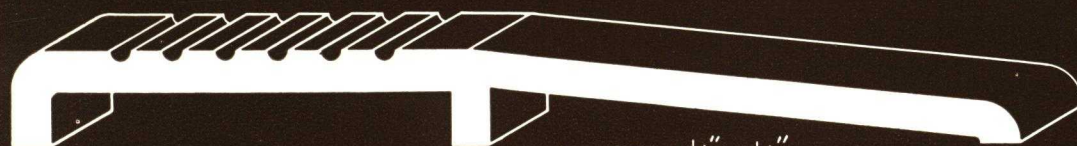


No. 82 4 1/2" x 1 1/2"

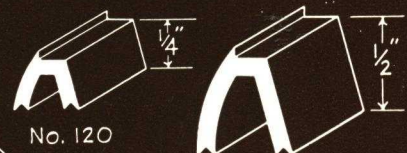


No. 123 3" x 1/2"

WATERPROOF SELF DRAINING
EXTRUDED BRASS SILL FOR
OUTSWINGING DOORS



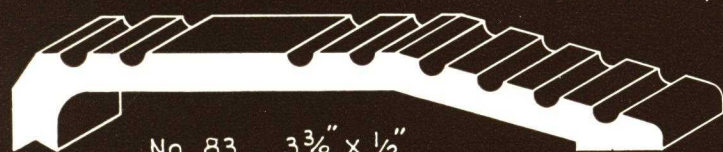
No. 27 5 1/4" x 1/2"



No. 120

No. 121

THRESHOLD ELEVATORS
EXTRUDED BRASS



No. 83 3 3/8" x 1/2"

FULL SILL COVERAGE
ADJUSTABLE WATERPROOF SILL
EXTRUDED BRASS PATENTED

SILL
FORMED
OF THREE
SECTIONS
A, B & C

No. 124

VARIABLE
1 1/8" TO 1 7/8"

SCREEN
DOOR

3" MINIMUM
3 3/4" MAXIMUM

DRAINHOLES (STAGGERED)

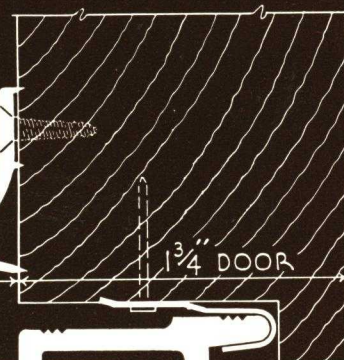
TAPPED AT JOB

WEEPHOLE

WEEPHOLES

CAULKING

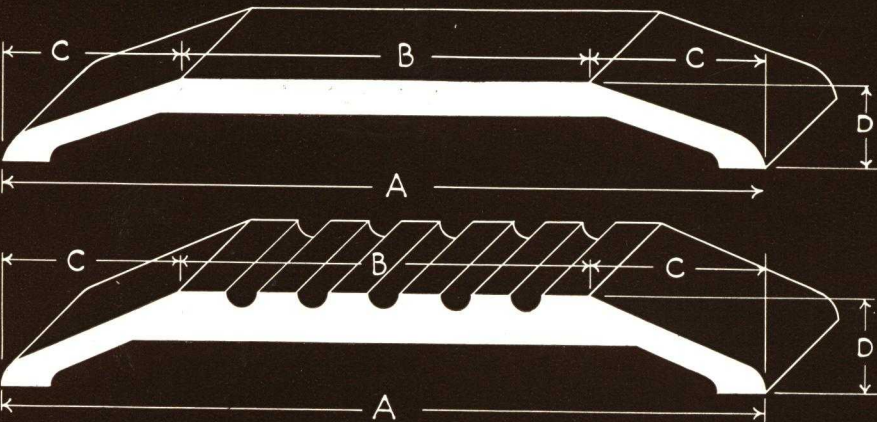
ADJUSTABLE 6 1/2" TO 7 1/4"



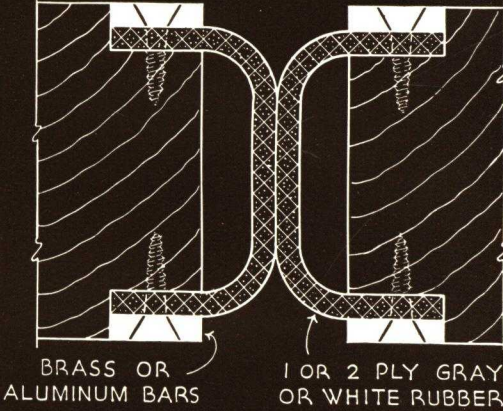
No. 76-A
EXTRUDED ALUMINUM
DOOR & WINDOW DRIP

SCALE
FULL
SIZE

EXTRUDED METAL SADDLES



DOUBLE DOOR CENTER



BRASS — PLAIN TOP

No.	A	B	C	D
71-D	3"	2 3/8"	5/16"	1/4"
58	4"	2 1/8"	15/16"	7/16"
59	5"	3 1/2"	3/4"	7/16"
60	6"	3 1/8"	1 7/16"	1/2"

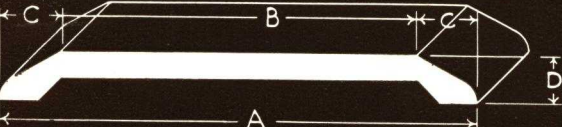
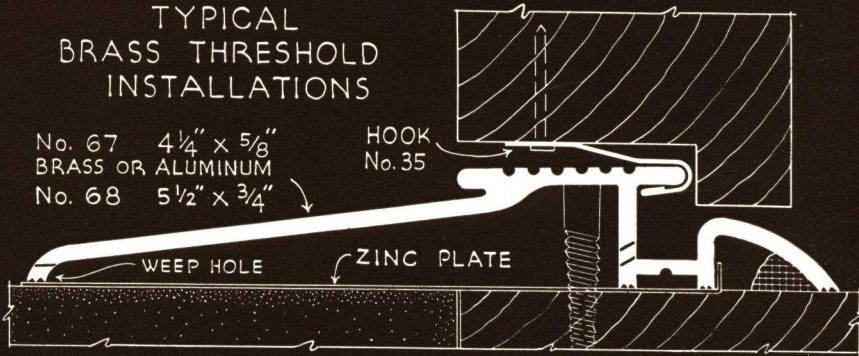
BRASS — FLUTED TOP

56	3 1/2"	1 15/16"	25/32"	15/32"
61	4"	2 1/8"	15/16"	1/2"
62	5"	2 11/16"	15/32"	1/2"
63	6"	2 15/16"	1 17/32"	7/16"

WHITE METAL — FLUTED TOP

61-W	4"	1 3/4"	1 1/8"	5/8"
62-W	5"	2 3/4"	1 1/8"	5/8"
63-W	6"	3 3/4"	1 1/8"	5/8"

TYPICAL
BRASS THRESHOLD
INSTALLATIONS

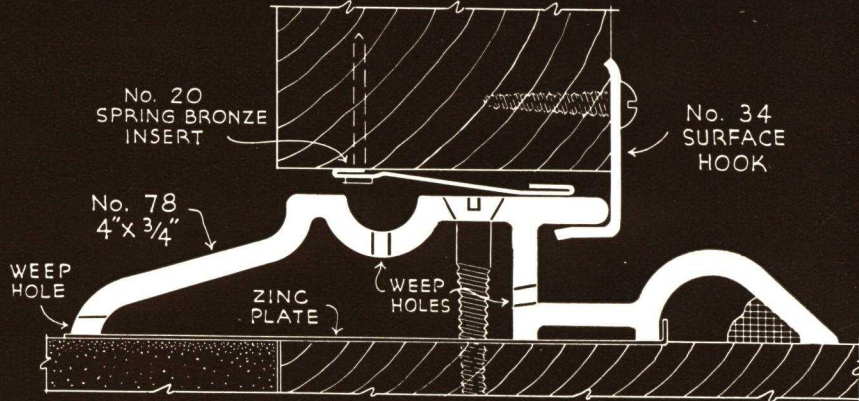


BRASS FLOOR PLATES

No.	A	B	C	D
70-A	2 1/4"	1 3/4"	1/4"	3/16"
70-B	2 1/2"	1 7/8"	5/16"	1/4"
71-D	3"	2 3/8"	5/16"	1/4"

WHITE METAL FLOOR PLATES

70-W	2 1/4"	1 11/16"	9/32"	3/8"
58-W	4"	1 3/4"	1 1/8"	5/8"



DOOR
LOCKSTRIPS

No. 83

8" LONG



No. 69

8" LONG



DOOR BOTTOMS

No. 38S

3 PLY RUBBER

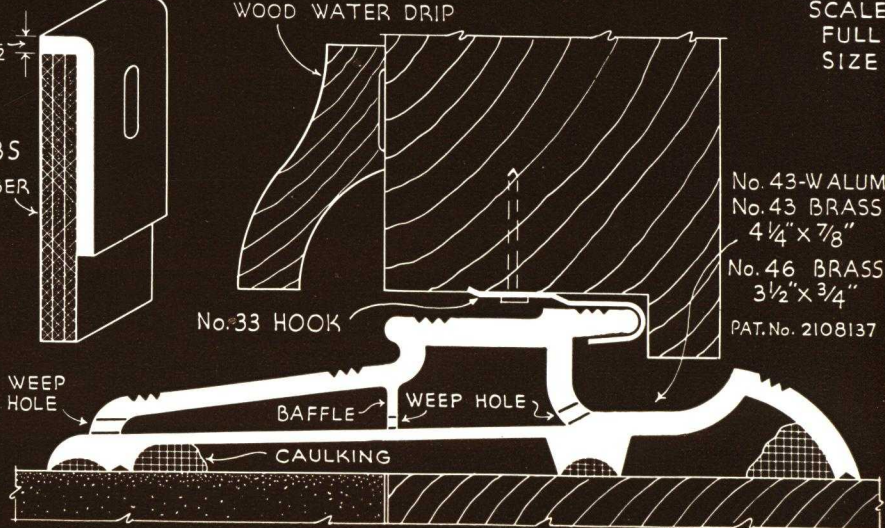
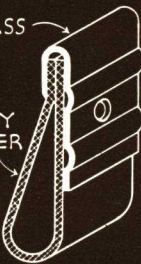


FELT



BRASS

1 PLY RUBBER



No. 43-WALUM.

No. 43 BRASS

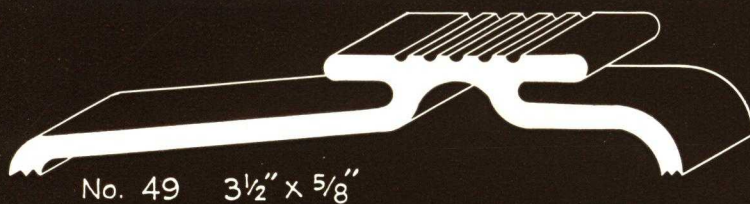
4 1/4" x 7/8"

No. 46 BRASS

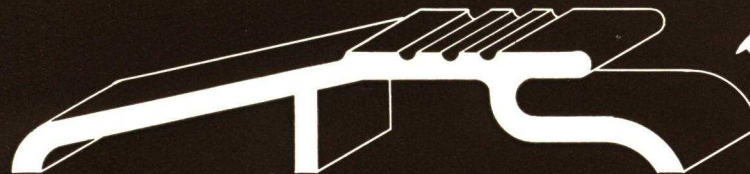
3 1/2" x 3/4"

PAT. No. 2108137

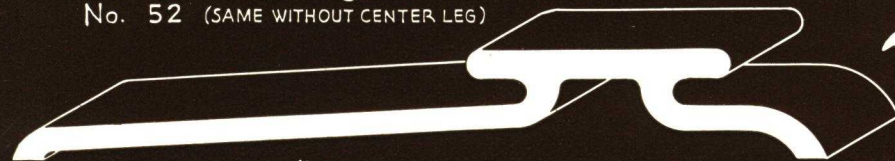
BRASS THRESHOLDS



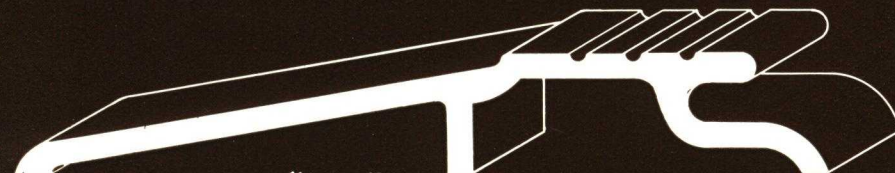
No. 49 $3\frac{1}{2}" \times \frac{5}{8}"$



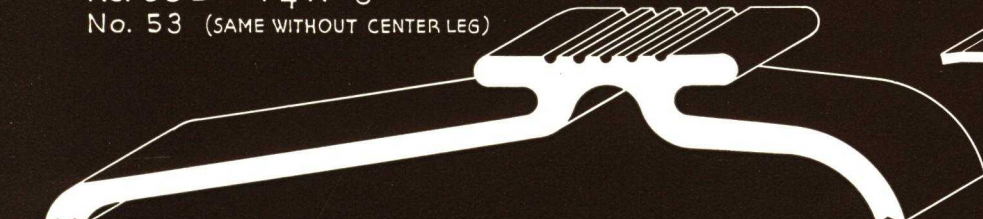
No. 52 L $3\frac{1}{2}" \times \frac{5}{8}"$
No. 52 (SAME WITHOUT CENTER LEG)



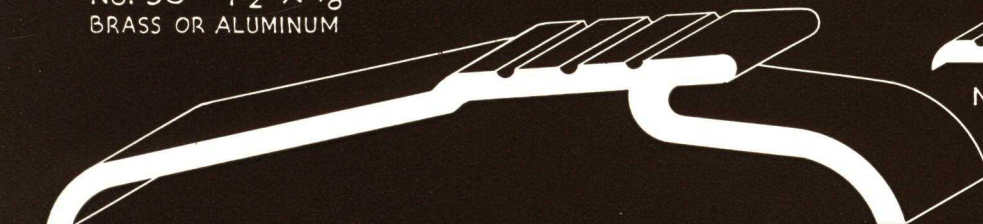
No. 150 $4\frac{1}{4}" \times \frac{9}{16}"$



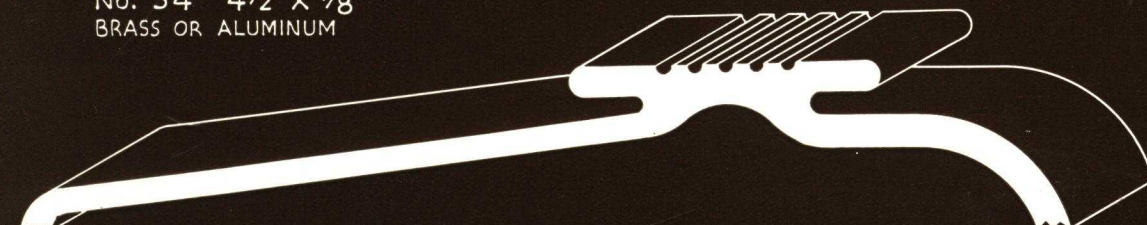
No. 53 L $4\frac{1}{4}" \times \frac{5}{8}"$
No. 53 (SAME WITHOUT CENTER LEG)



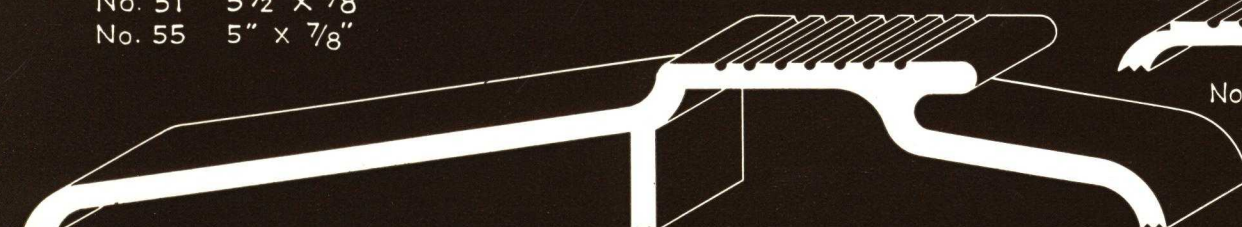
No. 50 $4\frac{1}{2}" \times \frac{7}{8}"$
BRASS OR ALUMINUM



No. 54 $4\frac{1}{2}" \times \frac{7}{8}"$
BRASS OR ALUMINUM



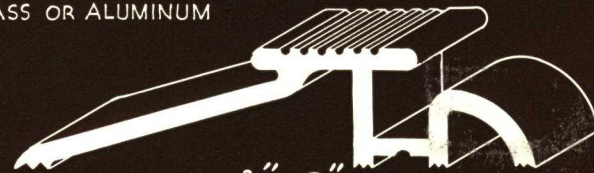
No. 51 $5\frac{1}{2}" \times \frac{7}{8}"$
No. 55 $5" \times \frac{7}{8}"$



No. 57 $6" \times \frac{7}{8}"$



No. 66 $3\frac{1}{2}" \times \frac{5}{8}"$
BRASS OR ALUMINUM



No. 65 $2\frac{3}{4}" \times \frac{5}{8}"$



No. 33
HOOK
BRASS



No. 35
HOOK
BRONZE



No. H-34
SURFACE
HOOK
BRASS OR
ALUMINUM



No. 48 $1\frac{3}{8}" \times \frac{1}{4}"$



No. 45 $1\frac{3}{8}" \times \frac{1}{4}"$
BRASS OR ALUMINUM



No. 47 $1\frac{1}{8}" \times \frac{1}{4}"$



No. 40 $1\frac{1}{8}" \times \frac{1}{4}"$



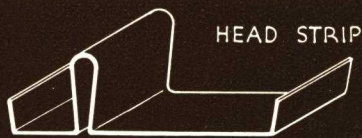
No. 44 $1\frac{7}{8}" \times \frac{1}{4}"$



No. 42 $1\frac{1}{4}" \times \frac{1}{4}"$

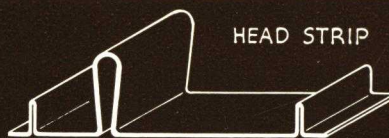


No. 41 $1\frac{1}{2}" \times \frac{1}{4}"$



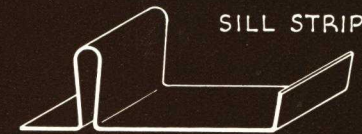
HEAD STRIP

No. 4 HF - $1\frac{3}{8}$ " SASH
No. 6 HF - $1\frac{3}{4}$ " SASH



HEAD STRIP

No. 4 TF - $1\frac{3}{8}$ " SASH
No. 6 TF - $1\frac{3}{4}$ " SASH



SILL STRIP

No. 4 RF - $1\frac{3}{8}$ " SASH
No. 6 RF - $1\frac{3}{4}$ " SASH

SILL STRIP
SELF DRAINING

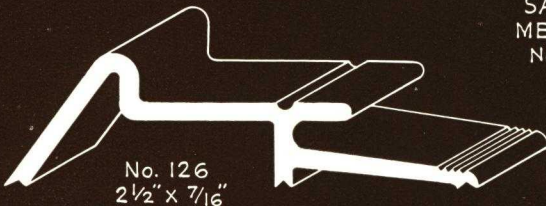
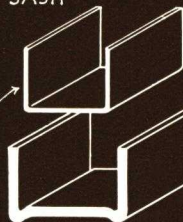
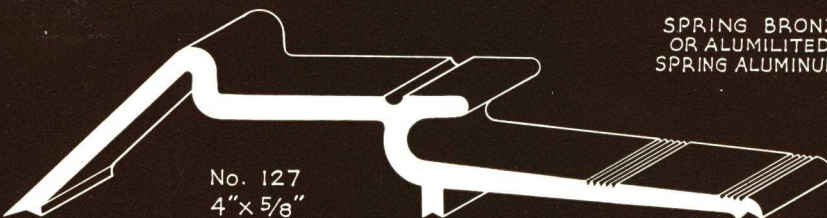
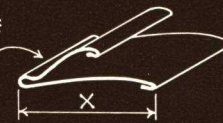
No. 11 S - $1\frac{3}{8}$ " SASH
No. 12 S - $1\frac{3}{4}$ " SASH

JAMB STRIP
INNER GUIDE

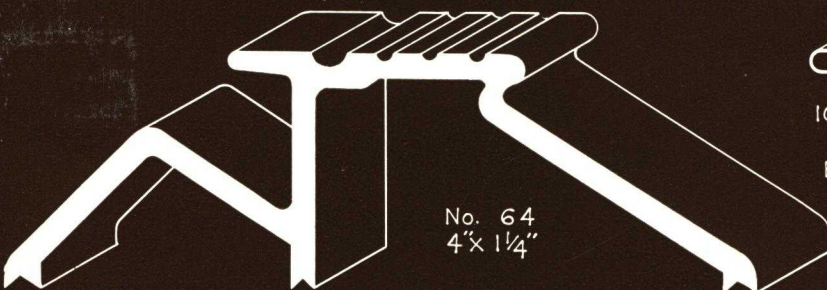
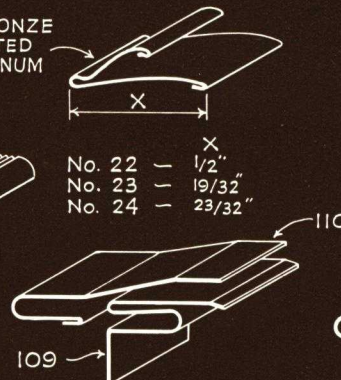
No. 4 M - $1\frac{3}{8}$ " SASH
No. 6 M - $1\frac{3}{4}$ " SASH

JAMB STRIP
OUTER GUIDE

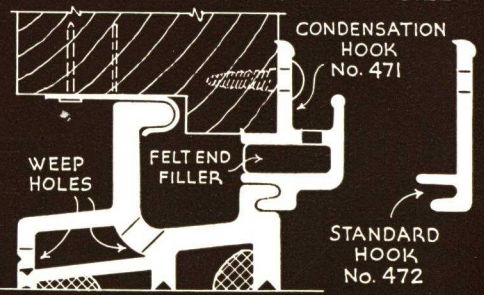
No. 2 M - $1\frac{3}{8}$ " SASH
No. 3 M - $1\frac{3}{4}$ " SASH

No. 126
 $2\frac{1}{2}$ " x $\frac{7}{16}$ "SASH
MEMBER
No. 26JAMB
MEMBER
No. 27No. 127
4" x $\frac{5}{8}$ "SPRING BRONZE
OR ALUMILITED
SPRING ALUMINUM

No. 22 - $\frac{1}{2}$ "
No. 23 - $\frac{19}{32}$ "
No. 24 - $\frac{23}{32}$ "

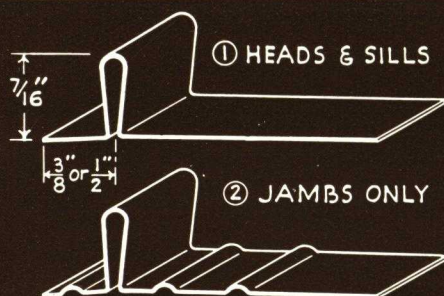
No. 64
4" x $1\frac{1}{4}$ "No. 125
3" x $\frac{5}{8}$ "EXTRUDED ALUMINUM
CASEMENT SILL FOR
OUTSWINGING CSMT.

EXTRUDED ALUMINUM INSWINGING CASEMENT SILL

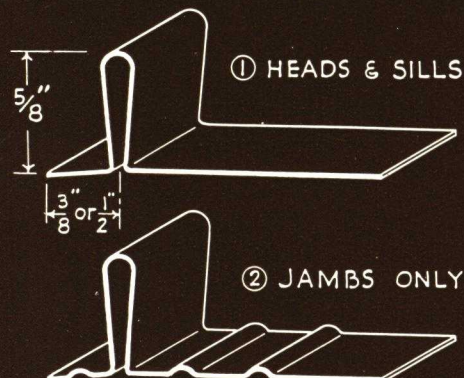
CONDENSATION
HOOK
No. 471STANDARD
HOOK
No. 472

No. 470 FOR $1\frac{3}{8}$ " SASH
No. 475 FOR $1\frac{3}{4}$ " SASH

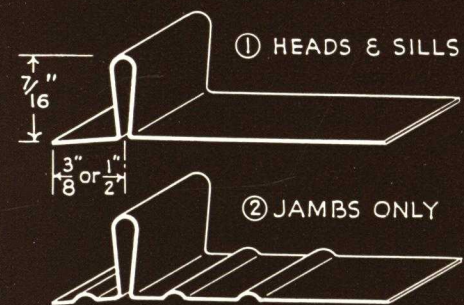
No. 128 $6\frac{3}{4}$ " x $\frac{1}{2}$ "



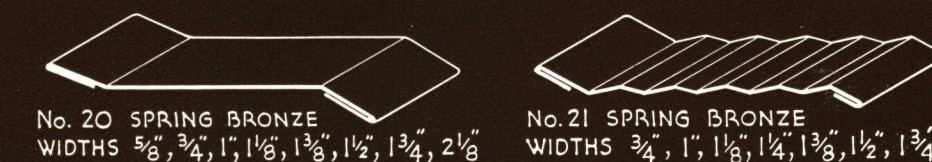
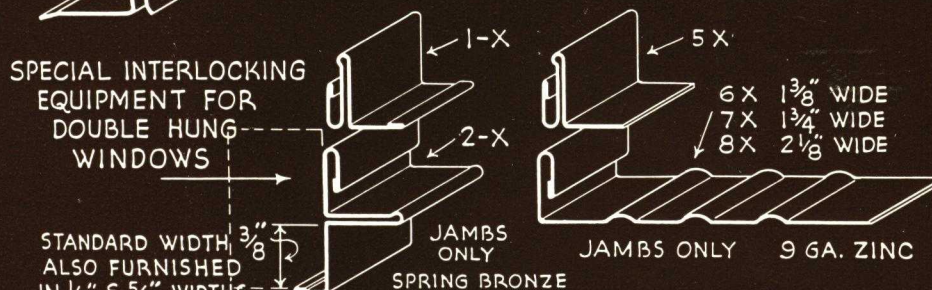
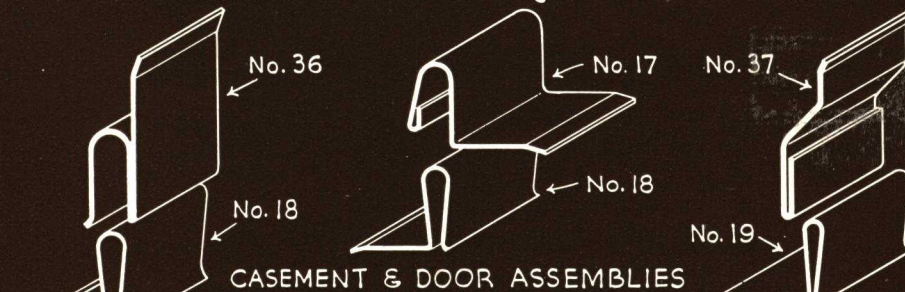
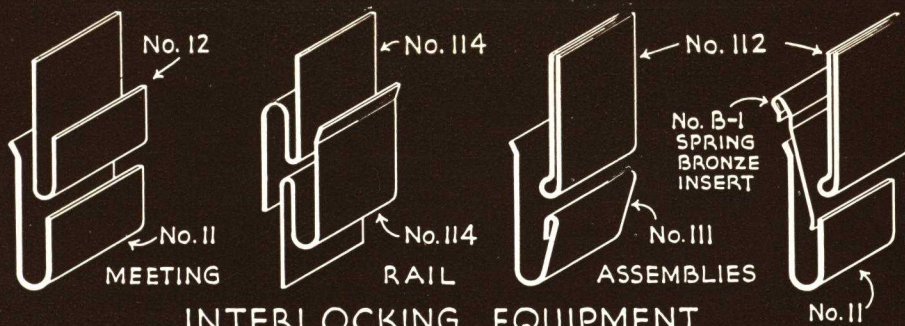
STANDARD ZINC RIB STRIPS
① $\frac{3}{4}$ ", 1", $1\frac{3}{8}$ ", $1\frac{1}{2}$ ", $1\frac{3}{4}$ ", $2\frac{1}{8}$ ", $2\frac{1}{2}$ " WIDTHS
② $1\frac{3}{8}$ ", $1\frac{1}{2}$ ", $1\frac{5}{8}$ ", $1\frac{3}{4}$ ", $1\frac{7}{8}$ ", $2\frac{1}{8}$ ", $2\frac{1}{2}$ " WIDTHS



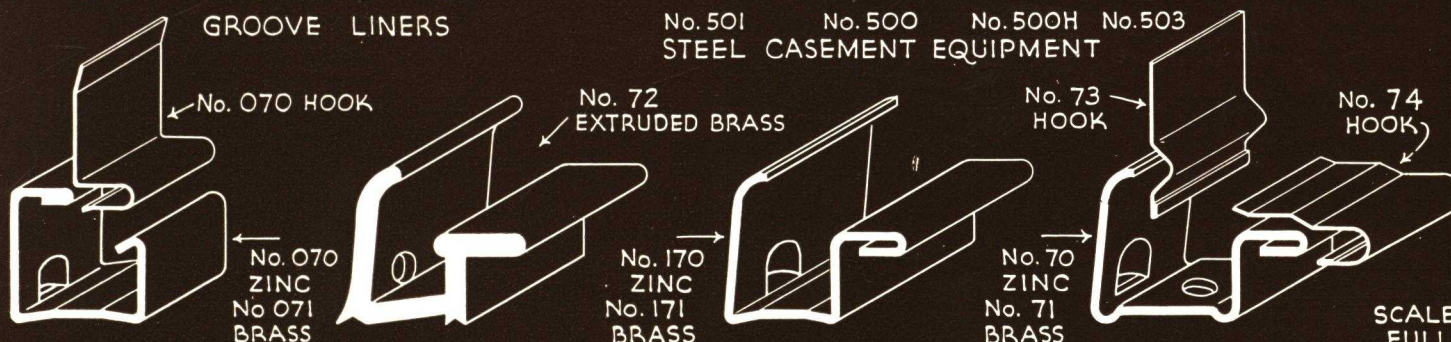
HEAVY DUTY ZINC RIB STRIPS
① $\frac{3}{4}$ ", 1", $1\frac{3}{8}$ ", $1\frac{1}{2}$ ", $1\frac{3}{4}$ ", $2\frac{1}{8}$ ", $2\frac{1}{2}$ " WIDTHS
② $1\frac{3}{8}$ ", $1\frac{1}{2}$ ", $1\frac{5}{8}$ ", $1\frac{3}{4}$ ", $1\frac{7}{8}$ ", $2\frac{1}{8}$ ", $2\frac{1}{2}$ " WIDTHS



STANDARD COLD ROLLED BRONZE RIB STRIPS
① $\frac{3}{4}$ ", 1", $1\frac{3}{8}$ ", $1\frac{1}{2}$ ", $1\frac{3}{4}$ ", $2\frac{1}{8}$ ", $2\frac{1}{2}$ " WIDTHS
② $1\frac{3}{8}$ ", $1\frac{1}{2}$ ", $1\frac{5}{8}$ ", $1\frac{3}{4}$ ", $1\frac{7}{8}$ ", $2\frac{1}{8}$ ", $2\frac{1}{2}$ " WIDTHS



No. 501 No. 500 No. 500H No. 503
STEEL CASEMENT EQUIPMENT

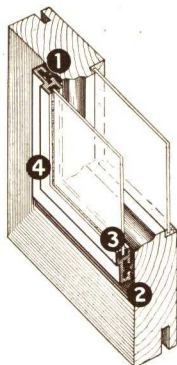


SCALE FULL SIZE

PROTEX

WINTER PANES

NOTE: Winter Panes furnished for steel sash are made with a sliding ventilator at the bottom providing air circulation when required and they are installed like flat screens so that the casement may be operated through them without removal.



Winter Panes are furnished in Satin-Alumilite finish at slight extra cost.

The glass used is selective. It may be single strength, double strength or any of the other specially made glasses which provide light and heat corrections.

- 1 INTEGRAL WITH SASH**—Winter Panes fit so neatly and snugly to the sash that they become an unobtrusive part of the window and are therefore accepted as all-year-around installation; for insulation of either cold in the winter or heat in the summer.
- 2 REFRIGERATOR TYPE RUBBER GASKET**—The contact between Winter Panes and the sash is through live rubber; a refrigerator type gasket which will not permit freezing of the pane on to the sash.
- 3 GLASS SET IN RUBBER**—The glass in Winter Panes which is selective is set in an extruded rubber glass channel easily removed if broken, but more strongly held in the frame than by other means.
- 4 STRONG FRAME**—Made of extruded aluminum, the frame for Winter Panes is exceptionally rigid and strong and does not need the glass pane itself for reinforcement.

THE MODERN STORM SASH

STOPS "WEEPING" WINDOWS ★

One of the greatest nuisances to many a householder during the heating season is condensation. This occurs when warm, moisture-laden air comes in contact with cold surfaces, especially glass window panes, and turns into water or becomes frost which eventually melts with the same result. Every one knows that double glazing or storm sash installation stops this from happening. WINTER PANES solve this problem definitely and conveniently. They are the modern storm sash, integral with each window. . . double glazing easily and quickly applied to **any** window.

SAVES FUEL IN WINTER ★★

It is a well known fact (see statistics on the right) that storm sash save fuel. Here again it is double-glazing; two panes of glass with "dead air space" between them that does the trick, in other words insulation which stops the transmission of heat. WINTER PANES provide just exactly that, effective insulation, in the most convenient form. Simply fasten WINTER PANES on any window and you have the proper amount of "dead air-space" between the glass already in the window and the glass in the WINTER PANE.

KEEPS OUT HEAT IN SUMMER •

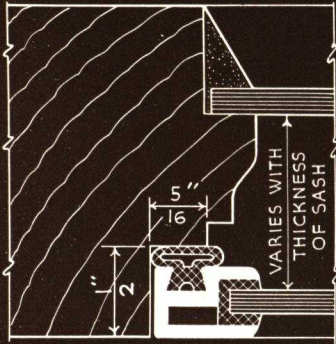
Modern air conditioning strives to maintain a comfortable temperature within the rooms of a house all the year round. Summer heat can be just as comfortable as winter cold. Proper insulation is half the job of air-conditioning . . . and windows are **half** the problem of insulation. As explained on the right, window openings are far more susceptible to heat transmission from either inside or outside than walls. Weatherstrip your windows and double-glaze them with WINTER PANES and you've got the problem licked.

★ One function of good heating equipment is to supply moisture to air that is heated. This is necessary for healthful humidity. However, unless outside wall surfaces are properly insulated condensation is bound to occur. Scientific tests show that the perfect balance is found in the use of double glass which makes it possible to raise humidity 45% without the appearance of surface moisture, as compared with single glass when it is not possible to carry more than 15% relative humidity with zero outside and 70° inside without having condensation.

★★ Infiltration and transmission are terms used by heating engineers to describe two kinds of heat loss. Check these effectively and maximum efficiency is obtained from any heating equipment. Again scientific tests show that about **four** times as much heat escapes through a single sheet of window glass as through the average wall section of the same area. You can stop infiltration by installing PROTEX weatherstripping. You can stop transmission by installing WINTER PANES.

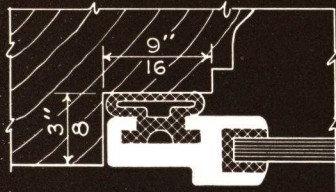
• Insulation against cold or heat is accomplished by using a non-conductor of **heat**, something that will not absorb it or let it pass. The best non-conductor is a vacuum or partial-vacuum. Thus the so-called Thermos bottle. Double-glazing for windows is based upon this principle of insulation because it creates a "dead-air" space or partial vacuum between two panes of glass effectively stopping the passage of heat. Old-fashioned storm windows are used only in winter months during which the heating plant furnishes artificial circulation of air. WINTER PANES may be used, conveniently, all the year round as they do not interfere in any way with the opening or closing of the sash.

DETAILS OF WINTER PANES - THE MODERN STORM SASH ELIMINATES ~ FROSTING • CONDENSATION • HEAT LOSS

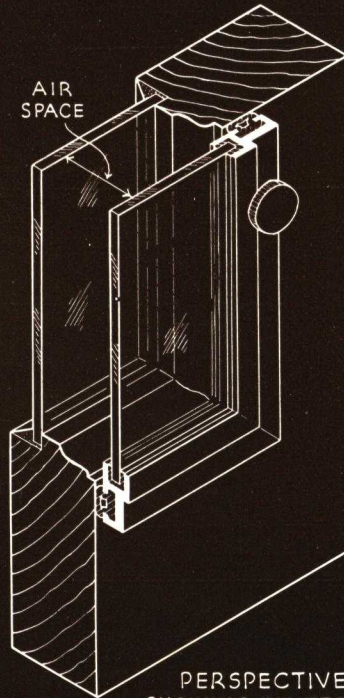


DETAIL SHOWING
RABBET REQUIRED FOR
FRAME ASSEMBLY No. 252
FLUSH TYPE

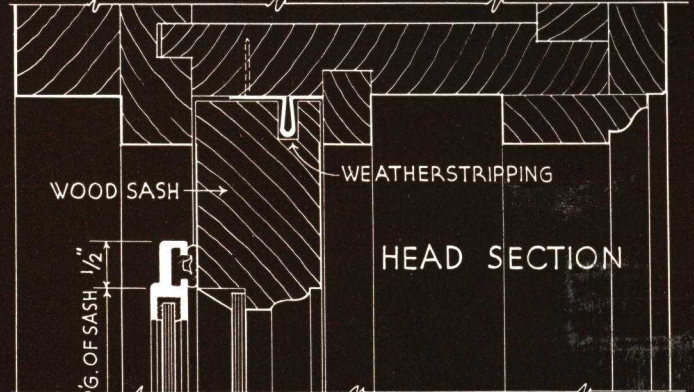
NOTE:- INSTALLATION CAN ALSO
BE MADE ON EXTERIOR OF SASH



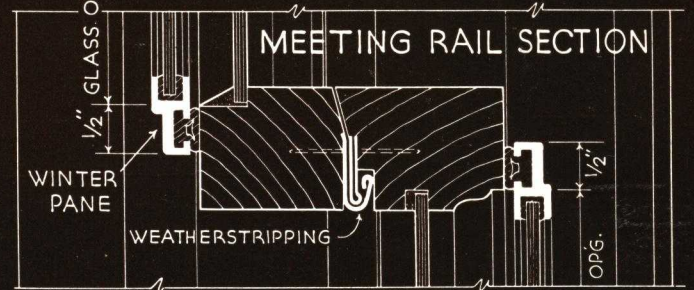
DETAIL SHOWING
RABBET REQUIRED FOR
FRAME ASSEMBLY No. 250
FLUSH TYPE



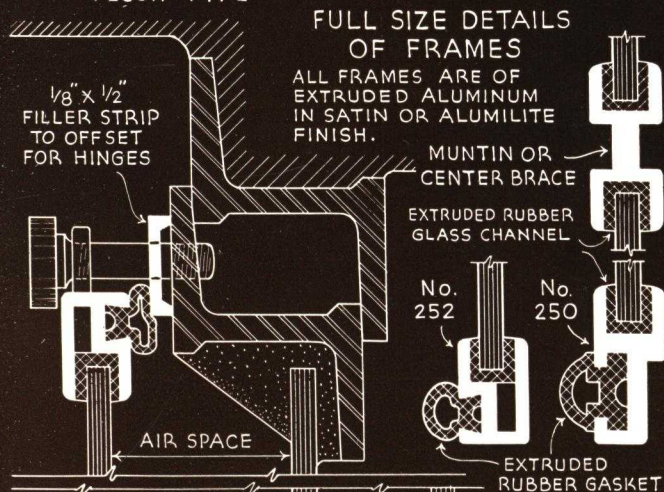
PERSPECTIVE
SHOWING WINTER
PANE, SURFACE TYPE,
INSTALLED ON
WOOD SASH.



HEAD SECTION



MEETING RAIL SECTION



FULL SIZE DETAILS OF FRAMES

ALL FRAMES ARE OF
EXTRUDED ALUMINUM
IN SATIN OR ALUMILITE
FINISH.

MUNTIN OR
CENTER BRACE

EXTRUDED RUBBER
GLASS CHANNEL

No.
252

No.
250

EXTRUDED
RUBBER GASKET

AIR SPACE

AIR SPACE

EXTERIOR
APPLICATION

WINTER
PANES
APPLIED
ON
STEEL
CASEMENT
SASH
WITH THUMB
SCREWS

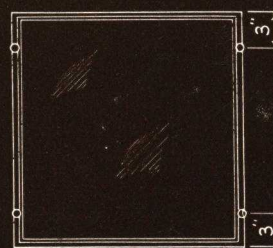
INTERIOR
APPLICATION
INTERCHANGEABLE WITH
FLAT TYPE SCREENS

HEAD
FILLER
No. 253

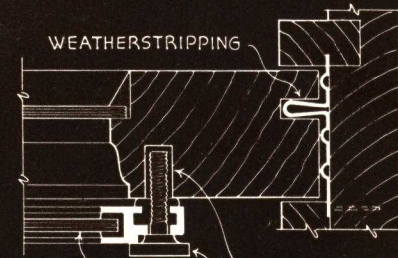
FILLER
STRIP
No. 254

HEAD
DRIP
No. 255

WINTER PANES ON WOOD D.H. WINDOW SURFACE TYPE INSTALLATION REQUEST ADD. DETAILS & WEIGHT SCHEDULES FOR FLUSH INSTALL. ON NEW WORK



ELEVATION SHOWING
LOCATION OF THUMB
SCREWS HOLDING WINTER
PANES TO WINDOWS



JAMB SECTION

PROTEX

Weatherstrips

METAL WEATHERSTRIPS
—
ALUMINUM THRESHOLDS
—
BRASS THRESHOLDS
—
CAULKING COMPOUNDS
—
KICK AND PUSH PLATES
—
STAIR NOSINGS AND EDGINGS
—
SPECIAL METAL SHAPES

PROTEX WEATHERSTRIP MFG.CO.
CHICAGO • ILLINOIS

THE *Blue Book* OF WEATHERSTRIPS

SECTION 16

CONTINUED 

REESE METAL WEATHER STRIP CO.

118 South 10th St., MINNEAPOLIS, MINN.

Products

FLEXO-SEAL EQUIPMENT for double hung windows (patented).

ADJUSTO-SEAL EQUIPMENT—self-adjusting interlocking equipment for casements and doors (patented).

PERFEC-SEAL AUTOMATIC DOOR BOTOMS (patented).

500 SERIES FLEXO-SEAL EQUIPMENT for

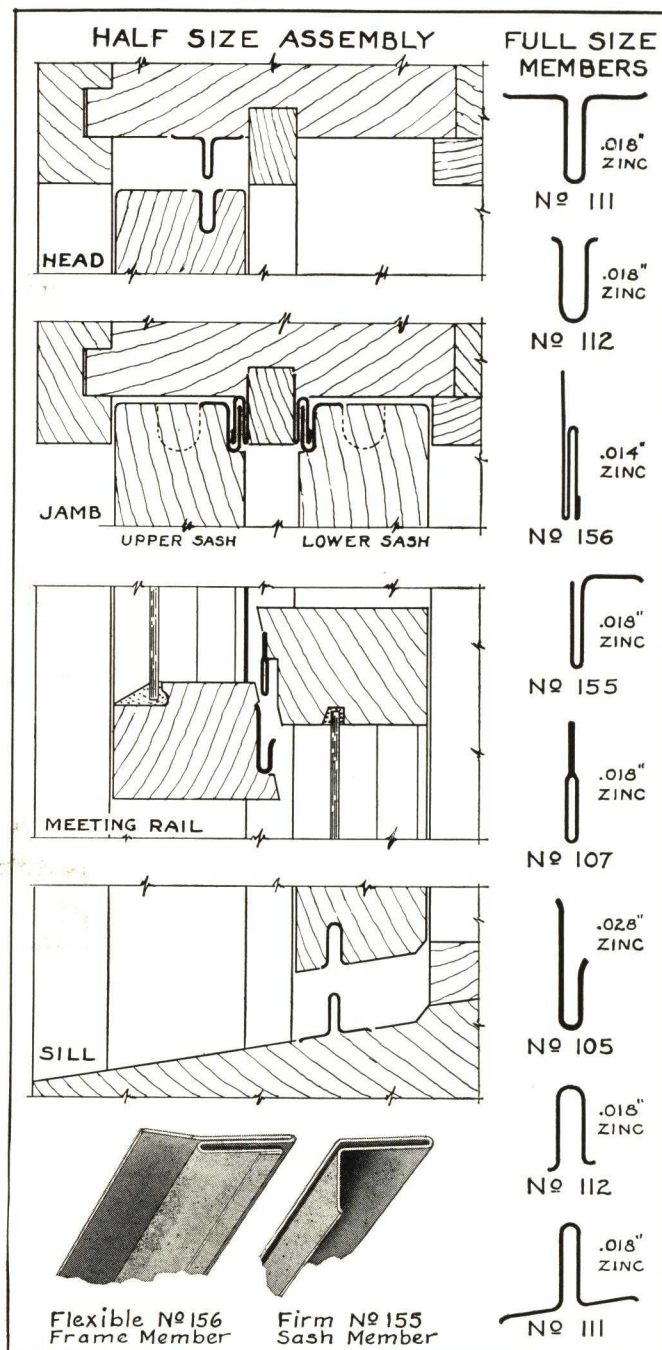


steel windows, hinged, projected, or pivoted (patented).

THRESHOLDS, SPRING BRONZE, WATERPROOF CASEMENT EQUIPMENTS.

GOLD SEAL NON-HUMMING SPRING BRONZE PLASTO-SEAL CAULKING COMPOUND.

IGA — SYSTEM of INSULATION of GLASS AREAS (patent pending).



FLEXO-SEAL EQUIPMENT

Wide Adaptability

Flexo-Seal Equipment for double hung windows requires no special detailing. It is admirably adapted to all ordinary double hung window construction, as well as to practically any vertically sliding sash of special detail.

Minimum Sash Cutting

Its installation involves minimum cutting of sash stiles. Jamb members are positioned next to the parting beads where they are protected from damage. They do not interfere with pulleys, balances, nor access to weight pockets, and furnish full protection past sash cord slots.

Automatic Adjustment

The jamb members provide automatic "shrinkage-swelling" adjustment of $\frac{1}{2}$ in. with *adjustment also for warpage of sash*.

The frame member, locked into the frame, is shaped like the bellows of an accordion. This interlocking member yields when sash warpage occurs and sash slide freely, without undue friction or grinding action on the weather strip. Because of this yielding action of a strip *designed to yield*, we produce the interlocking members with a tighter fit one with the other than is possible in rigid or non-pliant members, thus obtaining greater ability to exclude air, while retaining an ease of sash operation especially appreciated by any operator of the sash.

Ideal for New Buildings

Since the design of Flexo-Seal anticipates the changes which will naturally occur in a sash after installation, it is ideal for use on new work and may be so specified with assurance that it will continue to deliver satisfaction to the user through the years of usefulness of the sash.

High Quality Materials

All zinc strips, 60 in. or less in length, are made of best quality sheet zinc, cut and formed across the grain to provide the greatest strength and resistance to fracture.

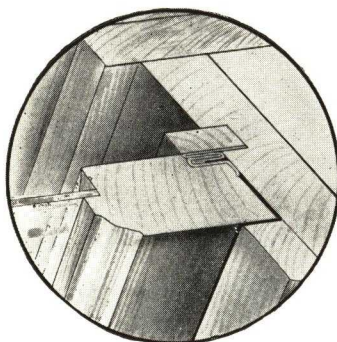
Laboratory Test Data

Flexo-Seal Equipment has been tested at the University of Wisconsin. Copies of test curves furnished on request.

With sash fitted to $\frac{3}{16}$ in. crack and $\frac{3}{32}$ in. clearance, and with pressure drop of 0.1 through windows in inches of water, Flexo-Seal equipment showed a leakage of .242 cu. ft. per minute per foot of crack. This leakage does not include leakage subject to control by pulley covers or caulking, but only that controlled by weather strips.

Comparisons of laboratory test data are often misleading on account of a difference in specifications governing the test. Percentage methods of computing efficiency are meaningless because the percentage varies according to the amount of leakage in the plain window.

Laboratory test data is valuable chiefly because it clearly proves the economic value of weather strips, and offers a scientific measure of this value to the engineer.



However, we do not consider laboratory test data alone an adequate guide in the selection of a weather strip. This data, together with experience gained in the use of the product, forms a reliable guide.

Flexo-Seal Specifications

All double hung windows shall be equipped with Reese Flexo-Seal Equipment, as applied by the manufacturer's authorized dealer. Jamb strips shall have $\frac{1}{2}$ in. interlocking contact with sash against jamb to allow amply for sash shrinkage, and the design shall permit easy operation in case of warpage of sash $\frac{1}{8}$ in. out of plane surface. Meeting rail, head, and sill shall have two-piece interlocking members. Unless otherwise specified, all members shall be made of sheet zinc cut across grain, and of thickness specified in published detail.

Alternate for Flexo-Seal in Bronze: All members shall be cold rolled from commercial bronze of thicknesses specified in published details.

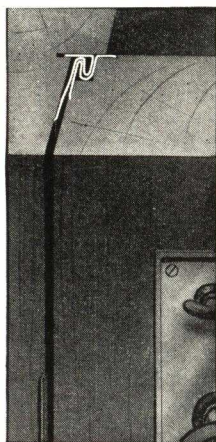
ADJUSTO-SEAL EQUIPMENT

(Patented)

A True Self-adjusting, Interlocking Equipment for the Jambs and Head of Casements and Doors

Adjusto-Seal Equipment is a permanent self-adjusting seal, made of rust-free materials of low (not spring) temper, either zinc or bronze. The design is such that the interlocking contact is preserved without change regardless of shrinking or swelling of sash.

Notice the wide mouth of the frame member on the lock side. See how its cam surfaces are shaped to pull the member automatically into proper alignment if its position should be moved through any cause while the sash is open.

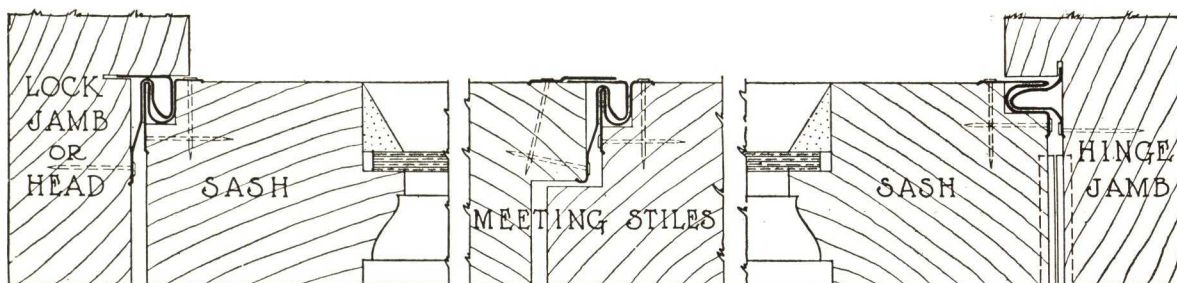
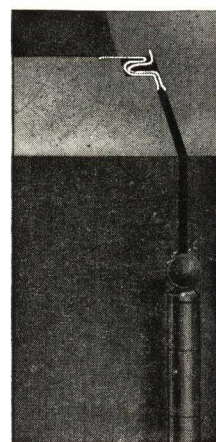


Adjusto-Seal Specifications

Sides, tops, and meeting stiles of all casement windows (and doors) shall be equipped with Reese Adjusto-Seal Equipment.

Frame members on hinge jamb shall be kerfed to form air and water seal continuous past butts, and shall be formed with outer radius for easy engagement with sash member. Frame member on lock jamb and head shall be self-adjusting to shrinkage of sash, kerfed into frame for air and water-seal. Sash members shall be double-nailed at right angles to prevent pulling loose on nails. Both frame and sash members shall be continuous past locks.

NOTE: Unless otherwise specified, Adjusto-Seal Equipment will be furnished in zinc. If desired of bronze, add to above specification: "All members shall be furnished of cold-rolled commercial bronze; Nos. 65 and 68, .018 in. thick; No. 66, .014 in.; No. 67, .028 in. thick."

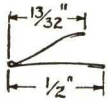


No. 65—Sash Member
No. 66—Frame Member

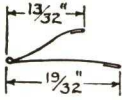
No. 65, No. 66 and No. 67—Astragal Strip
Prefix above numbers BR for bronze strip

No. 65—Sash Member
No. 68—Frame Member

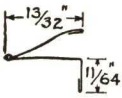
GOLD SEAL BRONZE



No. 341—The $\frac{1}{2}$ in. overall width is used when space limitations do not permit use of a wider size with more convenient nailing flange. (.0056 in. Bronze).

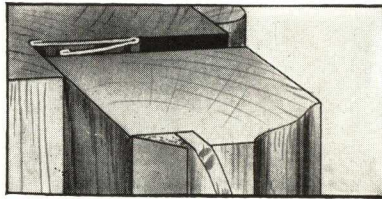


No. 342—Used mainly for cross members on Gold Seal Equipment and rabbeted casement meeting rails of $1\frac{1}{8}$ in. sash. (.0056 in. Bronze).

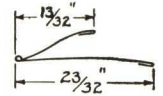


No. 343—Used as side members in Gold Seal Equipment, spring liners in rib equipments, and many special uses in wood window installations. (.0056 in. Bronze).

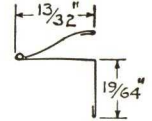
Gold Seal Bronze spring strips for doors and casements tend to tighten the seal as wind pressure increases. Unusually resilient, they will not hum in the wind and are adaptable to both standard and special applications.



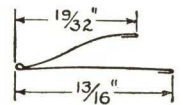
No. 344—Similar to No. 342 with wide flange to permit use of sheet metal or drive screws in steel window applications. (.0056 in. Bronze).



No. 345—Similar to No. 343. Wide flange suits sheet metal and drive screws. Used in special applications on wood windows also. (.0056 in. Bronze).



No. 350—For tops and sides of casement windows and doors of any thickness; also rabbeted meeting rails with $\frac{7}{8}$ in. space for bronze. (.0064 in. Bronze).



500 SERIES FLEXO-SEAL EQUIPMENT

(Patented)

For Steel Windows—Hinged, Projected, Pivoted

500 Series Flexo-Seal Weather Strip is the ideal equipment for steel windows needing weather strip treatment. It causes neither hinge binding nor distortion of steel sash members, but acts as a yielding impenetrable cushion between the fixed and movable portions of these windows. At reasonable cost it closes all cracks, from practically tight condition to the widest.

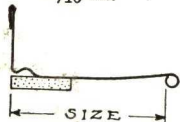
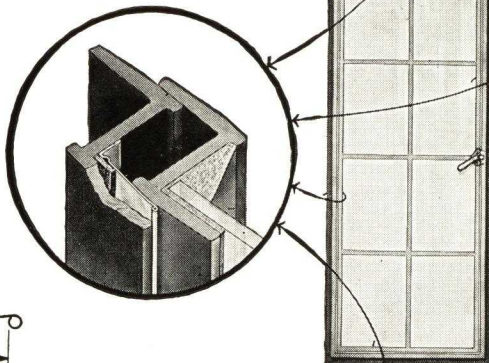
Sizes:
No. 509
 $\frac{9}{16}$ in.

No. 511
 $1\frac{1}{16}$ in.

No. 513
 $1\frac{3}{16}$ in.

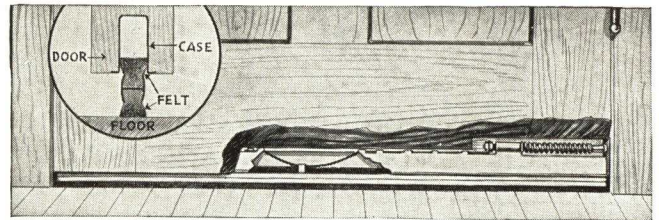
No. 515
 $1\frac{5}{16}$ in.

No. 517
 $1\frac{7}{16}$ in.



PERFEC-SEAL AUTOMATIC DOOR BOTTOMS

(Patented)



A common heat loss in many homes, erroneously considered fully weather-stripped, occurs at night when bed room windows are open and bed room doors, from a heating standpoint, become outside doors.

Perfec-Seal Door Bottoms automatically stop this heat loss. From a smooth metal case, concealed in the bottom of the door, a one-piece double felted bar is projected to the floor by simply closing the door.

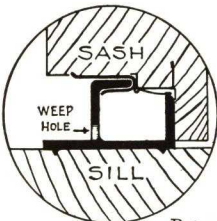
Because of the unique flat operating mechanism, a groove of minimum depth only is cut in bottom of door, yet both projection and retraction of felt bar are simple and positive. Units readily adjustable for cracks from $\frac{1}{8}$ in. to $\frac{3}{4}$ in. Felted extruded aluminum bar, 1 in. wide.

For Metal Doors—The standard unit may readily be built into metal doors by the door manufacturer. Reese also makes a special Perfec-Seal, mounted in a heavy brass casing, for surface application to metal doors.

CASEMENT SILL EQUIPMENTS

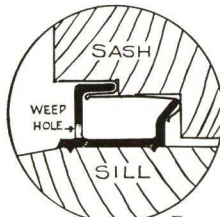
Reese Casement Sill Equipments are a series of shapes of various materials which are assembled to form

weather-tight drainage sills. Sections show the standard assemblies for both inswinging and outswinging sash.



Patented

No. 201—For Inswinging Casements $1\frac{1}{8}$ in. or $1\frac{1}{4}$ in. thick.
Extruded brass.



Patented

No. 205—For Inswinging Casements or French Doors $1\frac{1}{4}$ in. or more thick.
Extruded brass.



Patented

No. 241—For Inswinging Sash of any thickness.
Zinc or bronze.



No. 221—For Outswinging Sash.
Zinc or brass.

DOOR SILL EQUIPMENTS

From the standpoint of infiltration control only, all the interlocking sills are equally good. Width and height of sills have no bearing on their efficiency.

Suited to All Conditions—However, a variety of sills are offered to cover the needs for various conditions, and all brass sills are of our own design to add features of merit not found in usual stock sill designs.

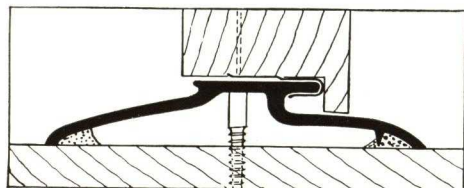
Materials—We use the terminology "extruded brass" for brevity, although it is also called "extruded architectural bronze". We confine the word "bronze" to alloys containing 90% or more of copper, although in practice there is no very definite dividing line.

For Residences—Nos. 368 and 378 Combination Sills, of the water drainage type, are shown with felted surface angles, useful in preventing frost in homes with high winter humidity. One piece drainage plates, set on gun grade Plasto-Seal Caulking Compound, prevent entrance of water through the sill connection.

For Public Buildings—For doors in public buildings, especially when operated with door checks, we recommend sills such as Nos. 305 or 307, in combination with No. 325 Surface Strip, to avoid use of sill as foot-scraper.

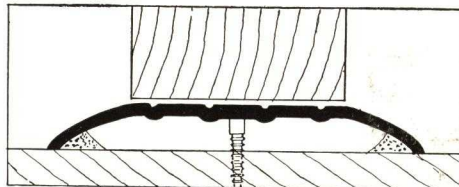
Special Conditions — No. 325 is a water-proof heavy duty rubber fabric strip riveted to a heavy brass angle. It will not pull loose in freezing weather.

No. 327 (not shown) is a useful strip for soundproofing around metal doors as well as for control of air leakage.

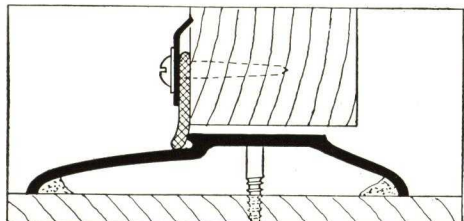


No. 301 — Extruded Brass Sill Strip 4x1 1/8 in.

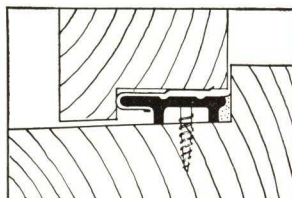
No. 314—Spring Bronze Hook Strip.



No. 305—Extruded Brass Sill 4x1 1/2 in. May be used in combination with No. 320, No. 325, or No. 327.

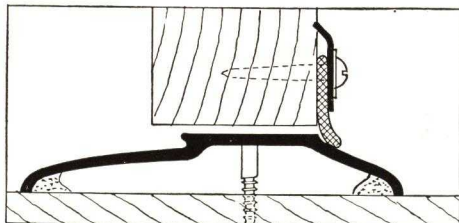


No. 307—Extruded Brass Sill 4x5/8 in.
No. 325—Surface Strip for Outswinging Doors, Schools and Public Buildings.

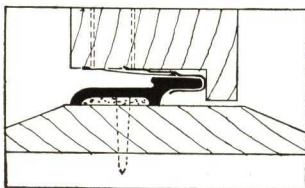


No. 308—Extruded Brass Sill Strip 1 1/8x1 1/8 in.

No. 314—Spring Bronze Hook Strip.



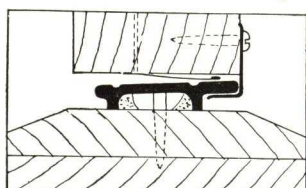
No. 307—Extruded Brass Sill 4x5/8 in.
No. 325—Surface Strip. For Inswinging Store Doors, etc.



No. 309—Extruded Brass Sill Strip 1 3/8x1 1/8 in.

No. 312—Spring Bronze Insert.

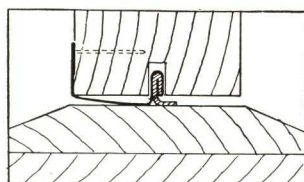
No. 311—Brass Hook Strip.



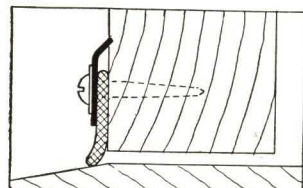
No. 310—Extruded Brass Sill Strip 1 1/2x1 1/8 in.

No. 312—Spring Bronze Insert.

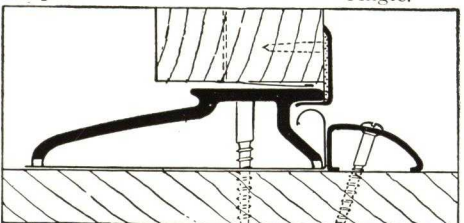
No. 313—Brass Surface Angle.



No. 320—Phosphor Bronze and Leather Door Bottom.



No. 325—Brass (.057 in.) and 1/8 in. Rubber Fabric Surface Strip for Garage Doors and other heavy duty uses.



Patented
No. 368—Extruded Brass Sill Strip 3x1 1/8 in.

No. 370—Brass Drainage Strip.

No. 371—Brass Moulding 1x1 1/2 in.

No. 312—Spring Bronze Insert.

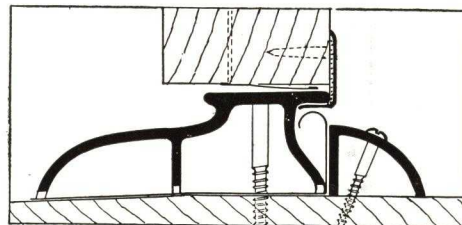
No. 313F—Felted Brass Surface Angle.

No. 382 — 1/8 in. Brass Angle (not shown) may be used instead of Moulding No. 371, and floor covering may be run flush with the sill.

Note to Architects

No attempt has been made to show our complete line of equipments for wood and metal windows, nor of extruded or formed sill constructions for doors and casement windows. Our line includes standard equipments of all types, as well as many special applications for unusual types of windows. We solicit your correspondence.

Our complete catalog will be mailed gladly upon request. For IGA System (Insulated Glass Areas) see following two pages.



Patented
No. 378 — Extruded Brass Sill Strip 3 1/8x1 1/8 in.

No. 380—Brass Drainage Strip.

No. 381 — Extruded Brass Moulding 7/8x3/4 in.

No. 312—Spring Bronze Insert.

No. 313F—Felted Brass Surface Angle.

No. 382—1/2x1 1/8 in. Brass Angle (not shown) may be used instead of Moulding No. 381 to run carpet and carpet lining flush with sill.

REESE IGA (INSULATED GLASS AREAS) SYSTEM

(Patent Pending)



For Insulating Windows

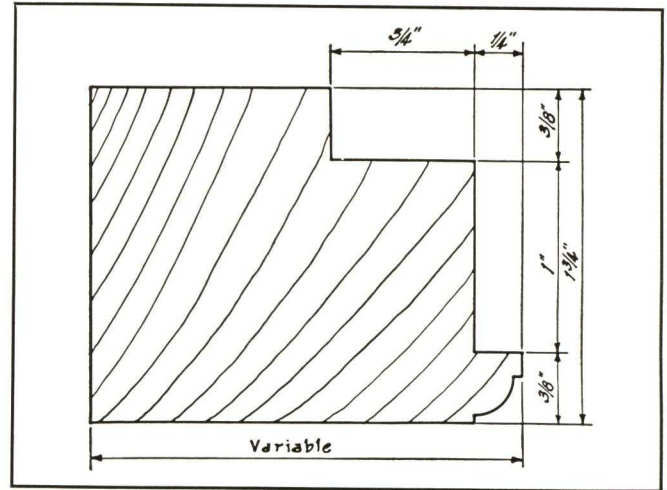
and Other Glass Areas

To Eliminate Frost, Ice, and Excessive Moisture Condensation

DOUBLE GLAZING NECESSARY—Air-conditioning in various types of buildings, from small homes to extensive industrial and commercial buildings, is now an accepted fact. The desirability of maintaining proper humidity indoors is well recognized. Among the more informed, one great disadvantage and limiting factor is also recognized—namely, the condensation of moisture on windows in cool weather and the formation of frost and ice in colder weather, resulting in rapid deterioration of sash and annual damage to decorations due to this deposit of water inside the windows.

Many different schemes have been tried in attempts to combat this problem, ranging from the simple but ineffective use of "storm sash" to the extreme solution in some "modernistic" buildings of eliminating the windows entirely.

The IGA (Insulated Glass Areas) System was perfected to meet this need in air-conditioned buildings. In the IGA System the same proven procedure is followed, to prevent rapid transmission of heat, as in the insulation of wall and roof areas.



Required Dimensions for Glazing and Panel Rabbets for
1 3/4 In. Sash

WHAT THE IGA SYSTEM ACCOMPLISHES

—The IGA System of insulated glass areas is a complete system, applicable to any type of window, regardless of whether the window is sliding, hinged, pivoted, or stationary, and regardless of whether windows are wood or metal. Details of application are varied to suit the conditions, but in each case the installation maintains inside glass temperatures sufficient to avoid condensation of moisture and frosting. This is accomplished by the provision of an *effective dead air space* between two panes of glass.

The most effective single dead air space has been determined by scientific experiment to be something over 3/4 in. thick.

The IGA System provides 1 in. air space in 1 3/4 in. sash and 5/8 in. for 1 3/8 in. sash. This prevents rapid transmission of heat from the inner pane of glass, maintaining an inner surface temperature under severe winter conditions above the point at which moisture will condense from the warm inside air. The inner pane of glass is maintained above the "dew-point" temperature within practical ranges of relative humidity.

Frost and ice form at a temperature of 32 degrees above zero (F), and this temperature has not been obtained on inner glass in practical tests of the IGA System with outdoor temperatures ranging as low as 33 degrees below zero.

IGA INNER PERMANENT GLASS SEAL—

An essential part of the IGA System is the provision for permanently sealing of the inner glass in a water-proof and air-tight manner. This is accomplished by setting the inner glass in Reese Plasto-Seal Bedding Compound, and finishing with Reese Plasto-Seal Aluminum Glazing Compound. The dead air space *must*



Conventional Storm Sash

Single Glass

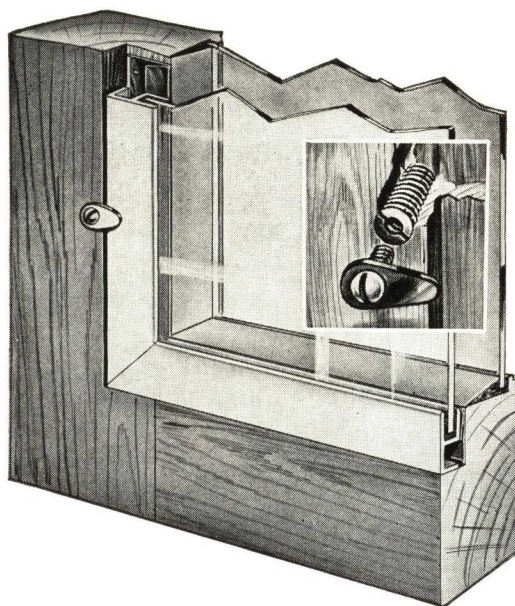
IGA System

Photographed Jan. 5, 1937. Outside temperature —16°

breathe to the outside as the confined air expands and contracts with temperature changes. The cold dry outside air contains too little moisture to condense on the cold outer pane. Ordinary glazing may not be depended upon for positive sealing of glass in the wood sash. If under wind pressure, moist inside air were forced into the dead air space, frost would form on the inside surface of the IGA panel.

IGA OUTER REMOVABLE PANEL—

The outer or removable single pane of glass is sealed in a rustproof extruded aluminum frame. A resilient bronze weather strip, applied in the panel rabbet, seals the dead air space against entrance of dust, yet the seal is less positive than that of the inner glass, insuring that the space will *breathe to the outside*. The IGA panel is made readily removable, since window glass eventually tends to form a surface film, which appears as a hazy condition and must be wiped clean once in a year, or two or three. After cleaning the inner surfaces of the glass the panels should be replaced at once. There is no storage problem as insulated glass areas are useful also in preventing rapid transmission of heat in the summer time, when the need is to shut out the heat rather than to conserve it. Single glass being a much better conductor of heat than even uninsulated wall construction, the merit of year round insulation of the glass areas is obvious. In large areas of the country, insulation for wall and roof



areas is practiced mainly for the protection it gives against heat. In the future no window will be considered really efficient which does not provide year round resistance to conduction of heat.

The removable panels are held in place by means of neat buttons, fastened with machine screws to brass bushings which are permanently set flush in sash. A half turn of the machine screw allows the button to turn free of the panel. All metal parts, furnished either in frame construction or accessories, are of rust-proof materials, to give a lasting installation without maintenance expense.

IGA SUMMER AND WINTER ECONOMIES—

Since it costs more to cool and dehumidify air than to heat and humidify it, the IGA System is, from the standpoint of operating economy, of greater importance in connection with summer cooling than with winter heating.

The co-efficient of heat transmission through a single pane of glass is 1.1 B.T.U. per sq. ft. of glass per hour per degree of temperature difference. This co-efficient becomes .55 in the IGA System, representing a saving of one half of the heat lost by transmission through glass. From the standpoint of heating economy alone, the IGA System is well justified, since in an average residence built in the old fashioned way with single glass windows, about 22% of the total heat delivered to the rooms is lost by conduction through the glass.

SPECIFICATIONS

UNDER MILL WORK—Exterior sash and exterior glazed doors shall be made with stiles and rails rabbeted to dimensions required for installation of IGA System of Glass Insulation, in accordance with details furnished by REESE METAL WEATHER STRIP COMPANY, Minneapolis, Minn.

GLAZING—Glass in wood frames shall be bedded in Plasto-Seal Gun Grade Bedding Compound, laid on glass rabbet with glazing gun. Glass shall be pressed lightly into bedding compound, set with glazing points, and finished with Plasto-Seal Aluminum Glazing Compound, of tool grade consistency, applied with putty knife. The excess of bedding compound, which is squeezed out around edge of glass, shall be trimmed off neatly after bedding compound has set for forty-eight hours.

NOTE: *The above glazing materials are prepared especially for use in IGA System installations, and are sold at low cost to glazing contractors by REESE METAL WEATHER STRIP COMPANY in order to insure proper water-proofing of the glass set in wood sash.*

UNDER HARDWARE—(No special hardware is required in the IGA System. In hardware specifications include the following:)

"Strikes for sash locks shall not exceed $\frac{5}{8}$ in. in thickness."

($\frac{1}{2}$ and $\frac{5}{8}$ in. thicknesses are available in stock in cast bronze, and the $\frac{5}{8}$ in. in pressed steel also.)

UNDER PAINTING (include the following:)

"All exterior glazed openings are to be provided with the IGA System of Glass Insulation. The painting contractor shall apply two coats of exterior paint before installation of IGA panels."

(If it is desired to paint exterior faces of panels, include the following:)

"After installation of IGA panels, the painting contractor shall paint the outside face of metal frames to match outside of sash. This shall be done without removing panels from sash."

INSULATED GLASS AREAS—IGA panels shall be furnished and installed complete, in accordance with details furnished by REESE METAL WEATHER STRIP COMPANY, in all exterior sash and exterior glazed doors. This work shall be done by the authorized dealer of the REESE METAL WEATHER STRIP COMPANY.

IGA panels shall be glazed with double strength "A" quality flat drawn glass. ($\frac{1}{8}$ in. plate glass may also be specified.) Frames shall be of extruded aluminum, of construction permitting glazing at job site where desirable, or of reglazing at job in case of glass breakage.

Both surfaces of glass in wood sash shall be left clean of paint or of oily substances by others before IGA panels are installed. The IGA Contractor shall then deliver clean inner surfaces of glass in insulated glass areas, and clean outside surfaces. After installation of panels by this contractor they shall not be removed by other workmen on job.

SAGER METAL WEATHERSTRIP COMPANY

Manufacturers and Installers of Metal Weatherstrips and Caulking

TELEPHONE:
ARMitage 1130

FACTORY AND GENERAL OFFICES
2531-2533 Homer Street, CHICAGO, ILL.
AGENTS IN ALL PRINCIPAL CITIES

Products

Sager Metal Weatherstrip for doors and windows including Sager Patented Interlocking Parting Bead Strip, Sager Patented Rotproof Sill Strip, Leakproof Casement Window Strip and Extruded Brass Interlocking Door Thresholds.

Sager All-Metal Interlocking Parting Bead Strip

For double-hung windows embodies every desirable feature of a weatherstrip plus an exclusive method of installation, which provides for the removal of the strip from the window frame, for repairing broken weight cords or other repairs to the sash, without in any way damaging the strip.

Shrinkage of the sash and frame does not in any way affect the contact of the interlocking members of this weatherstrip. Stops rattling windows when opened for ventilation because

both sash are tracking in the weatherstrip from head to sill. Stops air leakage at its source of entry.

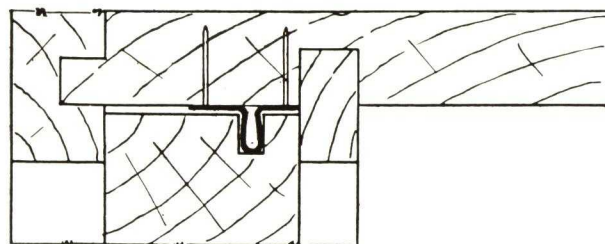
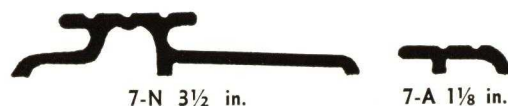
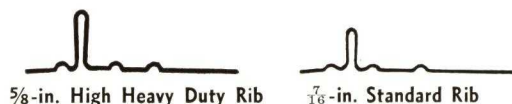
Sager Patented Interlocking Parting Bead Weatherstrip

Functions at the parting bead and does not interfere with the back of the sash, therefore makes a perfect installation in connection with Pullman and Unique sash balances.

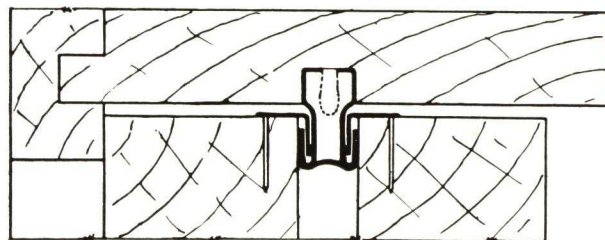
Sager New Improved Rotproof Sill Strip

For double-hung windows (shown below) allows water caused from condensation on the inside of window pane to drain through the weep holes in the sill strip and at the same time prevents air infiltration.

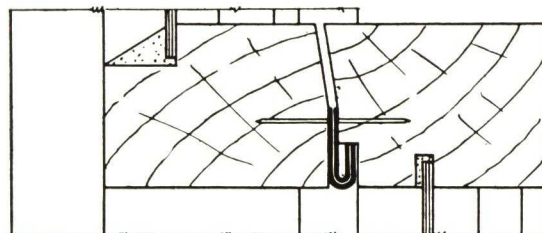
Catalog showing our complete line of weatherstrips for doors and windows will be mailed upon request.



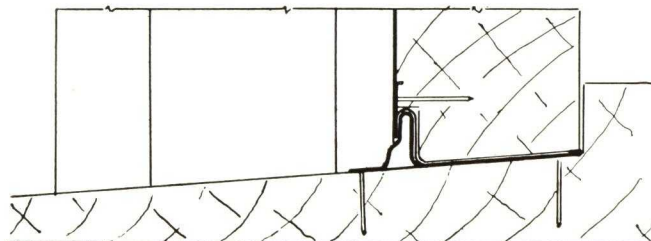
Section through Head



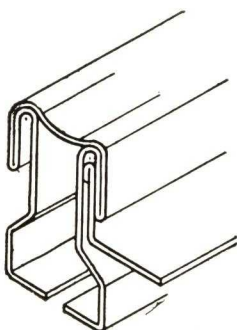
Section through Jamb



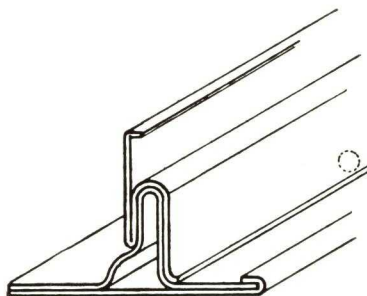
Section through Meeting Rail



Section through Sill



Isometric View Showing
Sager Interlocking Part-
ing Bead Strip
No. 2-B & 2-C



Isometric View Showing Sager Rot-
Proof Interlocking Sill Strip
No. 3-RP

A. J. SPANJERS CO.

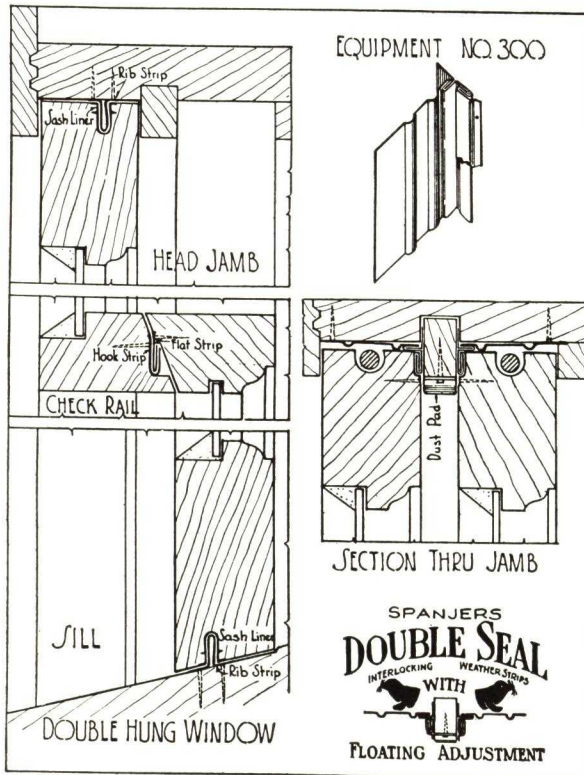
Manufacturers of Double Seal Metal Weatherstrip and "Bed-Dor-Seals"

82 Tenth Avenue, N. E.
MINNEAPOLIS, MINN.

SPANJERS DOUBLE SEAL INTERLOCKING WEATHERSTRIPS

Patents: No. 17,539; No. 1,748,660; No. 2,013,869. Other Pat. Pending

Spanjers Double Seal Interlocking Weatherstripping is made of heavy, flexible cross-grain zinc in channel shape interlocking to form an airtight, dustproof *double seal*. It is designed to take up any shrinkage between frame and sash and maintains maximum efficiency in withstanding the elements.



Adaptability

It is designed for use on double hung windows, casement windows and doors. Every movable joint is provided with windproof airtight connecting members.

Double Hung Windows—Are equipped with triple member weatherstrips, flexible and seating perfectly as the joining members meet. Note in the drawing below that there are no deep grooves to weaken either the sash or frame.

In-swinging Wood Casements—Are equipped with zinc interlocking and No. 25 zinc channel bottom. Can also be furnished in brass and bronze.

Out-swinging Wood Casements—Are equipped with hemmed edge bronze and No. 20 zinc interlocking bottom and also in concealed interlocking.

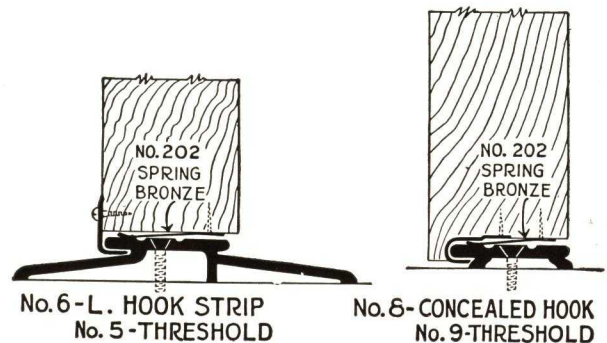
Doors—Exterior wood doors are equipped with hemmed edge bronze and various widths of interlocking and plain thresholds.

Special Equipment

We specialize in furnishing special equipment to meet your requirements.

Installation

Realizing the necessity for correct weatherstripping installations, the A. J. SPANJERS Co. undertakes to supervise the installation of its products and to guarantee the weatherstripping and calking of all frames.



"BED-DOR-SEALS" FOR BEDROOM DOORS

Patent: No. 1,976,970

Closes the Space Between Door and Floor

This is a fully automatic, noiseless device which operates on the adjustable plunger rod and leaf spring principle, greatly simplified and improved. All the complicated mechanism of the old type has been dispensed with, resulting in a trouble-free device, that will operate satisfactorily for years.

Superior Features

Metal Liner—Made of heavy cross-grained zinc flanged to make a finished appearance in bottom of door.

Seal—Made of heavy cross-grained zinc with inside core of part wood. This combines lightness with greater strength.

All Wool Felt—Highest quality and vermin proof.

Leaf Spring—Oil tempered spring steel of finest quality. Will retain its flexibility indefinitely.

Plunger Rod—Threaded

and accurately machined to permit of accurate and fine adjustment of seal.

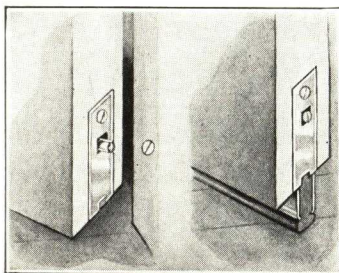
Rustproof—All metal parts are rustproof—will not corrode.

No Interference with Rugs—"Bed-Dor-Seals" do not operate until door is just two inches from being closed. Side nearest hinge drops first so there is no scraping of the felt along the floor. There is no possibility of interference with rugs.

Better Finished Appearance—Brass plates are furnished for both ends of doors as seen in illustration.

Fitted Quicker—Installation Costs Less—"Bed-Dor-Seals" can be fitted quicker and easier than other types. Only 3 small screws to be inserted after groove is cut. No chiseling for plunger box or clearance for spring or rod. Just a straight groove to be cut.

Operates Easily and Surely—Cannot stick. Device operates inside metal liner with smooth metal-to-metal contact. No jagged edges. Will operate indefinitely without trouble.



Door Open

Door Closed



Cross Section Through Door

IDEAL VENTILATOR CO.

ORIGINATORS AND PATENTEES OF GLASS WINDOW VENTILATORS

160 Atlantic Avenue, PROVIDENCE, R. I.

VENTILATE THE IDEAL WAY

Ideal Window Ventilators are especially adapted for schools, hospitals, and various large buildings where many persons work or congregate. They have been recommended by the joint committee on Health Problems in Education of the National Education Society, and the American Medical Association.

Ideal Ventilators

Manufactured and distributed for over forty consecutive years by this organization. Recommended by architects, engineers, contractors, and boards of education. Their efficiency has been proven in offices, homes, schools, hospitals, institutions, and factories.

The ventilator consists of two parts, the wood framed glass panel, and a pair of metal adjustable brackets.

Frames are light, strong, and unobtrusive. Made of the finest materials. Woods are selected, well seasoned, kiln dried, and finished with finest stains, or enamels. Glass is Libby-Owens-Ford. Panel is 11½ in. high, made to order for the window in which it is to be used.

Brackets No. 1 are adjustable, and are designed for framed ventilators only. Will accommodate frames 12 in. high. Can be adjusted to set at any angle up to 20°, from a parallel position with the window.

Only one measurement is required—across sill between stops.

Air Flow Regulated

Our many years' experience has proven that the best results are obtained only by using adjustable brackets, permitting the air flow to be regulated according to atmospheric conditions, and individual requirements. Adjustable brackets are unquestionably the most efficient.

Stock Finishes for Frames

Light Oak	Weathered Oak	Light Cream
Golden Oak	Walnut Finish	Dark Cream
Flemish Oak	Mahogany Finish	Pearl Gray
Green Oak	Enameled White	Specials to order

Some Users of Ideal Ventilators

Baltimore

Johns Hopkins Hospital
City Hall
Aetna Life Insurance Co.
New York Life Insurance Co.
Chesapeake & Potomac Telephone Co.
American Oil Co.

Boston

State House
New England Telephone & Telegraph Co.
Harvard University
Massachusetts Institute of Technology
Statler Office Building and Hotel
Standard Oil Co.

New York

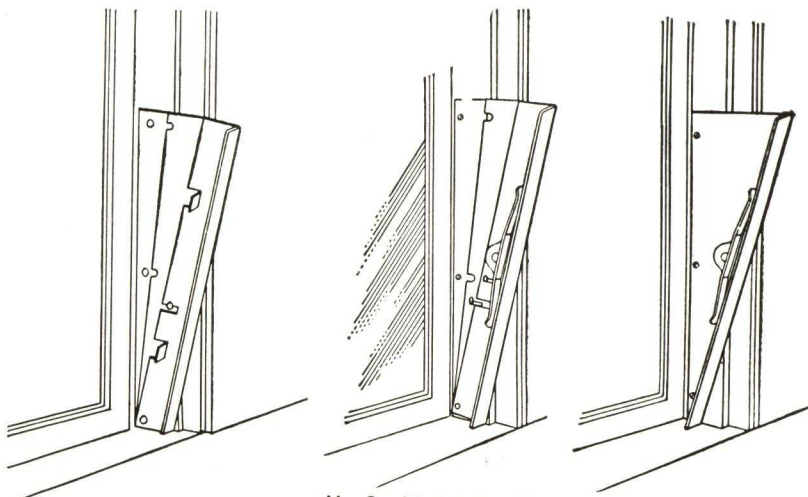
Empire State Building
Rockefeller Institute for Medical Research
Manhattan College
Columbia University
Department of Health
Mount Sinai Hospital

Providence

State House
City Hall
New Courthouse
Rhode Island Hospital
Brown University
Public Schools

Washington, D. C.

U. S. Weather Bureau
U. S. Department of Agriculture
U. S. Treasury Building



No. 1 Ideal Adjustable Bracket for Framed Ventilators

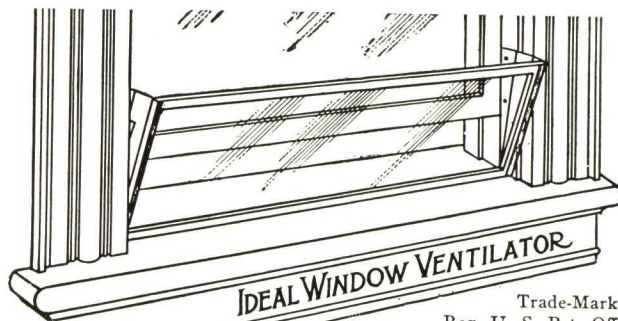
No. 2. Ideal Adjustable Bracket for Plate Glass Ventilators

Patent No. 1660972

No. 3. Ideal Stationary Bracket for Plate Glass Ventilators

Patent No. 1660972

Installation is very simple, and ventilators do not interfere with screens, shades, or draperies, and are instantly removable for cleaning or other purposes. Brackets do not interfere with removal of window stops.



Patented

Trade-Mark
Reg. U. S. Pat. Off.

Ideal Adjustable Anti-Rattle Brackets No. 2

Designed for unframed glass panels only, and eliminate the annoyance of glass rattling against the metal brackets. Anti-rattle clamps are properly tempered to allow for bending, permitting any thickness of glass to be used, and held firmly. Should glass become broken, the clamps act as holders to prevent panels being dislodged. Brackets furnished with, or without glass panels, thereby permitting the purchaser to obtain the glass from a local dealer, eliminating boxing and transportation charges.

All adjustable brackets are made of either steel or brass. They consist of three parts; friction clips control the fan shaped adjustment, permitting the air to be deflected at any angle desired up to 20° from a parallel position with the window, by simply opening or closing the brackets. Brackets are 11½ in. high, 1½ in. wide at base, and 4 in. wide at top when open. Will accommodate panels 12 in. high. All brackets are made from 20-gauge stock, either cold rolled steel or brass. Steel brackets are heavily copper plated and black oxidized, or bronze plated. Brass brackets have high quality satin finish, or are polished chromium plated.

Ideal Stationary Anti-Rattle Brackets No. 3

Made to meet low cost requirements. Are 20-gauge cold rolled steel, designed to hold glass panel approximately 12 in. high, and at an angle of 20°. Each bracket is equipped with an anti-rattle clamp acting as a holder for the glass panel. Colors are black, brown, cream, white or brewster green. Special colors to order.

THE AIROLITE COMPANY

Manufacturers of Ventilating Louvers

MARIETTA, OHIO

NEW YORK, N. Y., 548 Riverside Dr., Monument 2-4698
CHICAGO, ILL., 326 W. Madison St., Franklin 8259
PHILADELPHIA, PA., 513 Otis Bldg., Locust 2984
BOSTON, MASS., 665 Atlantic Ave., Hubbard 8575

SAN FRANCISCO, CAL., 991 Bryant St., Underhill 4612
SAN ANTONIO, TEX., 314 South St., Gar. 3761
LOS ANGELES, CAL., 1367 E. 17th St., Prospect 4084
ST. PETERSBURG, FLA., 1441 Central Ave., 42767

AGENCIES IN ALL PRINCIPAL CITIES

"AIROLITE" VENTILATING LOUVERS FOR MODERN NATURAL AIR VENTILATION

Products

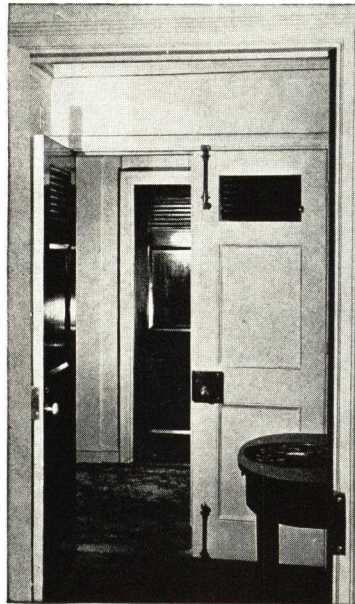
Adjustable and Stationary Ventilating Louvers for doors, windows, walls, ceilings and partitions.

Purpose

Airolite Louvers provide adequate and efficient ventilation in rooms, corridors, closets, attics and all other places requiring ventilation in any and all types of buildings.

Advantages

Controlled ventilation, sound and light resistance, privacy, economy, appearance and durability.



Airolite Door Ventilators

Construction

Built of heavy gauge furniture steel (brass, bronze, aluminum and other metals are available) in any size.

Held in place by suitable wood mouldings furnished by contractor or equipped at the factory with metal mouldings to fit any door or wall. Cannot be removed from outer side of opening.

Shipped complete in one unit ready for installation.

Finish

Two coats baked enamel in color to match doors or trim. Graining, plating, lead coating provided when required.

SUGGESTED GENERAL SPECIFICATIONS

"Louver Ventilators shall be type.....as made by THE AIROLITE COMPANY of Marietta, Ohio, furnished and installed by this contractor. Quantities and sizes shall be confirmed with door contractor. Finish

shall be two coats high grade baked enamel, solid color, to match doors and trim. All colors to be approved by architects."

LET AIROLITE SOLVE YOUR VENTILATING PROBLEMS

Whether the requirement is a small Door Vent, a unit equipped with fusible link, a large heavy duty Ball-Bearing Louver or a specially designed Ventilator, Airolite will solve your problem.

Airolite Louvers are installed in frame, brick, glass

block, concrete, steel sash and openings in any kind of construction.

Standard details on following pages—Call your nearest Airolite agent or write us for additional information on standard or special requirements.

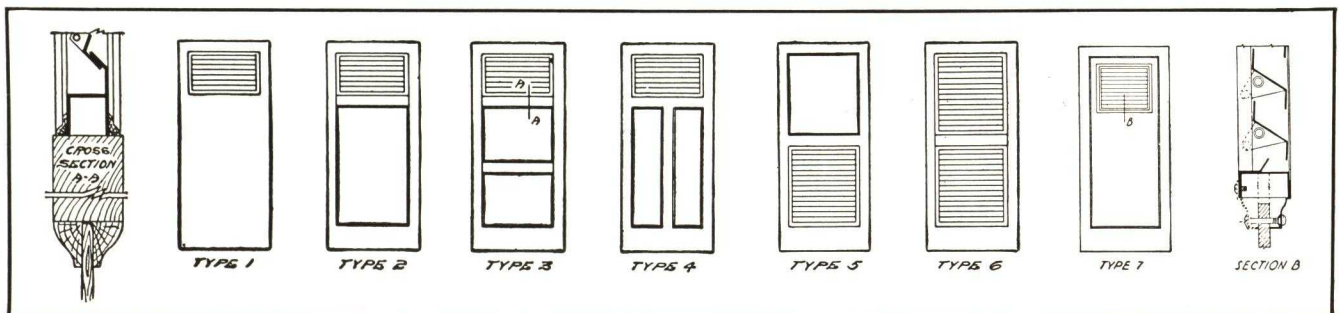


Plate III. Typical Elevations of "Airolite" Louver Installations

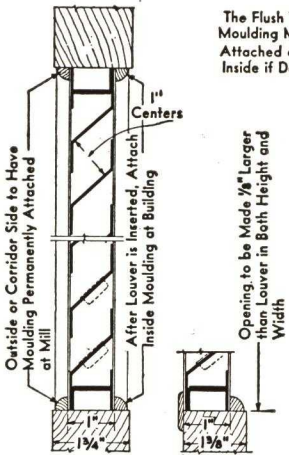
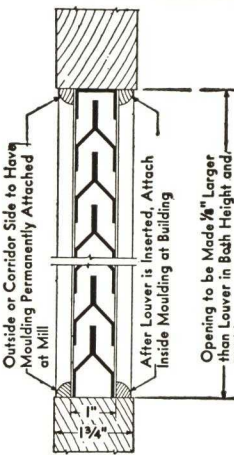
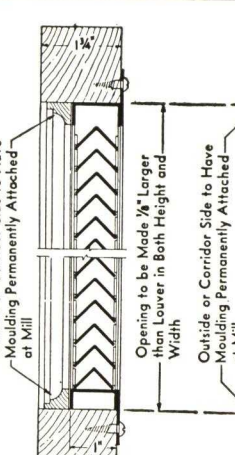
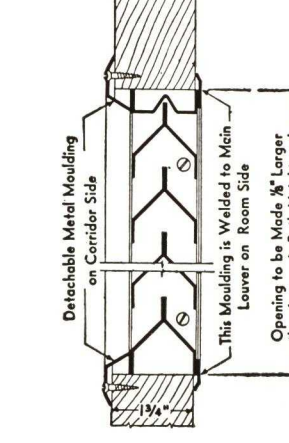
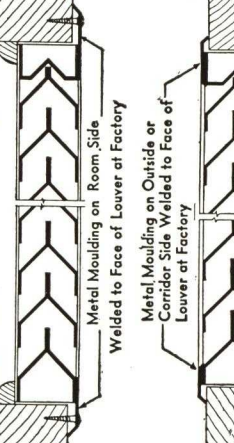
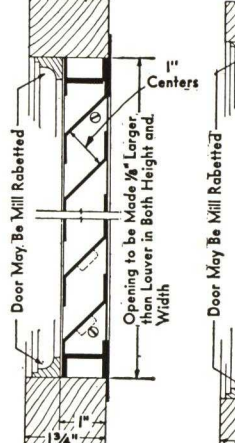
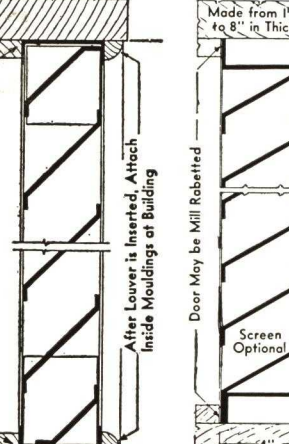
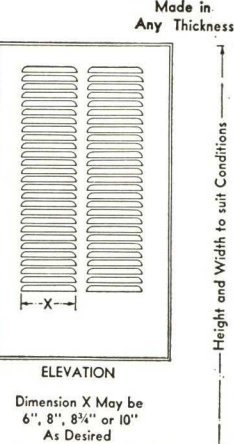
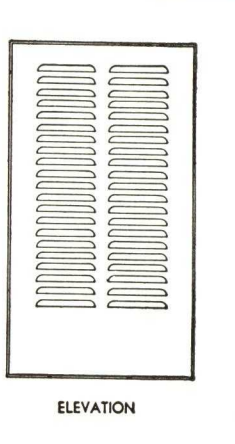
AIROLITE VENTILATING LOUVERS, ADJUSTABLE AND STATIONARY

		<p>VERTICAL SECTION PART ELEVATION</p> <p>Louvers shown in Open Position. Dotted Lines show Closed Position after Key has been Used to Throw Cam into Lift or Closed Position</p> <p>The Louvers are Adjusted by means of a Special Removable Key, and Cannot be Operated without a Key</p>
<p>FOR PANELED AND SLAB DOORS— MOULDINGS FLUSH BOTH SIDES 500</p>	<p>FOR PANELED AND SLAB DOORS— OVERLAP MOULDING ONE SIDE 551</p>	<p>LOUVERS CONTROLLED BY VENTILATING ENGINEER 502</p>
<p>METAL FLANGE, ROOM SIDE— WOOD MOULD FLUSH OUTSIDE 569</p>	<p>BEVELED MOULD ROOM SIDE— WOOD MOULD FLUSH OUTSIDE 584</p>	<p>MOULDINGS FURNISHED FOR DIFFERENT DOOR THICKNESSES 528</p>
		<p>VERTICAL SECTION</p>
<p>METAL MOULDING BOTH SIDES— FOR STEEL OR WOOD DOORS 643</p>	<p>MADE ESPECIALLY FOR EXISTING THIN PANEL DOORS 570</p>	<p>BALL-BEARING REINFORCED STRAIGHT BLADE LOUVER 675</p>

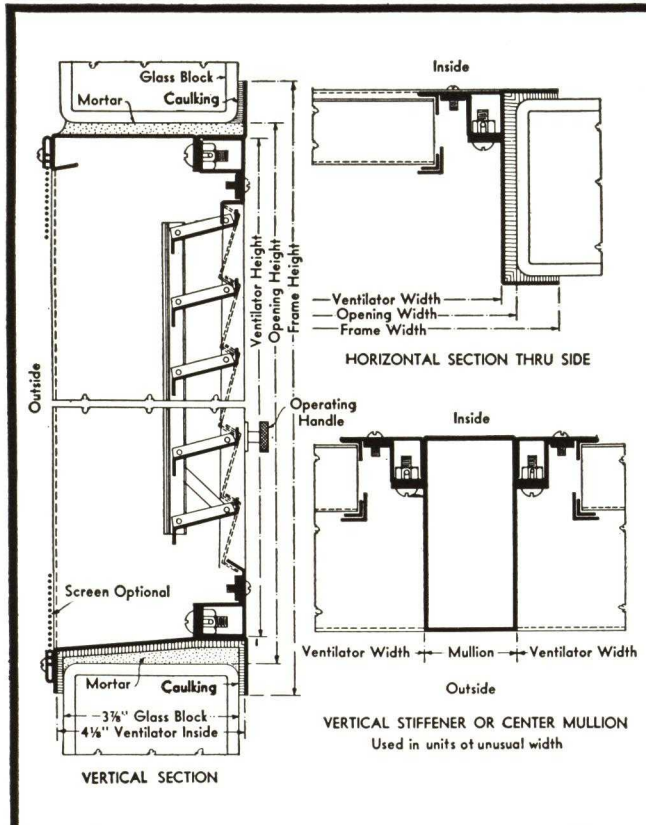
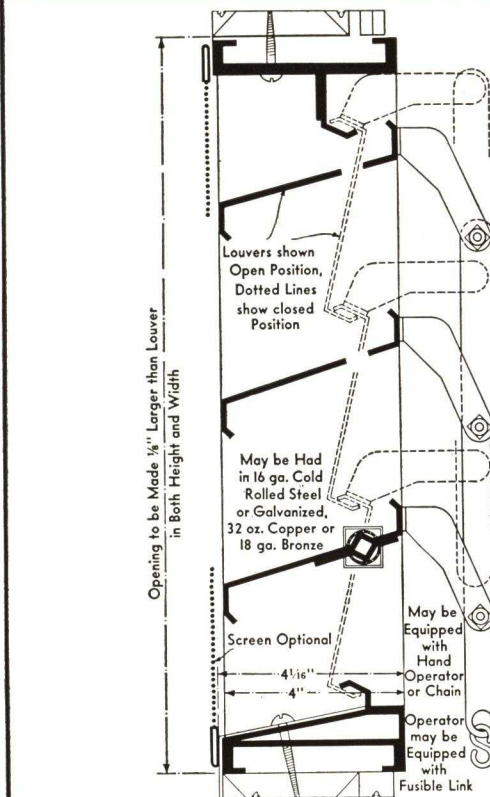
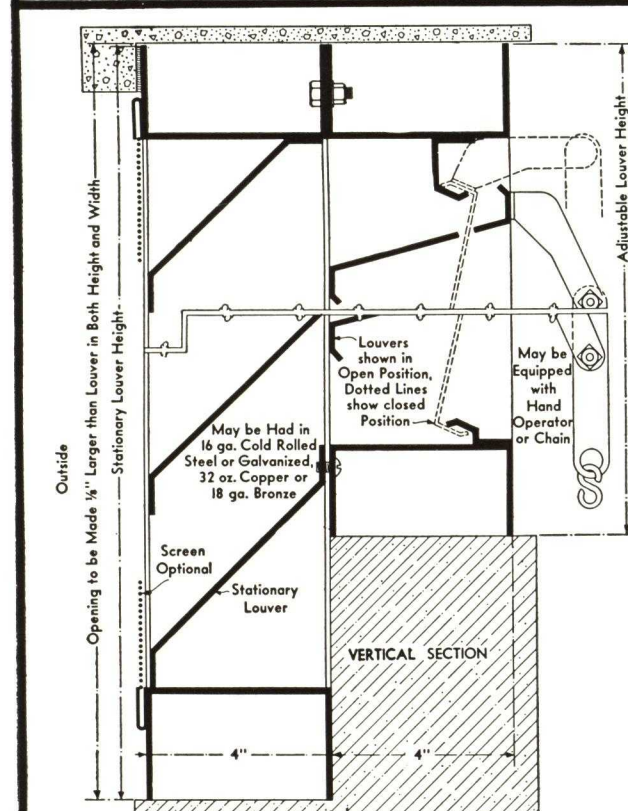
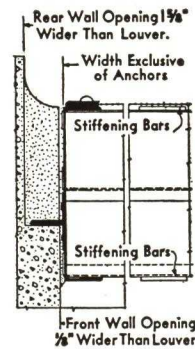
AIROLITE VENTILATING LOUVERS, ADJUSTABLE AND STATIONARY (Continued)

<p>Plaster Ceiling</p> <p>Screen Optional</p> <p>Closed Position</p> <p>HORIZONTAL SECTION THROUGH LOUVER</p> <p>VIEW LOOKING UP SHOWING ADJUSTER</p> <p>Tension Spring</p> <p>Pulleys Approx. 4" Apart</p> <p>HORIZONTAL SECTION AT SIDE OF LOUVER SHOWING CHAIN OPERATOR AND PULLEY</p> <p>Louver is designed for installation in Ceilings—It can be made to suit any size opening and is operated from Below by Pull Chains running through Pulleys to an Adjuster</p> <p>2" Diam. Ring One on each side of Adjuster</p>	<p>Special Top Angles Can Be Furnished to take Various Grilles</p> <p>1" Flange All Around</p> <p>Grille Set In Flush with Face of Louver</p> <p>This Type Grille Used when it is Desired That Grille be Attached Direct to Face of Louver Frame</p> <p>Inside</p> <p>Outside</p> <p>Opening to be Made 1/8" Larger than Louver in Both Height and Width</p> <p>ISOMETRIC VIEW OF LOUVER</p> <p>SECTION THROUGH LOUVER</p>	<p>Bracket</p> <p>Fusible Link</p> <p>Weight</p> <p>Weight Stop on Rod</p> <p>Bracket</p> <p>Operating Handle</p> <p>Corridor Side</p> <p>Room Side</p> <p>1 1/2"</p> <p>Pull Down on Handle to Close. Push Up to Open. Operating Rod runs free through Weight which is suspended by a Fusible Link. Melting of Link drops Weight on to Stop and Closes Louvers Automatically</p> <p>ELEVATION SHOWING FUSIBLE LINK AND OPERATOR</p> <p>VERTICAL SECTION</p>
<p>FOR CEILINGS IN STORES, OFFICES, ETC.</p>	<p>USED WITH FANS OR BLOWERS, FOR EXTERIOR OPENINGS</p>	<p>FUSIBLE LINK FOR AUTOMATIC CLOSING IN CASE OF FIRE</p>
<p>EXPOSED ADJUSTER</p> <p>CONCEALED ADJUSTER</p> <p>Application to Hollow Metal Door Frames is Similar to that shown Above</p> <p>ELEVATION</p> <p>ELEVATION</p>	<p>Mullion</p> <p>Operator</p> <p>HEAD</p> <p>TRANSOM BAR</p> <p>NOTE: For Detail of Adjuster See Louver No. 552</p> <p>Vertical Stiffener Braces Used when Louvers are 42" Wide or Over. Louvers can be made Any Reasonable Width by the Use of Vertical Mullions - They can then be Individually Operated or Gang Operated.</p>	<p>Adjuster</p> <p>Opening to be Made 1/8" Larger than Louver in Both Height and Width</p> <p>ELEVATION</p> <p>Furnished with or without Copper Screen</p> <p>Metal Sash</p> <p>VERTICAL SECTION</p>
<p>TRANSOM LOUVER WITH EXPOSED OR CONCEALED LIFT</p>	<p>TRANSOM FOR DOUBLE DOORS, REQUIRING DOUBLE LIFTS</p>	<p>ADJUSTABLE VENTILATOR FOR METAL SASH</p>
<p>Louvers can be made Any Reasonable Width or Height</p> <p>Opening to be Made 1/8" Larger than Louver in Both Height and Width</p> <p>1"</p> <p>1 3/4"</p> <p>VERTICAL SECTION</p>	<p>Stationary Louvers</p> <p>Adjustable Louvers</p> <p>Outside or Corridor Side to Have Moulding Permanently Attached at Mill</p> <p>After Louver is Inserted, Attach Inside Moulding at Building</p> <p>2 3/8"</p> <p>1 3/4"</p> <p>VERTICAL SECTION</p>	<p>Holes for securing in place</p> <p>Brass Operator</p> <p>Stationary Louvers</p> <p>Louvers shown in Open Position. Dotted Lines show Closed Position</p> <p>Opening to be Made 1/8" Larger than Louver in Both Height and Width</p> <p>VERTICAL SECTION</p>
<p>LIGHTPROOF FOR DARK ROOMS- LEAD-COATED FOR X-RAY</p>	<p>COMBINATION ADJUSTABLE AND STATIONARY, LIGHTPROOF</p>	<p>FOR INDUSTRIAL BUILDINGS, BARGES, FREIGHT CARS, ETC.</p>

AIROLITE VENTILATING LOUVERS, ADJUSTABLE AND STATIONARY (Continued)

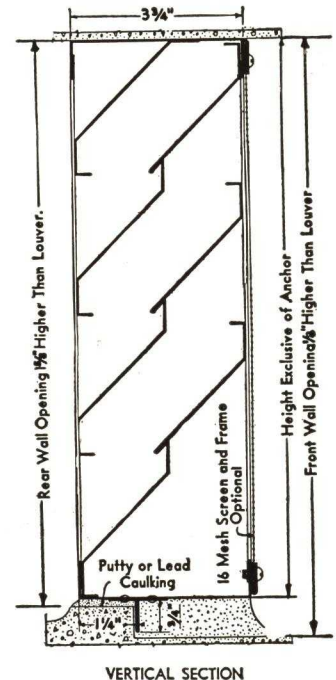
 <p>The Flush Type Moulding May be Attached on the Inside if Desired</p> <p>1" Centers</p> <p>Outside or Corridor Side to Have Moulding Permanently Attached at Mill</p> <p>After Louver is Inserted, Attach Inside Moulding at Building</p> <p>Opening to be Made $\frac{1}{8}$" Larger than Louver in Both Height and Width</p> <p>VERTICAL SECTION</p>	 <p>Outside or Corridor Side to Have Moulding Permanently Attached at Mill</p> <p>After Louver is Inserted, Attach Inside Moulding at Building</p> <p>Opening to be Made $\frac{1}{8}$" Larger than Louver in Both Height and Width</p> <p>VERTICAL SECTION</p>	 <p>Outside or Corridor Side to Have Moulding Permanently Attached at Mill</p> <p>Opening to be Made $\frac{1}{8}$" Larger than Louver in Both Height and Width</p> <p>Outside or Corridor Side to Have Moulding Permanently Attached at Mill</p> <p>After Louver is Inserted, Attach Inside Moulding at Building</p> <p>VERTICAL SECTION</p>	<p>560</p>	<p>583</p>	<p>536</p>	<p>601</p>
<p>THESE THREE LOUVERS ARE FOR USE IN TOILET, WASHROOM, SLOP SINK AND CLOSET DOORS AND PARTITIONS. AIR SHAFTS AND HEATING SYSTEMS IN OFFICES, SCHOOLS, HOSPITALS, HOTELS, THEATRES, ETC., NO'S. 583 AND 601 ARE SIGHT PROOF</p>						
 <p>Detachable Metal Moulding on Corridor Side</p> <p>This Moulding is Welded to Main Louver on Room Side</p> <p>Opening to be Made $\frac{1}{8}$" Larger than Louver in Both Height and Width</p> <p>VERTICAL SECTION</p>	 <p>Opening to be Made $\frac{1}{8}$" Larger than Louver in Both Height and Width</p> <p>Metal Moulding on Room Side Welded to Face of Louver at Factory</p> <p>Metal Moulding on Outside or Corridor Side Welded to Face of Louver at Factory</p> <p>Opening to be Made $\frac{1}{8}$" Larger than Louver in Both Height and Width</p> <p>VERTICAL SECTION</p>	 <p>Door May Be Mill Rabbetted</p> <p>Opening to be Made $\frac{1}{8}$" Larger than Louver in Both Height and Width</p> <p>Door May Be Mill Rabbetted</p> <p>Opening to be Made $\frac{1}{8}$" Larger than Louver in Both Height and Width</p> <p>VERTICAL SECTION</p>	<p>517</p>	<p>521</p>	<p>517-21</p>	<p>560A</p>
<p>METAL MOULDINGS AVAILABLE IN ANY DESIGN DESIRED</p>	<p>FOR WALLS, DOORS, ETC.—INTERIOR AND EXTERIOR</p>	<p>METAL FLANGE ONE SIDE—WOOD MOULDING OTHER SIDE</p>	<p>520</p>	<p>517-21</p>	<p>560A</p>	<p>610</p>
 <p>Door May Be Mill Rabbetted</p> <p>After Louver is Inserted, Attach Inside Moulding at Building</p> <p>Door May Be Mill Rabbetted</p> <p>Screen Optional</p> <p>Opening to be Made $\frac{1}{8}$" Larger than Louver in Both Height and Width</p> <p>Inside</p> <p>VERTICAL SECTION</p>	 <p>Made in Any Thickness</p> <p>ELEVATION</p> <p>Dimension X May be 6", 8", 8 1/4" or 10" As Desired</p> <p>May be Had in 16 ga. Cold Rolled Steel or Galvanized, 32 oz. Copper or 18 ga. Bronze</p> <p>Height and Width to suit Conditions</p> <p>VERTICAL SECTION</p>	 <p>ELEVATION</p> <p>Height and Width to suit Conditions</p> <p>VERTICAL SECTION</p>	<p>609</p>	<p>666</p>	<p>529A</p>	<p>602-2</p>
<p>HEAVY GAUGE TO WITHSTAND ROUGH USAGE</p>	<p>DOUBLE STAMPED HOODED LOUVER</p>	<p>STAMPED LOUVERS, ANY SIZE OR SHAPE FOR ANY PURPOSE</p>	<p>609</p>	<p>666</p>	<p>529A</p>	<p>602-2</p>

AIROLITE VENTILATING LOUVERS, ADJUSTABLE AND STATIONARY (Continued)

ADJUSTABLE VENTILATOR WITH SPECIAL FRAME
FOR USE IN GLASS BLOCK WALLS**544A**BALL-BEARING LOUVER, GRAVITY TYPE, ADJUST-
ABLE BY CHAINS AND PULLEYS OR HANDLES**663**COMBINATION STATIONARY AND BALL-BEARING
LOUVER, GRAVITY TYPE.**652**

HORIZONTAL SECTION

Louvers are Made of
either 16 oz. Copper or
26 ga. Galvanized Steel.
They Can Be Made in
Any Width up to 72" and
Any Height up to 48".
Heights Must Be in
Multiples of 6".
Braces are Used on
Louvers 42" and Wider.



VERTICAL SECTION

LEAKPROOF FOR INDUSTRIAL
BUILDINGS, POWER PLANTS, ETC.**638**

ELLISON LOUVRE COMPANY, INC.

JAMESTOWN, N. Y.



Ellison Louvre

Types

Ellison Louvres are ventilating panels for doors, transoms or walls. They are made in several different types as shown below, any of which can be made either adjustable or stationary.

Adjustable types find wide use in sleeping rooms, apartments, hotels, dormitories, hospitals, sanitariums, offices, theatre dressing rooms, staterooms, pullman compartments, etc. Stationary types are especially suited for toilets, closets, attics, pantries, wards, air shafts, etc., wherever cross ventilation is desired.

Types A, B, C, D, H are adjustable.

Types AF, BF, CF, DF, HF are stationary.

Samples

Gladly loaned to any responsible parties for inspection and comparison. Literature and prices on request.

Material

Louvres and frames are made of No. 18 gauge steel, strongly welded construction. Can also be furnished in copper, bronze, or aluminum. Outside (public side) is rigid, reinforced and immovable; inside (private side) is adjustable with operating handle made of polished, cast bronze.

Finish

Standard finish consists of one prime coat and two finish coats baked on, any solid color.

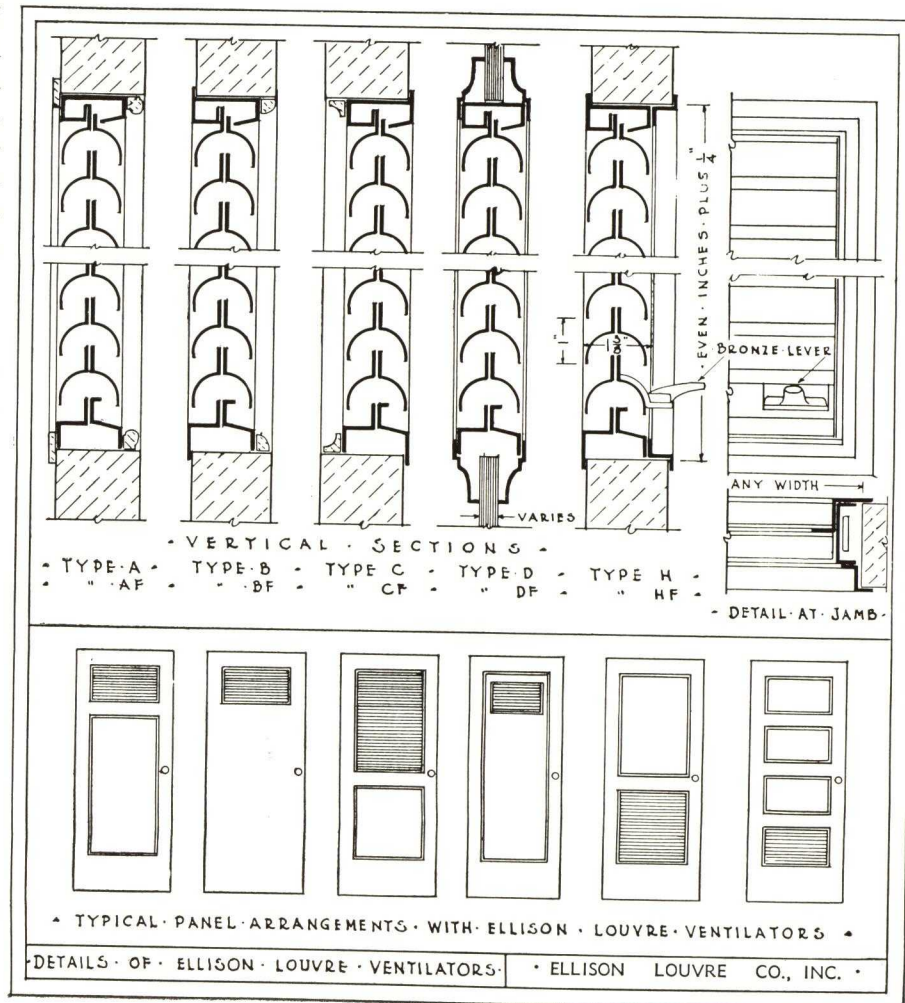
Grained finishes can be furnished at slight additional cost.

Advantages

Provide the maximum of ventilation and are sightproof and lightproof; perfectly quiet in operation; can be painted repeatedly without interfering with their operation; no crevices or pockets to collect dust and dirt. May be equipped with fly screens at small additional cost.

Installation

This is very simple, as drawings indicate. All necessary screws furnished with louvres.



THE VAN ZILE VENTILATING COMPANY

Adjustable Metal Ventilators for Use in Doors and Transoms

548 Riverside Drive
NEW YORK, N. Y.

THE VENTADOOR

The Modern Ventilator with Vertical Louvres

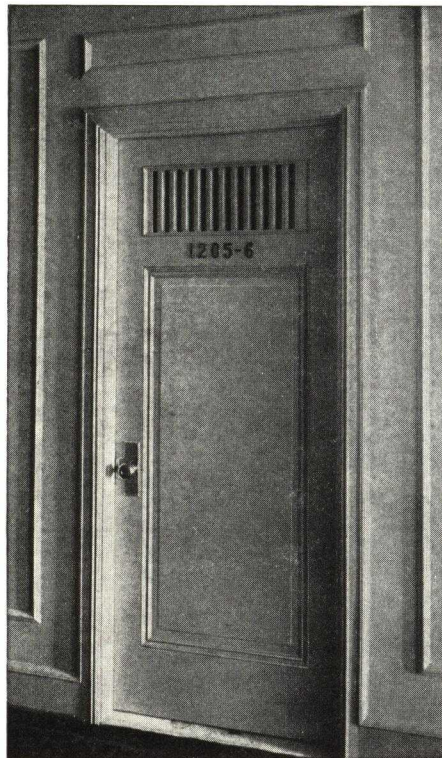
"Follows" the Door

This efficient ventilator not only performs the necessary functions of a ventilator—permits continual air circulation, deflects air currents and prohibits view from outside—but, due to its simple, unique design, actually enhances the appearance of the door.

For the Ventadoor is built to follow the structural lines of the door; its louvres run in the same predominant direction—*vertically*. Consequently, the Ventadoor becomes, even architecturally, a part of the door and its casement. There is no short, "squatty" appearance. No disturbing conflicting lines. It is because of this feature, combined with the unusual operating ability of the Ventadoor, that architects are specifying this ventilator for hotels, clubs, college dormitories and other important buildings.

No Projections for Clothing

Another paramount reason the Ventadoor is selected by so many architects is its *inability* to act as a hat or coat hanger—and defeat its own purpose. With its louvres running vertically, this type ventilator, unlike others, has no projections on which clothing may be hung.



With Its Vertical Louvres, The Ventadoor Becomes, Architecturally, Part of the Door

Either Stationary or Adjustable

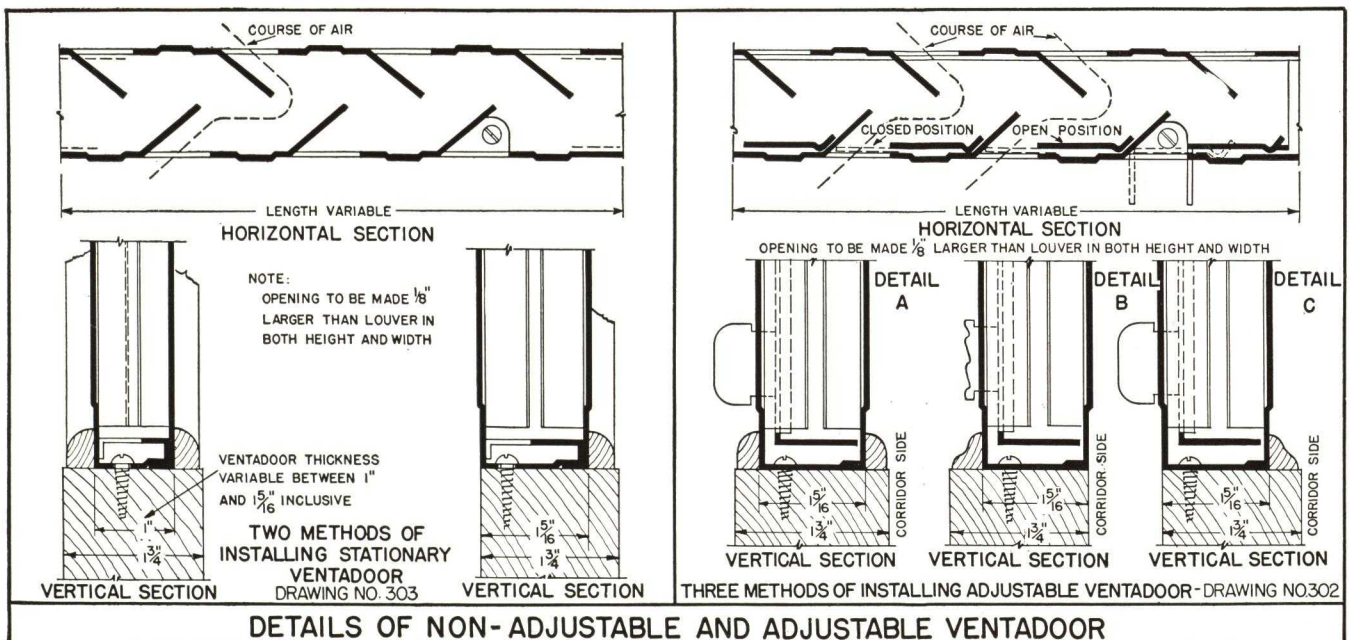
The Ventadoor is built in two types: stationary (non-adjustable) and adjustable. Both types furnished 10 in. high and in any width. Easily installed in wood, kalamein or all-metal doors of any thickness, or in any transom or wall space. Both are lightproof and sight-proof. The adjustable type is similar to the stationary, except that by sliding its operating handle it closes the louvres completely.

Suggested Specifications

The Ventadoor, as manufactured by THE VAN ZILE VENTILATING COMPANY, 548 Riverside Drive, New York, N. Y., shall be furnished for all doors where indicated on the drawings, and shall be factory finished in two coats baked enamel. Color to be approved by architect.

Typical Installations

University of Montreal, Canada
Lakeside Hospital Group, Cleveland, Ohio
Life Science Building and International Hall, University of California, Berkeley
Savoy Plaza, New York, N. Y.
U. S. Veterans' Hospital, Palo Alto, Calif.
Navy Central Y. M. C. A., Philadelphia, Pa.
Ocean Forest Hotel, Myrtle Beach, S. C.
Paxton Hotel, Omaha, Neb.
Northwestern Y. M. C. A., Detroit, Mich.
Mayflower Hotel, Washington, D. C.
Knickerbocker Hotel, New York, N. Y.
Ramona Hotel, Sacramento, Calif.



THE VENTILLOUVRE COMPANY, INC.

TELEPHONE
Monument 2-4788

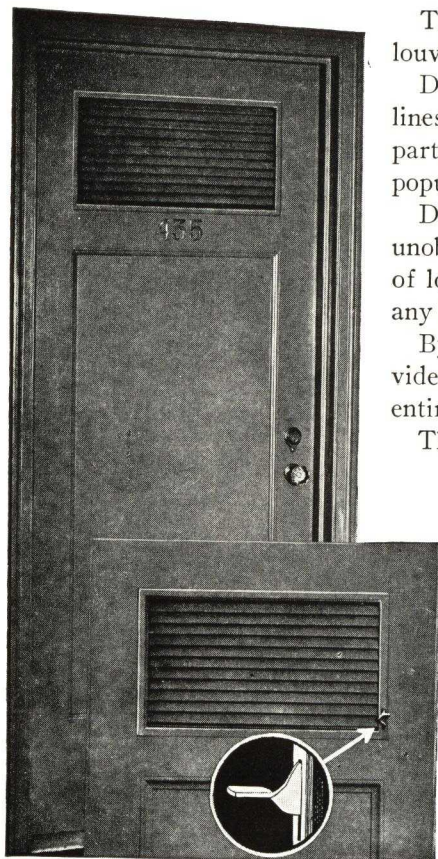
548 Riverside Drive
NEW YORK, N. Y.

BALTIMORE, MD., 1102 No. Charles Street
CHICAGO, ILL., 326 W. Madison Street
CLEVELAND, OHIO, 1014 Keith Building
DALLAS, TEX., 3201 Worth Street

DENVER, COLO., 1411 Court Place
LOS ANGELES, CALIF., 4711 Second Avenue, So.
PHILADELPHIA, PA., 1508 Architects Building
SAN FRANCISCO, CALIF., 557 Market Street

SEATTLE, WASH., 520 Denny Way

REPRESENTATIVES IN ALL OTHER PRINCIPAL CITIES



The introduction of the PANELOUVRE marked the final development in perfecting louver type natural air ventilation.

Designed to meet the architectural trend toward functional simplicity, narrow lines and inherent beauty; rigidly built of the best materials and with all wearing parts eliminated—the PANELOUVRE now enjoys its well deserved and universal popularity.

Discerning architects soon realized that the PANELOUVRE not only adapts itself unobtrusively to carrying out their design motifs but permits—through the use of lower ceiling heights—a substantial increase in the effective floor area without any increase in the total building cubage.

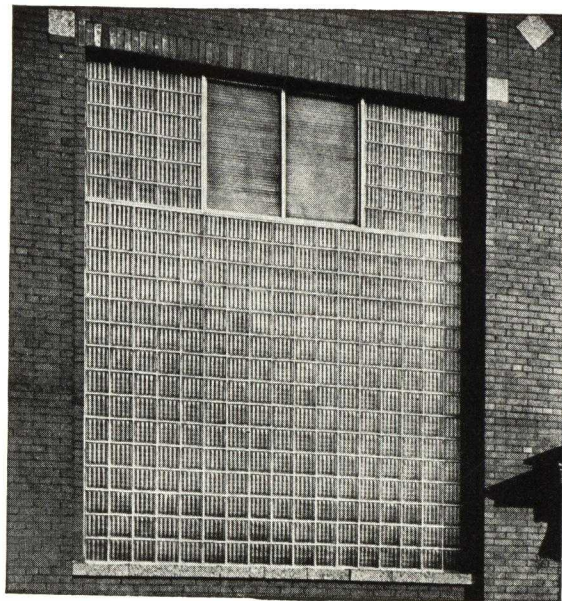
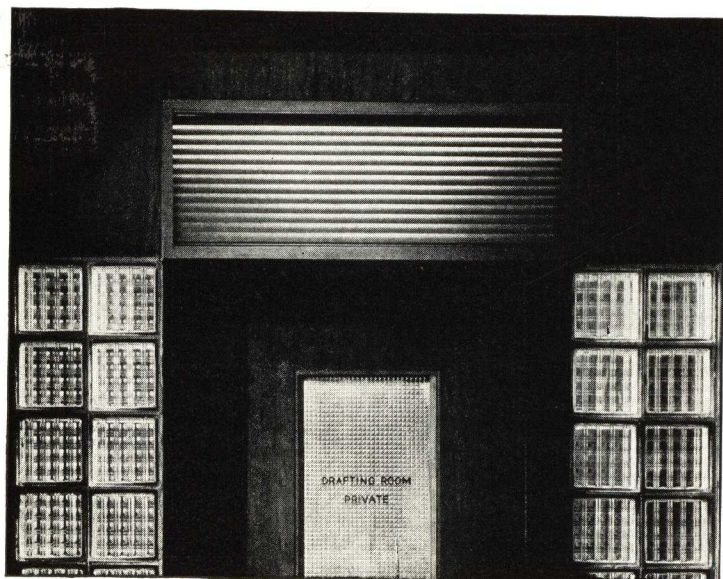
By using the PANELOUVRE for natural louver type ventilation the architect provides maximum air circulation under perfect control and without drafts and with entire freedom from prying eyes and glaring outside lights.

The PANELOUVRE will last a lifetime without repair, maintenance or replacement; operates easily and positively “without stick, click or trick”; and is made in sizes and types—adjustable or stationary—for interior or exterior use, in new or old buildings, to solve any and every conceivable need.

INSTALLED IN ALL TYPES OF CONSTRUCTION FOR ANY PLACE OR VENTILATING PURPOSE

The PANELOUVRE is made in types and designs for openings in frame, brick, concrete, glass block—all types of construction and is installed in doors, walls, partitions and other openings in any building requiring ventilation.

Standard details shown on following pages. Information and details covering special requirements furnished upon request.



The PANELOUVRE is installed in all types of construction

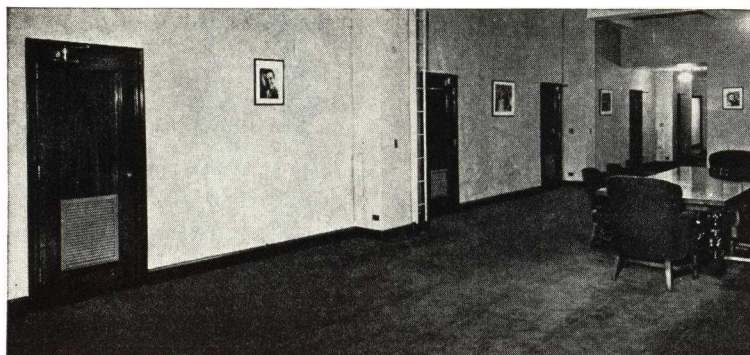
THE PANELOUVRE FOR AIR CONDITIONING

The illustration below, Executive Offices of 20th Century Fox Film Corporation, shows the use of the PANELOUVRE in connection with Air Conditioning.

Elimination of exhaust ducts in rooms and offices, controlled air circulation, reduction of sound transmission, appearance and

durability are outstanding features of adjustable PANELOUVRES and are essentials in Air Conditioning installations.

Consult your local VENTILOUVRE agent or write for further information.



Executive Offices—20th Century Fox Film Corporation, 444 West 56th St., New York, N. Y.

PANELOUVRES USED IN AIR CONDITIONED BUILDINGS

Alameda County Court House, Oakland, Calif.—Using: 101 Type S-3.

Tennessee Eastman Corp., Kingsport, Tenn.—Using: 106 D-2 and D-4.

Medical Arts Bldg., San Antonio, Tex.—Using: 666 D-2.

Brooklyn College, Brooklyn, N. Y.—Using: 18 S-2.

The Higgins Bldg., Los Angeles, Calif.—Using: 200 S-4.

The First National Bank Bldg., Lincoln, Neb.—Using: 175 D-4.

The Burlington Hotel, Burlington, Iowa—Using: 35 D-3.

The Rig & Reel Co., Parkersburg, West Va.—Using: 15 S-4.

CONSTRUCTION OF THE PANELOUVRE

Frame—All frame members are made of No. 18-gauge cold rolled steel channel and are $\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{2}$ in. Top and bottom channel frame members are specially designed and inverted to prevent dust collecting, and provided with countersunk screw holes. Corners are drawn and spot-welded, and both faces of frame are flush. Brass, bronze, aluminum or other metals can be furnished.

Louvres—Of the inverted "V" shape; made of cold rolled 18-gauge steel; set on 1-in. centers, with $\frac{1}{2}$ -in. space between bottom edges.

Operating Bar—Made of $\frac{3}{8} \times \frac{1}{2}$ -in. cold rolled steel. Attached to each louvre and runs the full height of the unit. Assures continued equal spacing and operating of each louvre.

Operating Trigger—Various types of operating triggers are available: Standard is Brass. Bakelite, plated or painted triggers can be supplied.

Sizes—Made in any width.

(1) For openings exceeding 40 in. wide, we furnish two PANELOUVRES welded together.

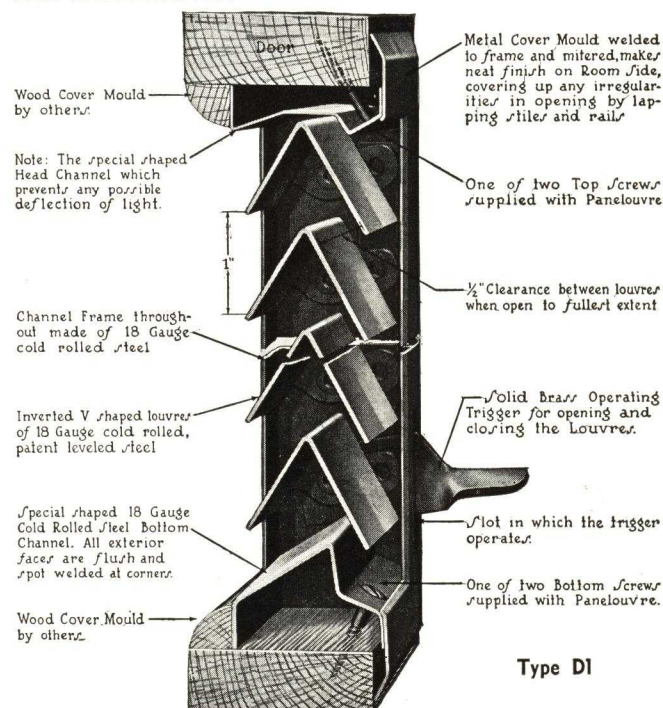
(2) Heights, due to design, preferably held to multiples of 1 in. plus $\frac{3}{8}$ in.—for example 10 $\frac{3}{8}$, 11 $\frac{3}{8}$, 15 $\frac{3}{8}$, etc., as may be required.

We can furnish PANELOUVRES in other heights, depending on opening sizes, at no additional cost.

Openings—Should be $\frac{1}{8}$ in. larger each way than unit.

Finish—Two coats of high grade baked enamel, applied at the factory. Finished in any solid color selected to harmonize with doors and trim. Where ordered, grained finish will be furnished at an additional charge.

Shipments—In one unit, complete with screws, ready for installation.



Type D1

ARCHITECT'S SPECIFICATIONS

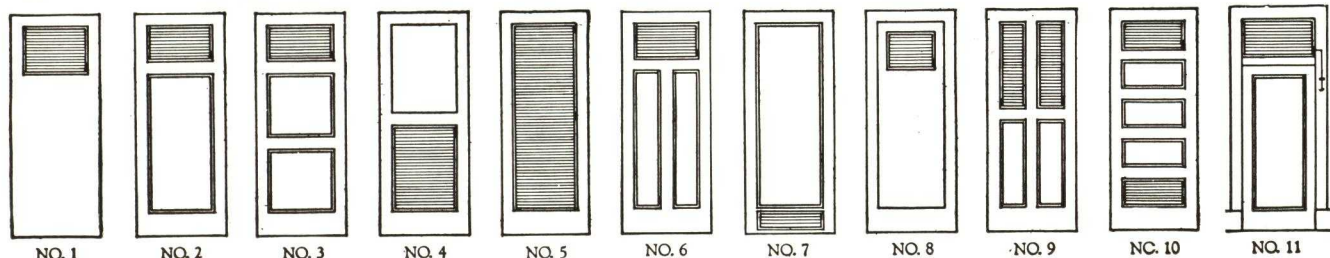
PANELOUVRES, of both adjustable and stationary types, and whether they are to be installed in wood or metal doors, walls or partitions, should be specified under Carpentry section.

(1) The Contractor shall furnish and install as shown on plans, PANELOUVRES, as manufactured by THE VENTILOUVRE COMPANY, INC., New York, N. Y., with (adjustable or stationary) Sightproof "V" type louvre blades.

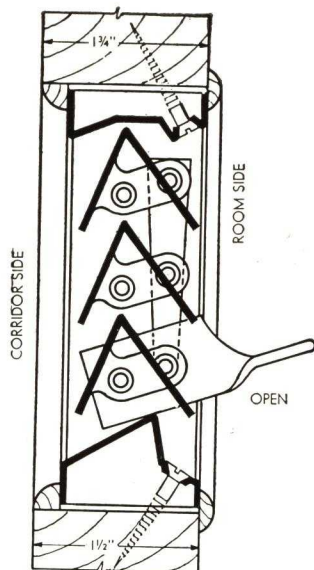
(2) **Finish**—Two coats baked enamel to match color sample submitted by Contractor. All samples of finish to be approved by Architect.

(3) **Hardware**—Solid brass, polished.

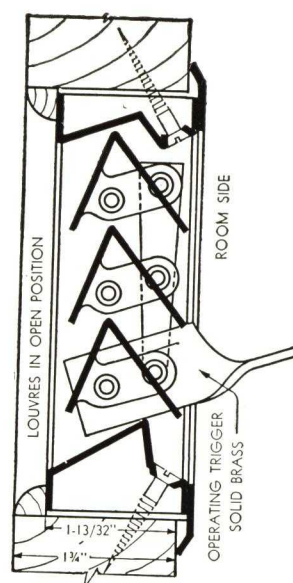
(4) Metal mouldings as detailed shall be furnished by the Manufacturer. (If wood mouldings are used they shall be furnished by the Contractor.)



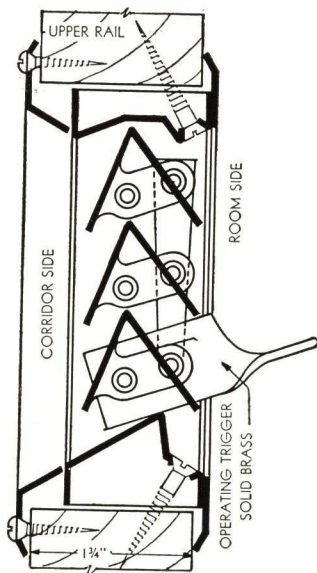
Typical Elevations Showing The PANELOUVRE



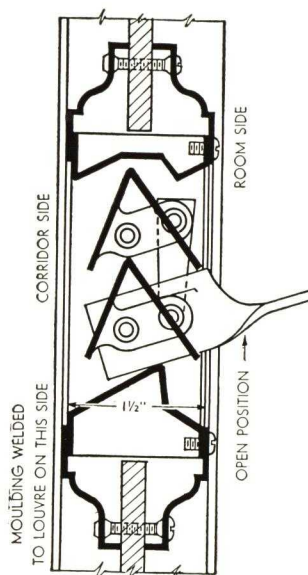
Adjustable Panelouvre
Type D2—Detail No. 41
Stationary Panelouvre
Type S2—Detail No. 96
(Same as Detail No. 41 without operating trigger.)
Wood moulding both room and corridor sides. Moulding furnished by others—screws by Ventilouvre.
Made for Wood or Metal Doors 1 3/8, 1 1/2 and 1 3/4 in. thick. Also for Walls and Partitions.



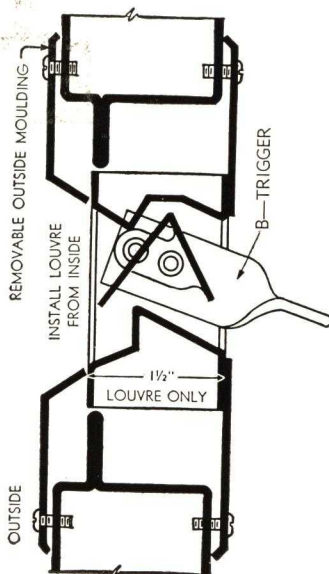
Adjustable Panelouvre
Type D1—Detail No. 46
Stationary Panelouvre
Type S1—Detail No. 55
(Same as Detail No. 46 without operating trigger.)
Metal moulding room side. Wood moulding corridor side. Metal moulding overlaps door opening 5/8 in. in width and 1 in. in height.
Wood moulding furnished by others—screws by Ventilouvre.
Made for Wood or Metal Doors 1 3/8, 1 1/2 and 1 3/4 in. thick. Also for Walls and Partitions.



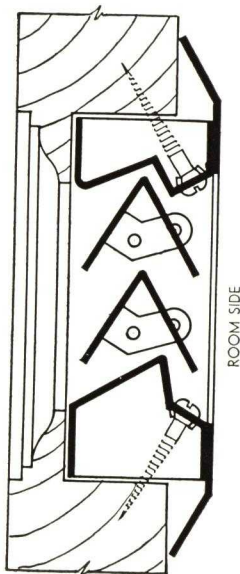
Adjustable Panelouvre
Type D3—Detail No. 56
Stationary Panelouvre
Type S3—Detail No. 90
(Same as Detail No. 56 without operating trigger.)
Metal moulding both sides. Moulding room side welded to face of louvre. On corridor side, moulding attached with wood or machine screws after Panelouvre is placed in opening. All metal moulding and screws furnished by Ventilouvre.
Made for Wood or Metal Doors 1 3/8, 1 1/2 and 1 3/4 in. thick. Also for Walls and Partitions.



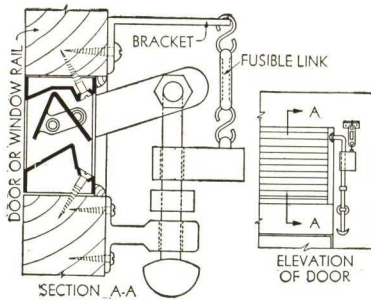
Adjustable Panelouvre
Type D4—Detail No. 58
Stationary Panelouvre
Type S4—Detail No. 99
(Same as Detail No. 58 without operating trigger.)
For use in thin panel doors. Enough margin should be left on panel so Panelouvre mouldings do not overlap door mouldings. Moulding 1 3/4 in. greater in width and 2 in. greater in height than Panelouvre.
Moulding on corridor side is welded to louvre. Inside moulding attached with machine screws (furnished with unit).
Specify panel thickness and trigger location.



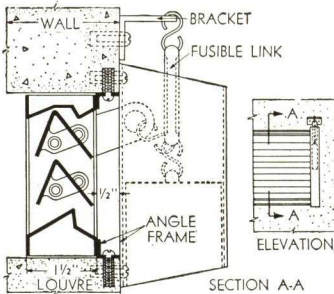
Adjustable Panelouvre
Type D3—(Special)—
Detail No. 131
For all types of metal doors. Also furnished as stationary unit (Type S3).
Made for Doors 1 3/8, 1 1/2, and 1 3/4 in. thick.
All moulding and screws furnished with Panelouvre.



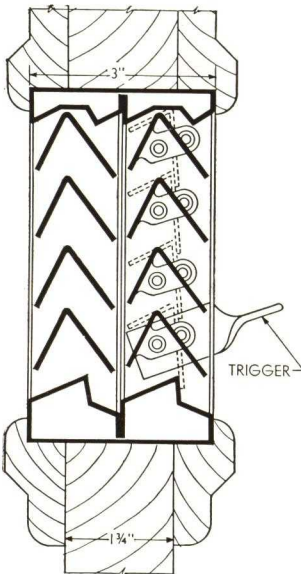
Adjustable Summer Door
Type SD1—Detail No. 93
Metal moulding on room side only.
Made for doors 1 3/8, 1 1/2 and 1 3/4 in. thick.
May be any size (up to 72 3/8 in. high) to fill the entire panel in any door.
Each unit equipped with two operating triggers.



Adjustable Louvre
Type FPD—Detail No. 64
Equipped with fusible link for automatic closing in case of fire.



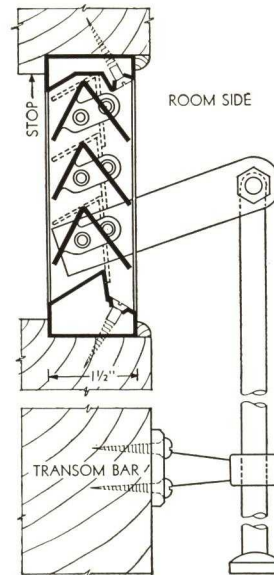
Stationary Louvre
Type FPW—Detail No. 64-A
For fire walls—equipped with fusible link for automatic closing in case of fire.



Type DX2—Detail No. 45
For X-Ray and Photo Dark Rooms without metal moulding.

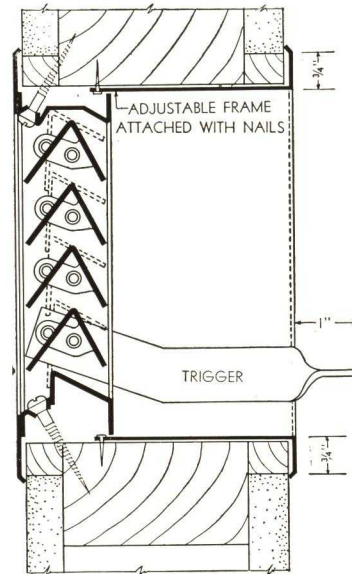
Type DX4—Detail No. 45
(Same as Type DX2 equipped with metal moulding both sides.)
All DX models 3 in. thick. One Stationary and one Adjustable unit combined.

An efficient means of ventilating dark and X-Ray rooms.
May be lead coated if desired.



Adjustable Transom
Type T2—Detail No. 42
Wood moulding both sides.

Adjustable Transom
Type T1—Detail No. 42
(Metal moulding room side only.)
Wood moulding furnished by others—rods, brackets, and screws by Ventilouvre.



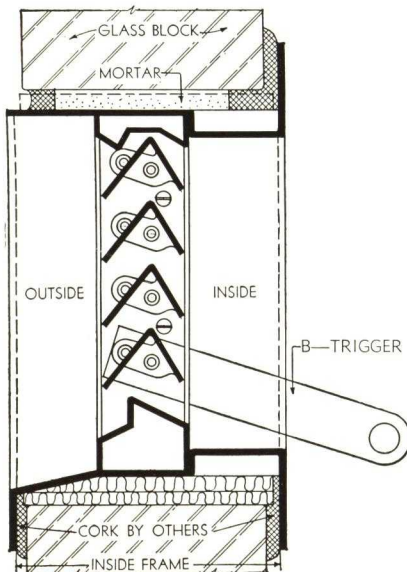
Adjustable Panelouvre
Type D1—(Special)—
Detail No. 148

For interior and exterior masonry walls of any thickness — installations made in openings equipped with wood frames.

Beveled metal flanges, both sides.

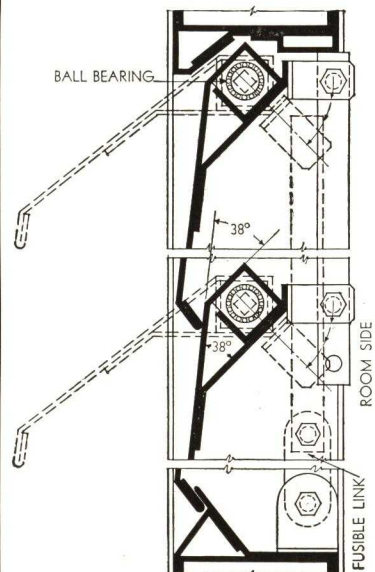
Screens if desired.
Wood frames furnished by others—metal frames and screws by Ventilouvre.

Can be furnished as Stationary unit.



Adjustable Panelouvre
Detail No. 132

For glass block walls. Maximum weather protection is assured. Made of Steel—Galvanized—Bronze—Copper or other metals as specified.
Furnished with screen when required.



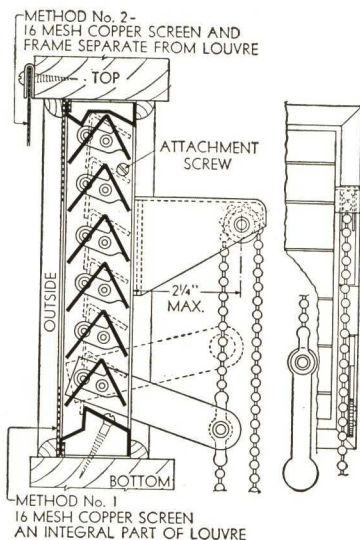
Ball Bearing Louvre
Detail No. 123

For heavy duty in industrial buildings.

Made throughout of 16 gauge.

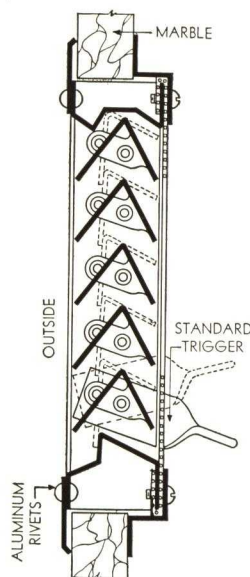
May be equipped with fusible link for automatic opening or closing.

May be equipped with hand operator or Chain and Pulley operator.



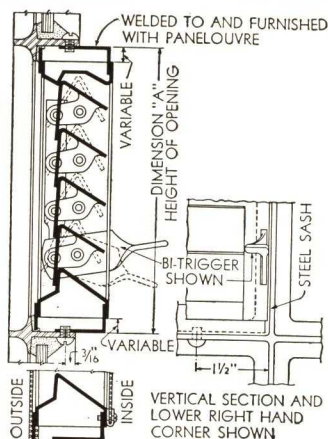
**Adjustable Panelouvre
Detail No. 97-A**

For overhead installations. Operation by chain from floor—chains fitted with "open" and "close" grips. Note two methods of screen attachment.



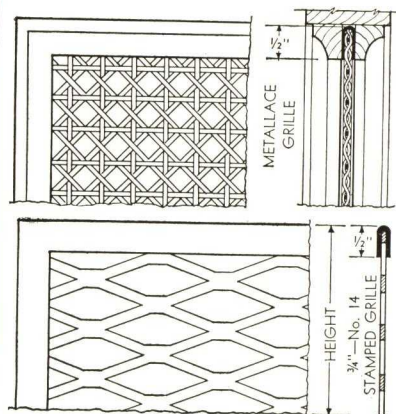
**Adjustable Panelouvre
Detail No. 137-A**

For bulkheads in store windows. Inserted from outside and attached with inside mouldings. Made of Steel, Bronze, Aluminum or other metals. Equipped with Copper Screen when ordered.



**Adjustable Panelouvre
Type PW—Detail No. 60-A**

For steel sash. Furnished with Copper Screen when ordered. Drilling and tapping by contractor. Machine screws furnished by others.



**Metallace Grille
Detail No. 116**

For doors, walls, etc.

**Expanded Metal Grille
Detail No. 138**

Grilles furnished in all types and weights of metals for any purpose.

SALIENT FACTS REGARDING THE PANELLOUVRE

(1) **Maximum Ventilation**—The Panelouvre permits the maximum passage of air.

(2) **Light and Sight Proof**—The shape of louvre blades prevents the passage of light and makes the Panelouvre absolutely sight proof, even when in full open position.

(3) **Privacy**—It is not possible to see between louvre blades from either side or in any position whether open or closed.

(4) **Sound Resistance**—Precision in design and construction permits complete closures at points of contact. The Panelouvre breaks sound waves and provides maximum resistance to noise.

(5) **Durability**—The "V" shape louvre blades and the heavy gauge metals used in the Panelouvre provide great durability and life-time service. Not a single unit has ever been reported as being "worn out" or unsatisfactory because of either length of service or type of usage.

(6) **Service**—The operating mechanism of the Panelouvre is the simplest and most practical that engineering skill can devise. No maintenance is necessary other than a few drops of oil placed on the louvre lugs once or twice a year.

(7) **Finish**—Standard finish for the Panelouvre is two coats of high grade baked enamel in any solid color. Grained finishes to match door or trim provided when required. Because factory applied baked enamel is far more satisfactory than brush applied, air drying enamel, it is strongly recommended that all Panelouvres be completely finished at the factory.

(8) **Weather Protection**—The Panelouvre can be installed in exterior doors and all outside openings with assurance of maximum weather protection.

(9) **Sanitation**—Construction of the Panelouvre is such that no crevices or recesses exist for the accumulation of dust, dirt, insects, germs, etc.

(10) **All Sizes**—The Panelouvre is so constructed that any size can be furnished.

(11) **Adjustments**—The operating trigger may be located in any of the four corners on either side of the unit.

(12) **Mouldings**—The Panelouvre can be furnished for installation with wood mouldings provided by others, or metal mouldings furnished as an integral part of the unit.

(13) **Special Features**—The Panelouvre can be furnished with:

- (a) Fusible Links for automatic closing in case of fire.
- (b) Screens.
- (c) Grilles.
- (d) Special triggers suitable in type and size for recessed locations and the special operating requirements of overhead installations.

(e) The Panelouvre can be furnished in special metals such as Bronze, Brass, Copper, Aluminum and Stainless Steel.

(14) **Openings**—The openings in wood doors and other frame construction should be 1/8 in. larger than the Panelouvre in both width and height. In steel doors and metal partitions the openings should be 1/16 in. larger than the louvres.

(15) **Installations**—The installation should be made at the job after the doors are hung.

(16) **Existing Buildings**—The Panelouvre solves the ventilating problem for hotels, apartment houses, hospitals, and other buildings not properly equipped for cross ventilation. Installation can be made by any Carpenter without harming or disfiguring the doors. The installation is simple, requires little time, and can be made with no inconvenience to occupants.

(17) **Built to Specifications**—The size and design of the Panelouvre is suited to each individual requirement. After the order is once in production no changes can be made. This necessitates approval of details by the Architect for design and construction, and confirmation of sizes by Contractor or Mill.

THE BOSTWICK-GOODSELL CO.

Manufacturers Venetian Blinds for Over 40 Years

NORWALK, OHIO

VICTORIA VENETIAN BLINDS

Specifications

Head— $1\frac{1}{8}$ in. thick by $2\frac{1}{4}$ in. wide on $2\frac{3}{8}$ and 2-in. slats; and $1\frac{3}{4}$ in. wide on $1\frac{3}{4}$ and $1\frac{1}{8}$ -in. slats.

Top Tilting Rail— $\frac{7}{8}$ in. thick, reinforced with metal clips over ends to prevent wear and splitting.

Bottom Slat— $\frac{7}{8}$ in. thick on all blinds, except those large enough to require Easy Lift construction where $1\frac{1}{8}$ in. thick bottom slat is used.

Moulded Edges—On head, tilting rail, and thick bottom slat.

"B-G" Worm Gear Tilt—Die cast from rustless metal, will not corrode, choice of two types:

All cord, or ball chain type.

Pulley Wheels—Solid steel, solid brass, also ball bearing.

Automatic Cord Stop—For holding blinds when raised. Its construction eliminates excessive wear on cords.

Raising Cords—On end of head (end lift).

Cord Levelers—Solid brass, attached to raising cords, keep slats horizontal when blind is raised or lowered.



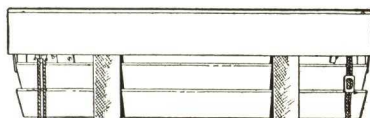
Cords—Braided, flexible, glazed against wear, made especially for Venetian Blinds, in colors to harmonize with tape.

Tapes—Best quality, woven ladder, imported or domestic, with or without ornamental facings.

Center Supports—Between head and top tilting rail supplied on blinds large enough to require them.

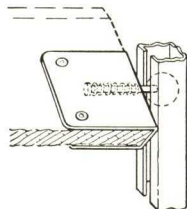


Fascia or cornice boards—several patterns



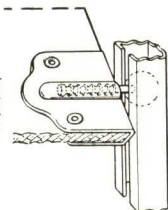
Cornice No. 38 Gives Closed Head Effect

Channel Side Guides—Steel, brass finished or color of blinds, or solid brass or bronze, or aluminum. Steel furnished, unless otherwise specified. $\frac{1}{4} \times \frac{1}{2}$ -in. with metal shoe or $\frac{1}{2} \times \frac{1}{2}$ -in. with brass ball, or $\frac{1}{2}$ -in. round with ball, with spring tension.

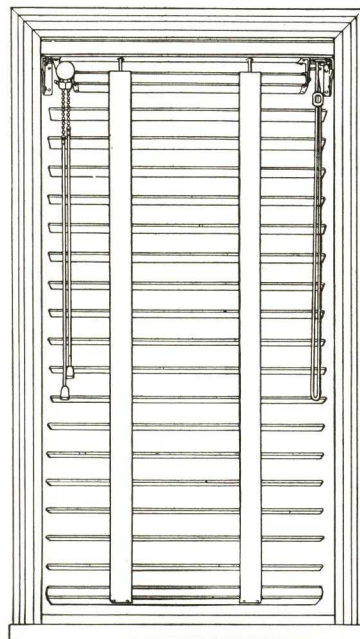


$\frac{1}{2} \times \frac{1}{2}$ in. guide and brass ball on $\frac{3}{4}$ in. thick slat at intervals of $1\frac{1}{2}$ ft. of height

Square channel and ball on every 7th thin ($\frac{1}{8}$ -in.) slat

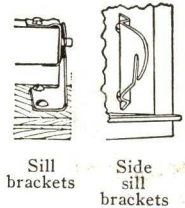


To be sure you receive genuine "Victoria Venetian Blinds" look for the name plate shown above on thick bottom slat.



Detachable Blinds—Top tilting bar quickly detachable from head.

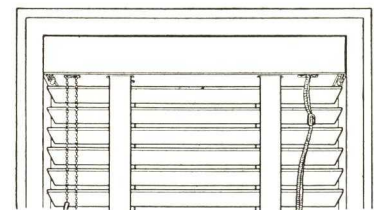
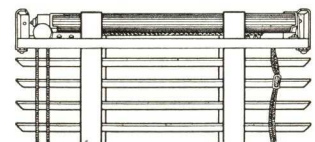
Hardware—And other metal parts (except cord holders) steel brass finished nickel-plated or cadmium-plated, also solid brass.



Sill brackets

Side sill brackets

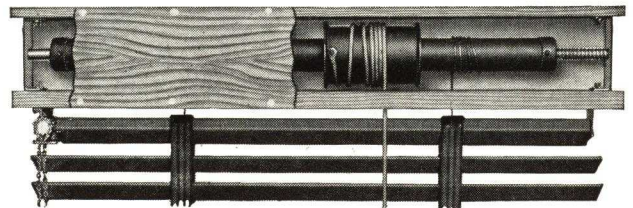
"Bos-Good Type"—Has operating parts above head, covered with fascia if desired.



Bos-Good Type with Fascia, No. 53

Roll Head Blinds—for Large Windows—With $\frac{7}{8} \times 3\frac{1}{2}$ -in. headboard, extra heavy side brackets, steel roll, $2\frac{1}{2}$ in. diameter, bronze cable, instead of cord through slats for raising, worm gear for tilting slats, with or without oscillating roll, with or without ratchet, with or without hand tape.

Oscillating Roll—Has $3\frac{1}{2}$ -in. metal drums for operating cords all inclosed in box $6\frac{1}{2}$ in. high \times $5\frac{1}{4}$ in. wide, with front easily removable to get at mechanism.



Mechanical Operator—On oscillating roll head blind, has a set of worm gears that operate in connection with a 5-in. sprocket wheel over which there is an endless brass chain with which the blind is raised and lowered. The blind will automatically remain at any elevation.



BURLINGTON VENETIAN BLIND COMPANY

Manufacturers of Venetian Blinds for Over Half a Century

BURLINGTON, VT.

REPRESENTATIVES IN ALL LARGE CITIES

VENETIAN



BLINDS

Keep Out the Sun—Permit Perfect Ventilation—Control the Light

A Company Specializing in Venetian Blinds

Venetian Blinds have been a specialty of this company for over fifty years and have been constantly improved to make them as perfect as possible. They are thoroughly modern and will fit into any surroundings. No order is too small to receive prompt and careful attention, and no order too large for factory capacity.

Burlington Venetian Blinds are installed throughout in many of the prominent buildings of the country, and a list of installations will be gladly furnished on request to this office or to our representative in any large city.

Types

BURLINGTON (without headpiece), sometimes used for openings up to 48 in. wide.

BURLINGTON "E-Z" Single Lift (with headpiece), generally used for openings between 48 in. and 72 in. wide.

BURLINGTON "E-Z" Double Lift (with headpiece), used for blinds over 72 in. in width.

BURLINGTON Traverse Roller, used for extremely large blinds.

BURLINGTON Frame Blinds, for square and semi-circular openings where operating blinds are not feasible.

Manufacture

All our blinds are made to order only. They are the output of a large well-equipped factory, employing men skilled in this line. Sizes of blinds are secured by our representatives as well as the color of finish desired. Each order is then run through the factory according to the specifications received for that order.

Quality of Materials

Slats—We use only the best quality of materials which in our experience of over fifty years has given satisfactory and lasting construction. All wood used is first air-dried and is then kiln-dried to the proper moisture content. Unless some other wood is specified we use Linden, as we consider it the best obtainable for this purpose and gives the best results. It is light, durable, does not twist and will take any kind of finish. Other woods will be used, however, if so desired.

Sizes of Slats—Slats $\frac{1}{8}$ in. thick and $2\frac{3}{8}$ in. wide are generally used. In small windows either $1\frac{1}{2}$, $1\frac{3}{4}$ or 2 in. in width are used. The blinds with wider slats are lower priced as fewer slats are required.

Ladder Tape—The tape and interwoven cross straps supporting the slats are of the very best quality of imported or domestic manufacture and may be had in any color.

Cord—We use a hollow braided cord as it does not twist when handled and is specially treated to prevent wear.

Finishes—Blinds are finished natural wood varnished, stained and varnished, painted, enameled or lacquered in any color.

Operation

Raising and Lowering of Blinds—All our blinds are raised and lowered easily and are secured at any desired elevation by our automatic cord stop. This device is positive in action and may be used on any type of operating blind having a headpiece. It is mounted in the headpiece and the necessity of using a horned hook on the window trim to hold the blind is avoided.

Note: The operating cord is ordinarily placed at the right side of the blind but when conditions require it the position of the operating and tilting cords may be reversed.

Cord Adjusters—The cord adjusters or equalizers are placed on the raising cord in order to keep the blind slats level in the window and to raise the blind evenly.

Burlington Blinds Tilt Easily and Noiselessly—The tilting of slats in all types of our blinds (slats are "raised" flat under each other) is accomplished easily and noiselessly by operating cords at the left of the blind. They are held fixed until changed by our worm gear tilting device which locks them at any desired angle.

Brackets—Detachable blind brackets are sent with each blind which allows the removal of the blind from the brackets without the use of tools, and if required by the window trim special brackets are furnished. To prevent the blind swinging in the window opening, hold-down brackets can be used. These engage with the bottom bar of the blind when the blind is completely lowered.

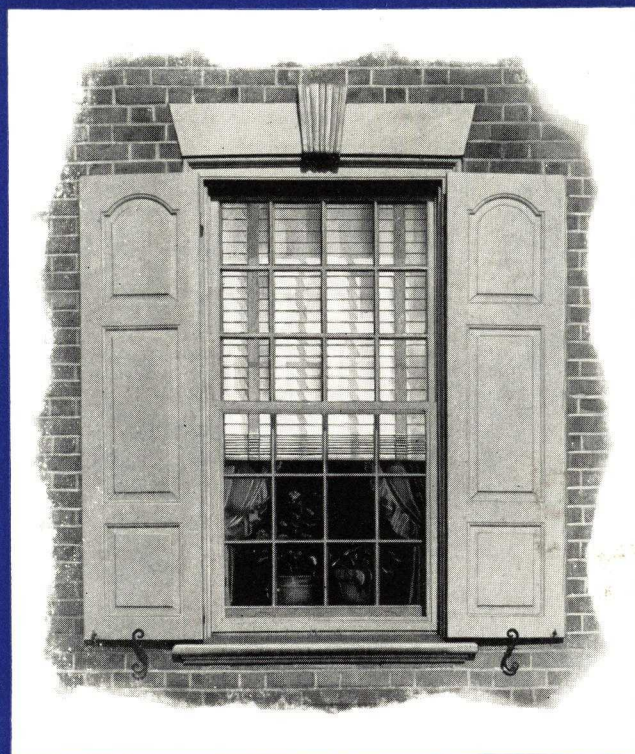
Guides—These are most desirable to prevent blinds swinging in the window opening where the wind is strong. Either Rods or Channel Guides can be used. Rod guides are made of brass and channel guides are made of brass, aluminum or steel. The fittings engaging with master slats placed at intervals in the height of the blind and used in connection with the guides are of solid brass. With channel guides the blind can readily be removed from the window without removing the guides.

Frame Blinds—When it is desired to shade arched windows we provide a frame for the curved portion set with stationary slats placed in a horizontal or radial position and spaced to admit light and ventilation. Square top transoms can be treated in a similar manner.

Ease of Installation—All our blinds are shipped completely finished with the necessary hardware and instructions for proper installation of each type of blind. As each blind is built to fit each opening they are easily installed with a few screws.

Details and samples will be mailed on request.





Columbia
VENETIAN BLINDS
and
WINDOW SHADES

**THE COLUMBIA MILLS
INCORPORATED**

225 FIFTH AVENUE, NEW YORK

Columbia
WINDOW
TREATMENTS

VENETIAN BLINDS

WINDOW SHADES

SHADE CLOTH

SHADE ROLLERS

AWNING ROLLERS

The Columbia Mills, Inc. are the largest manufacturers of Venetian Blinds and Window Shades. With factories in the East, Middle West and Far West they are fully equipped to give the best in service and workmanship on jobs of any size. Nearly half a century of manufacturing progress behind them, Columbia products are the recognized standards.

VENETIAN BLINDS

Columbia Venetian Blinds are sold by Authorized Dealers, located throughout the country. These dealers have been appointed for their responsibility and their ability to best fulfill the Architects' requirements. They are prepared to co-operate with the profession in planning and carrying out installations.

The names of authorized dealers in your locality will be furnished upon request. Their services can be fully relied upon and will meet with your approval.

WINDOW SHADES
AND ROLLERS

Columbia Window Shades and Rollers are obtainable in specialty window shade shops, reliable department stores and at house furnishing stores all over the country, so that there is never any difficulty in procuring replacements, regardless of who makes the original installation.

ARCHITECTURAL SERVICE

Architects are invited to avail themselves of Columbia's Architectural Service Department. An expert will assist you in solving your Venetian Blind and Window Shading problems, and will help you to prepare specifications. Each of our branch sales offices (listed on the back cover) maintains such a service. Through this means you may be assisted in the selection of the proper type of window treatment, and be recommended to reliable dealers to supply your needs.

THE COLUMBIA MILLS, INC.
GENERAL OFFICES: 225 FIFTH AVENUE, NEW YORK

Columbia manufactures two brands of Venetian Blinds, each for a purpose all its own. These are the Residential and Controlite brands. Both are made-to-order only to fit the windows for which they are intended.

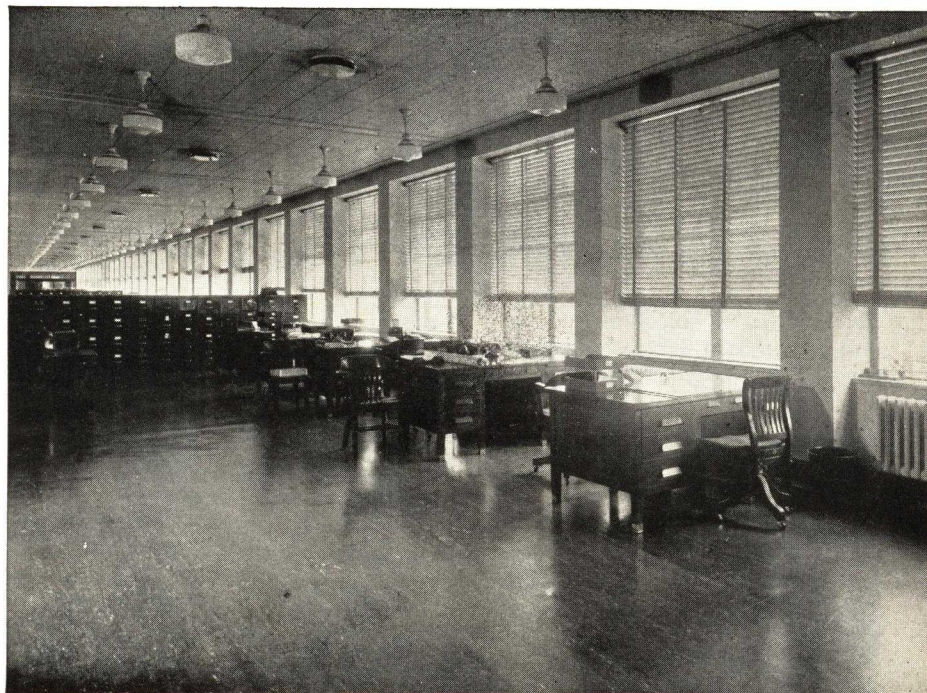
The two brands are all made with the same high standards of workmanship and material. Every blind is subject to the same rigid inspection and careful supervision.

All wooden parts are made of basswood, thoroughly and scientifically seasoned in our own dry kilns. After careful sanding they are finished with high grade enamel. The entire manufacturing process from dry kilns to assembly is done in our own plants. Mechanical parts are patented, developed and manufactured by us.

Both Residential and Controlite Blinds are made with either Open Heads or Enclosed Heads. In the latter all operating mechanisms are concealed in a small wooden box at the head of the blind. This feature is illustrated in the following pages.

Columbia

VENETIAN BLINDS



RESIDENTIAL*

FOR RESIDENCES— $1\frac{3}{4}$ " SLATS—MAXIMUM AREA 100 SQ. FT.

The Columbia Residential Blind is particularly smart, designed especially for homes. Its chief feature is its narrow $1\frac{3}{4}$ " slats that give the blind a neat, compact appearance. In most cases it can be hung directly to the stop-bead of the window. Being made for residential windows, it is not manufactured in sizes over 100 sq. ft. in area or 12 ft. in width.

CONTROLITE*

FOR COMMERCIAL AND RESIDENTIAL WORK
 $2\frac{3}{8}$ " SLATS. MAXIMUM AREA 250 SQ. FT.

Where cost is a factor the use of the Controlite Blind is suggested. It is sturdy and well built, guaranteed to meet the most rigorous requirements. It is equipped with the silent Worm Gear Tilt which insures positive tilting and the unique Columbia Automatic Safety Stop.

*Reg. U. S. Pat. Off.

Columbia

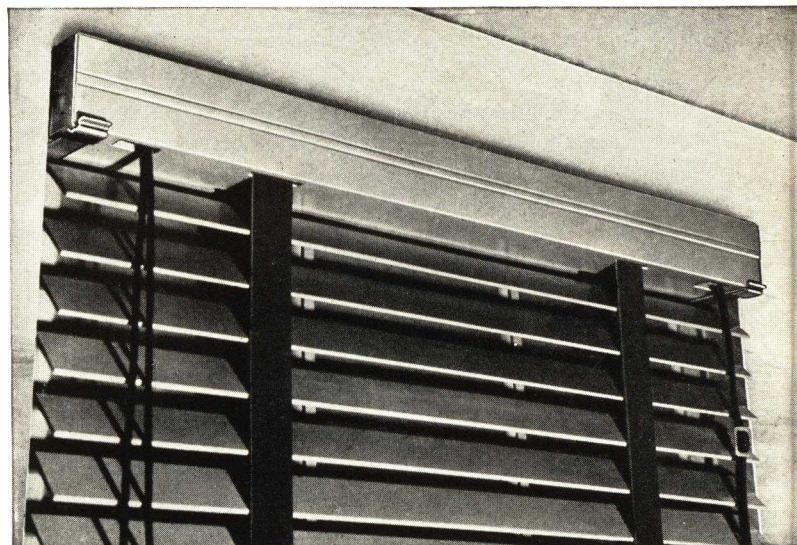
ENCLOSED HEAD

VENETIAN
BLINDS

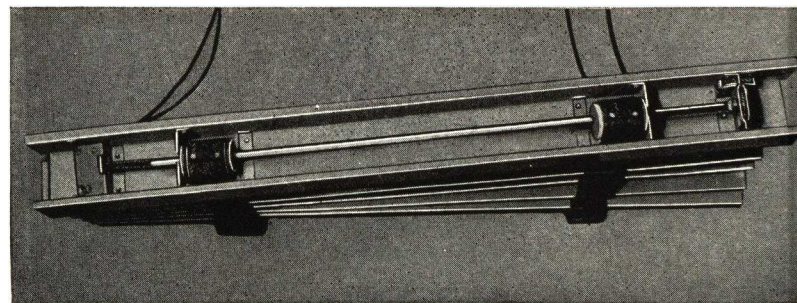
Both Columbia Residential and Controlite Blinds are available with an Enclosed Head. This is a wooden casing $2\frac{1}{2}$ " deep by $2-7/16$ " high at the head of the blind, in which all of the operating mechanisms are concealed. The tapes are carried on rollers in the Head instead of on a tilt rail as in Open Head Blinds. Tilting is accomplished by rotating the rollers through the patented Worm Gear Tilt, operated by cords on the left side of the blind. The lifting cords run over lignum vitae pulleys, through the Automatic Safety Stop, all of which are concealed in the Enclosed Head.

The Enclosed Head does away with the need for fascia or valances and presents a neat tailored appearance. The face of the Head may be had either plain or with small bead running horizontally in the center.

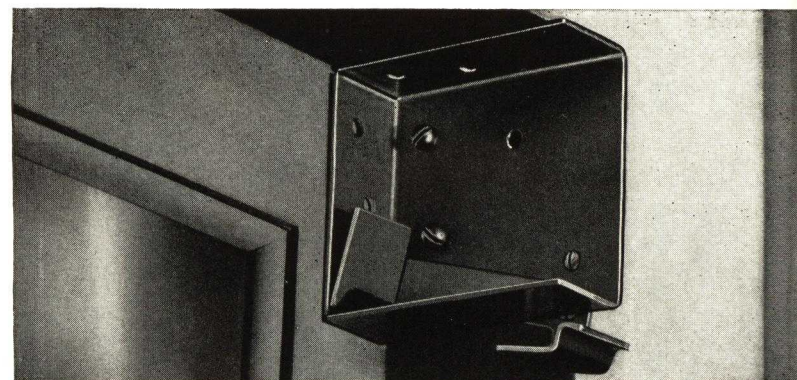
For installations on the face of casing, the Columbia bracket closes the ends of the head and covers are furnished to keep the mechanism free from dust.



Close-up Enclosed Head Blind



View of Mechanism in Enclosed Head



Universal Snap Block Bracket for Enclosed Head Blind

The illustration above shows a Columbia Universal Bracket for the Enclosed Head blind. This may be fastened with screws to the inside or outside or soffit of the window casing. When used for outside-of-casing installations the Universal Bracket closes the ends of the Enclosed Head.

Its operation is extremely simple and fool-proof. When it is screwed in place the Enclosed Head slips into place and automatically locks itself there. To take blind down it is only necessary to depress the trigger guards and the blind may be removed without tools or unfastening any screws.

Brackets are painted to match the blind.



FEATURES OF

Columbia

VENETIAN BLINDS

A and B—UNIVERSAL BRACKETS.

Brackets may be attached to either inside (A) or outside (B) of window casing. Head rail of blind slips into brackets and locks itself there. Instantly removable by finger pressure on retaining guard.

C—AUTOMATIC STOP.

This is a patented Automatic Safety Stop which locks the lifting cords the moment pressure on them is released. To disengage Stop cords are drawn toward centre of window. Then blind may be raised or lowered and stops automatically as soon as cords are released.

D—TAPES.

Specially woven tapes, vat dyed to make them as sunfast as possible. Cross tabs or ladders are woven into the tapes.

E—EQUALIZER CLIP.

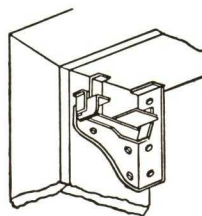
This is standard equipment on all blinds and is used to keep the lifting cords uniform for level raising or lowering of the blind.

F—CORDS.

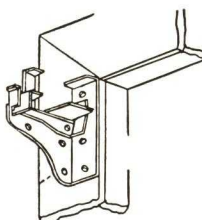
Standard No. 4½ solid braided cords are used to operate the Tilting Device and for raising the blind. Tilt Cords are furnished with wooden knobs, painted to match the blind. Lift cords are endless.

G—SLIDER GUIDES.

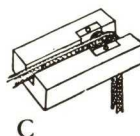
An optional feature used to prevent blinds from swaying or billowing in the wind. See page 10 for complete details. May be used in place of Snap Stop.



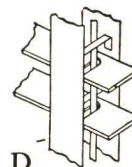
A



B



C



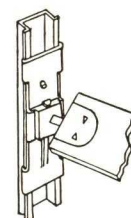
D



E



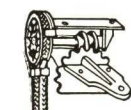
F



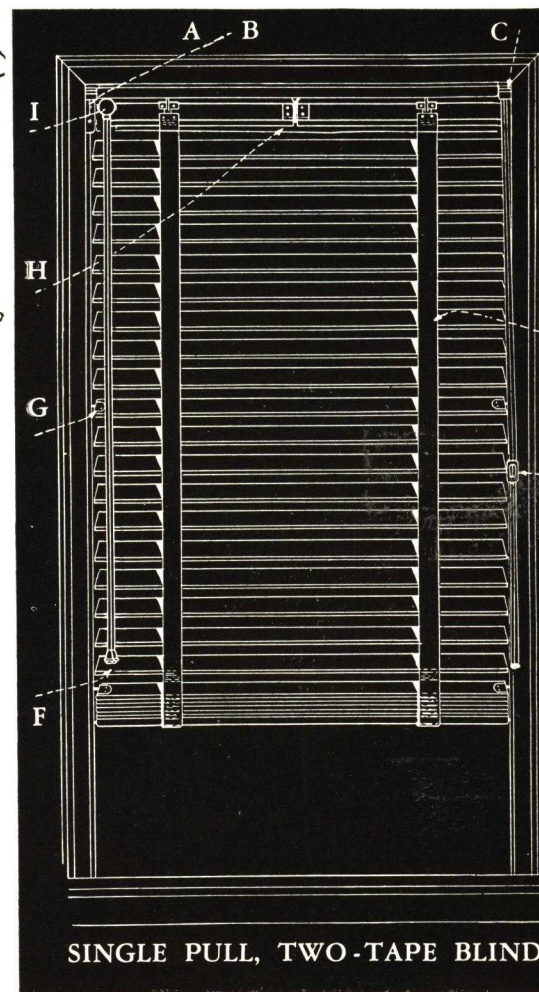
G



H



I



SINGLE PULL, TWO-TAPE BLIND

H—ANTI-SAG CENTER SUPPORT.

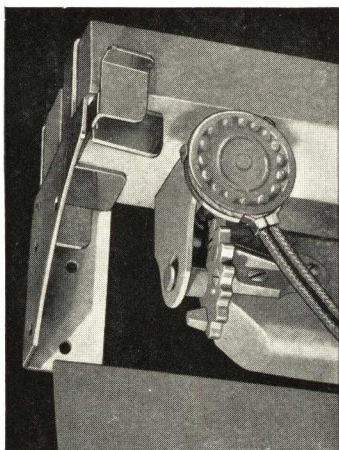
Used on wide Columbia blinds to eliminate all possibility of sagging. It is anchored to the head rail and supports the tilting rail.

I—WORM GEAR TILT DEVICE.

This is a three piece die cast unit of extremely smooth action. For Enclosed Head blind cut steel and brass gears are used. Because of worm gear action slats cannot be jarred accidentally out of position.

CORD HOLDER. Not illustrated.

This is furnished only when Automatic Stop is omitted. Lifting cords are tied to Cord Holder. An adapted plate, furnished to match blind is furnished where necessary.



*Columbia Worm Gear Tilt
Open Head Blind*

DETAILS OF OPERATING MECHANISM OF REGULAR PULLEY TYPE BLINDS

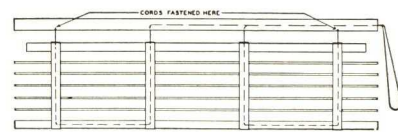
THREE TYPES OF PULLEY ARRANGEMENTS



*Single Pull,
two tapes for widths up to 60"*

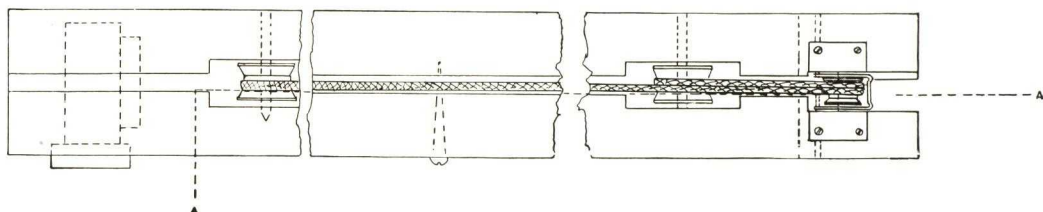


*Compound Pull,
three tapes for widths over 60"*

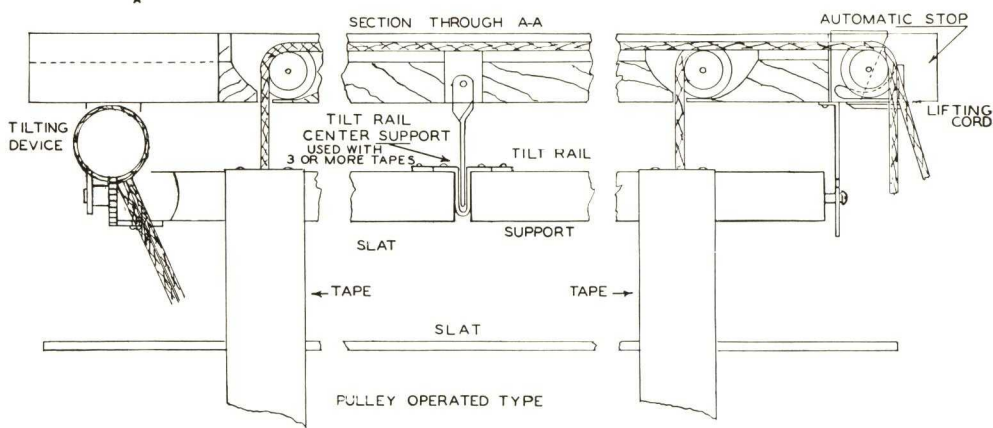


*Compound Pull,
four tapes for areas up to 100 sq. ft.*

*Plan looking down
on headrail*



*Front view of blind,
section through head-
rail at AA*



The raising and lowering of average size Residential and Controlite blinds is accomplished by means of cords and pulleys. In blinds up to 60" wide inclusive, the lifting cords are anchored in the bottom rail, rise behind the tapes, and run over pulleys in the head rail through the Automatic Stop. This is called Single Pull Operation.

As blinds increase in size, they also increase in weight and hence require more pulleys to reduce the pull necessary to raise or lower them. In blinds over 60" wide the cords are anchored in the Head Rail and run over pulleys in both the Head and Bottom Rails. This is called Compound Pull Operation.

Illustrations of the different Pulley operations are shown above.

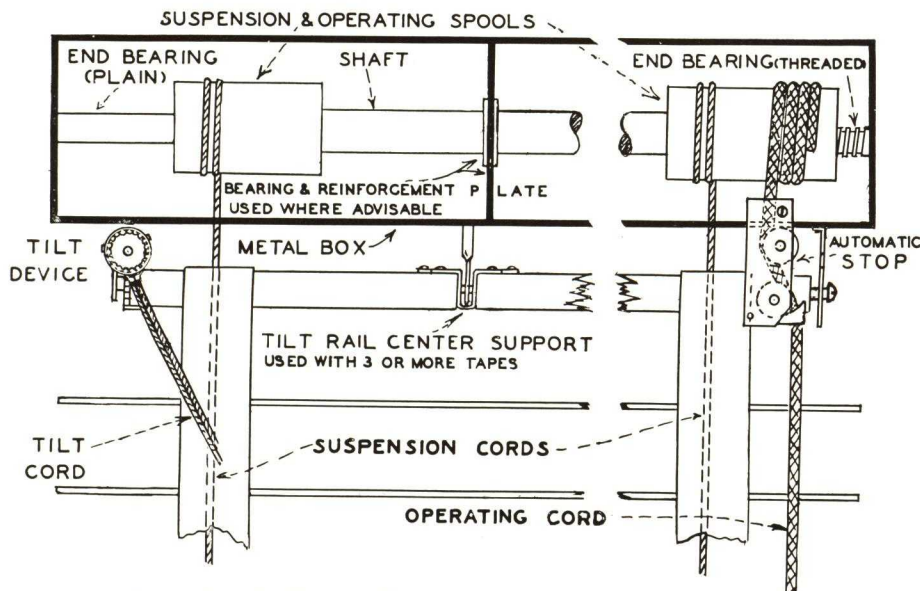
The routings and channels through which the operating cords run in the Columbia blinds are clean and smooth. There are no rough spots or jagged edges to fray the cords or impede their smooth running. This is one of the many advantages found in the Residential and Controlite blinds.

In single pull blinds, where lifting cords are anchored in the Bottom Rail, the tapes are also fastened at the same point but in such a manner that the cord anchorage is easily accessible without the necessity of removing

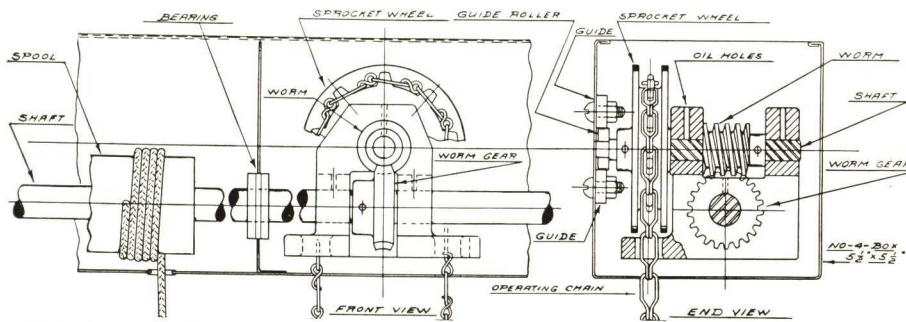
the tapes. This has the double advantage of permitting replacement of cords or slats without completely disassembling the blind.

Not shown in the details, is the patented Tilt Bracket Guard. The Tilt Rail Bracket is at the right end of the Tilt Rail. It is fastened to the Head Rail and in it the Tilt Rail pivots. The Guard keeps the Tilt Rail from jumping out of the bracket. By releasing this guard the Tilt Rail may be taken out of the bracket, disengaged from the Tilting Device, and tilt rail and slats dropped to the bottom of the blind. This makes the entire window accessible for cleaning without having to take down the blind.

DETAILS OF OPERATING MECHANISM OF ROLLER TYPE BLINDS



Front view of roller type blind showing regular operating mechanism



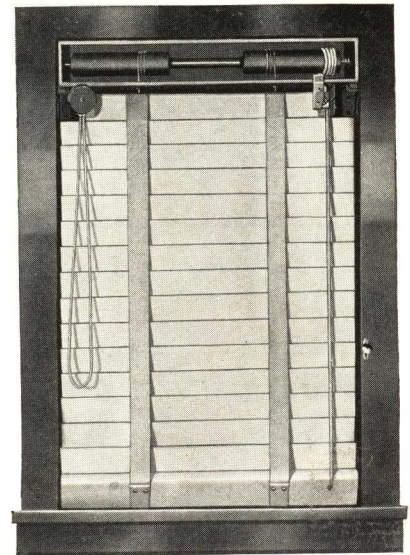
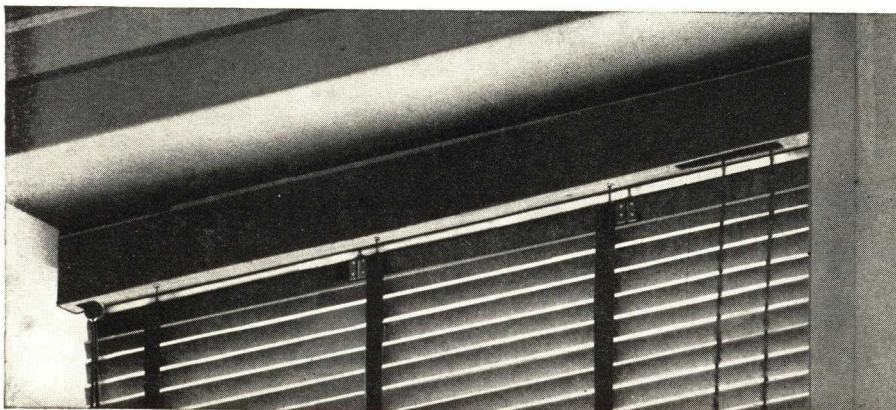
Front view of roller type blind showing mechanical lift mechanism, Type 1

End view

No. of Box	Blind Area Sq. Ft.	Width of Box	Depth of Box
1	up to and incl. 40	3 1/2"	3 1/2"
2	over 40 to 80 incl.	3 1/2"	4"
3	over 80 to 120 incl.	4 3/4"	4 3/4"
4	over 120	5 1/2"	5 1/2"

Note: The width of the box is the distance from top to bottom, the depth from front to back.

Mechanical roller lift installed



Model of small blind with Roller Lift, front cut away

Roller Lifts are for use on Controlite Blinds where additional ease of operation is desired.

The Roller Lift consists of spools, mounted upon a shaft and upon which the lifting cords are wound. The spools are rotated by a single cord at the right of the blind. An unique Automatic Safety Stop will hold the heaviest blind securely without the need of tying the cord.

As the winding spools rotate, they travel horizontally along the shaft. This makes the cords wind evenly and keeps the slats level at all times.

The Roller Lift Mechanism is housed in an open top metal box which takes the place of the Head Rail in pulley operated blinds. Tilting is controlled by the Columbia Worm Gear Tilt, operated by two cords at the left of the blind. The table at left shows the sizes of the four standard Roller Lift Metal Boxes.

MECHANICAL LIFTS

For exceptionally large blinds, the mechanical lift used in conjunction with the roller type blind is definitely recommended for proper operation. This is a worm gear hoist which rotates the winding spool shaft. The Lift is operated by an endless chain. Because of the worm gear, chain does not have to be fastened to hold the blind at desired level.

Mechanical Lifts can be used only with No. 4 Roller Lift.

For definite recommendation for roller type and mechanical lift blind write the Architectural Service Dept.

POCKET INSTALLATIONS

Where Roller Lift Blinds are installed in an architectural transom of large windows, provision must be made for removing the face of the transom for access to the blind mechanism. The Roller Lift boxes for this type of installation may be made with removable face.

COMPARATIVE DETAILS OF

RESIDENTIAL AND CONTROLITE BLINDS

DETAILS	RESIDENTIAL OPEN HEAD	CONTROLITE OPEN HEAD	RESIDENTIAL & CON- TROLITE ENCLOSED HEAD
MAXIMUM SIZE	Area: 100 sq. ft. Width: 12 ft.	Area: 250 sq. ft. Width: 16 ft. Length: 25 ft.	same as open head
MINIMUM SIZE	Area: 2 sq. ft. Width: 12"	Area: 2 sq. ft. Width: 12"	same as open head
OPERATION	Pulley Operated. Blinds over 60" and wider are made with Compound Pull.	Pulley operated up to 100 sq. ft. Blinds over 60" and wider are made with Compound Pull.	same as open head
ROLLER LIFTS	See page 7	See page 7	same as open head
MECHANICAL LIFTS	See page 7	See page 7	same as open head
HEAD RAIL	1 7/8" x 7/8"	2 3/8" x 1 1/8"	2 5/8" x 2-7/16" Wooden Box
TILT RAIL	1 7/8" x 5/8"	2 3/8" x 49/64"	none
SLATS	1 3/4" x 1/8"	2 3/8" x 1/8"	same as open head
BOTTOM RAIL	Single pull: 1 7/8" x 5/8" Compound Pull: 1 7/8" x 7/8"	2 3/8" x 49/64" 2 3/8" x 1 1/8"	same as open head

PULLEYS: Lignum Vitae, steel shafts.

HARDWARE: All metal parts are bright zinc plated except Worm Gear, face of which is painted to match the blind on open head models. Plated parts may be copper-plated instead of zinc, if desired.

BRACKETS: Columbia patented Snap Lock Universal Brackets. "U" type Center Support Brackets supplied with blinds taking Center Supports.

TILTING DEVICE: Columbia Worm Gear Tilt Device, operated by cords.

AUTOMATIC STOP: Patented Automatic Safety Stop.

FINISH: High grade oil base enamel.

COLOR: In addition to regular standard colors in slats, tapes and cords, special colors may be had at additional cost.

TAPE SCHEDULE

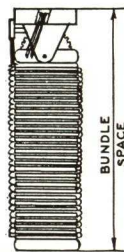
RESIDENTIAL AND CONTROLITE BLINDS OPEN AND ENCLOSED HEADS

Tilt Rails for Open Head blinds over 40" wide are made of more than one piece. Anti-Sag Center Supports are used to prevent sagging. Enclosed Head Blinds have no Tilt Rails.

RESIDENTIAL Width	Tapes	Tilt Rail	Center Supports	CONTROLITE Width	Tapes	Tilt Rail	Center Supports
Up to and incl. 40"	2	1 piece	None	Up to and incl. 40"	2	1 piece	None
Over 40" to 69"	3	2 "	1	Over 40" to 69"	3	2 "	1
Over 69" to 94"	4	3 "	2	Over 69" to 94"	4	3 "	2
Over 94" to 121"	5	4 "	3	Over 94" to 121"	5	4 "	3
Over 121" to 144"	6	5 "	4	Over 121" to 148"	6	5 "	4
				Over 148" to 175"	7	6 "	5
				Over 175" to 193"	8	7 "	6

BUNDLE SPACE FOR RESIDENTIAL AND CONTROLITE BLINDS

The Bundle space is the space occupied by the blind when fully raised. This varies for each blind and depends on the height of the blind as well as the slat size.



The most satisfactory method of installing Venetian Blinds is in a pocket above the window so that they are concealed when fully raised. The tables below give data necessary for figuring size of pockets. If blinds are to be hung on face of casing or on the wall, bundle space will indicate how high they must be hung to clear the window opening when raised. It will also show how much light is cut off when they are hung between window jambs.

Type	Bundle Space	Width of Pocket
Residential, pulley operated—Open or Enclosed Head	2½" plus 1¼" for each foot in height of window opening	4¼"
Controlite, pulley operated—Open Head	3⅜" plus 1¼" for each foot in height of window opening	4¼"
—Enclosed Head	2½" plus 1¼" for each foot in height of window opening	4¼"
Roller Box No. 1, Blinds up to 40 sq. ft.	5¾" plus 1¼" for each foot in height of window opening	5 "
Roller Box No. 2, Blinds up to 80 sq. ft.	5¾" plus 1¼" for each foot in height of window opening	5½"
Roller Box No. 3, Blinds up to 120 sq. ft.	7 " plus 1¼" for each foot in height of window opening	6¼"
Roller Box No. 4, Blinds over 120 sq. ft.	7¾" plus 1¼" for each foot in height of window opening	7 "
Mechanically operated Roller	7¾" plus 1¼" for each foot in height of window opening	7¼"

SPECIFICATIONS FOR CONTROLITE BRAND

Venetian Blind Specification for (name)
Building (address)

General—All Venetian Blinds called for in these specifications and shown on plans or drawings shall be manufactured by THE COLUMBIA MILLS, INC., 225 Fifth Avenue, New York, N. Y. Only first quality materials shall be used, assembled in a workmanlike manner throughout to conform with the following specifications:

Brand—Blinds to be furnished under these specifications shall be the Columbia "Controlite" Brand.

Operation—Blinds up to 80 sq. ft. shall be regular pulley type assembly and lift raising cords, operating over pulleys on steel shafts. Blinds 60" wide and less made single pull. Blinds over 60" wide are made compound pull. Blinds over 100 sq. ft. shall be equipped with Columbia Auxiliary Roller Lifts.

Head Rail—Shall be 2⅜ in. wide by 1⅞ in. thick, exposed edges to be thoroughly sanded and rounded. Cord and pulley routings to be clean cut allowing sufficient clearance for free action of cords and pulleys.

Tilt Rail—Shall be clear well-seasoned wood 2⅜ in. wide by 49/64 in. thick with exposed edges rounded and Cord slots shall be clean cut 1⅞ in. long by ⅞ in. wide.

Slats—Shall be 2⅜ in. wide and ⅞ in. thick, made of best seasoned Basswood, free from pin knots, machine marks etc. Cord slots shall be not over ⅞ in. wide, clean cut without fractured edges. Ends shall be thoroughly finished.

Bottom Rails—(Blinds less than 60 in. in width.) Shall be best seasoned wood, 2⅜ in. wide by 49/64 in. thick, edges thoroughly sanded and rounded. Recesses to be provided for knotting of lift cords.

Bottom Rails—(Blinds over 60" wide.) Shall be best seasoned wood, 2⅜ in. wide by 1⅞ in. thick. Under side to be recessed for cords and pulleys. Furnished with regular ⅞ in. covering slat on the under side.

Hardware—All hardware to be steel, bright zinc-plated. Face of worm gear painted to match slat color, rest of gear natural aluminum color.

Brackets—All pulley-operated blinds shall be hung on Columbia Universal Patented snaplock brackets, to enable removal of blinds for cleaning, etc.

Tilt Device—All blinds shall be equipped with Columbia Worm Gear tilt device insuring smooth and quiet operation of blind by use of tilt cords.

Automatic Safety Stop—All blinds shall be equipped with Columbia Automatic Safety Stop which holds the blind in any position without the necessity of fastening the cords.

Center Supports—Blinds over 40 in. in width and wider shall be equipped with bright zinc-plated steel center supports to eliminate possibility of sagging or warping. To be of a design to allow full angle of tilt in either direction without interfering with slats.

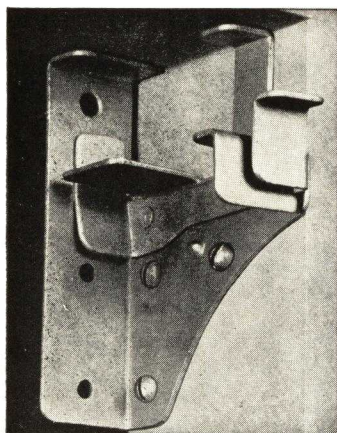
Finish—All head rails, tilt rails, slats and bottom rails including ends shall be finished with high grade enamel to produce a semi-gloss velvet finish. Color to be selected from Columbia color line.

Tapes—Shall be first quality with cross straps interwoven, free from defects in warp, woof or weaving. End tapes shall be spaced not less than 4 in. or over 9 in. from ends of slats, intermediate tapes spaced not more than 28 in. on centers.

Cords—All cords on pulley operated blinds shall be first quality No. 4½ braided cord and glazed to minimize wear. Pull cords on Roller Lift blinds shall be first quality No. 6 braided cord glazed to minimize wear. Cords on all blinds shall be of sufficient length to control tilting and raising of the blind from the floor.

Installation—To be made in a thoroughly workmanlike manner in accordance with manufacturer's standards, and to be subject to inspection and approval of manufacturer's and architect's representative.

NOTE: Specifications for Roller and Mechanical Lift Blinds and for the Columbia Residential Blind may be had upon request.



UNIVERSAL BRACKETS—For all ordinary installations the Columbia Universal Snap-Lock Bracket will be found adequate. The illustration above shows the bracket for open head blinds. That for the Enclosed Head is shown on page 4. These brackets may be installed on the stop, the jamb or face of casing. For soffit installations of the open head blind special universal brackets are available.

In wide blinds where additional support is required for the head rail, Center Support Brackets are furnished. These are "U" type brackets fastened to the soffit or the face of the window casing. They are usually placed where the Anti-Sag Center Supports are and the bottom member of the bracket is recessed to accommodate either the Center Support arm or lifting cord. Where blinds are mitred for corner installation the "U" Type Center Support Bracket is usually used in place of the Universal Bracket at the mitred ends.

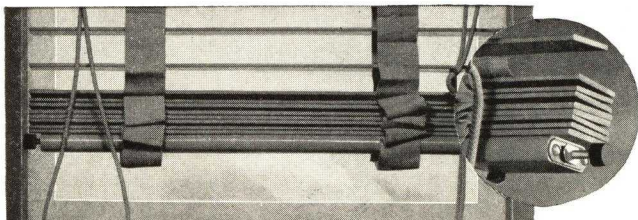
Where pulley operated blinds are installed in a pocket, they can be held in place by screws through the head rail into the header. Special brackets have been developed for Roller lift blinds which contain many of the features of the Universal Snap-Lock Brackets. For difficult and unusual conditions, the Columbia Architectural Department will gladly cooperate in designing special brackets.

SNAP-STOP—The Columbia Snap-Stop is a patented device for preventing swaying and billowing. It is the device that makes possible at all times privacy with ventilation.

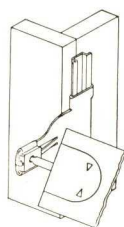
The Snap-Stop is a spring actuated rubber tipped plunger in the bottom rail which grips the window jamb or stop. It can be used only on installations on the stop or window jamb. It cannot be used on face of casing installations.

When not in use the plunger on the right hand side recedes into the Bottom Rail where it is held in place by a trigger. Slight pressure on the trigger will release the plunger so that the Snap-Stop will hold the blind. To disengage the Snap-Stop, it is necessary only to grip the Bottom Rail and move it to the right. This pushes the plunger back into its recess where the trigger holds it.

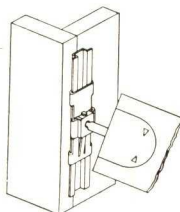
Snap-Stops are optional features with both Residential and Controlite blinds.



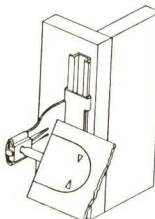
DETAILS OF *Columbia* RESIDENTIAL AND CONTROLITE BLINDS



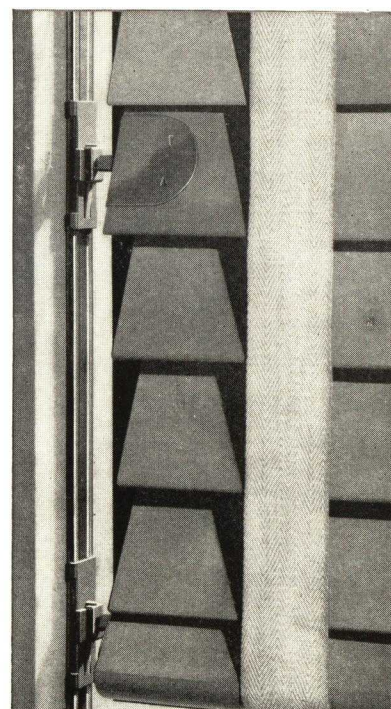
Inside Slider



Offset Slider



Outside Slider



Intermediate and Bottom Slider Guide

SLIDER GUIDES. These are another device for the prevention of swaying and billowing of Columbia blinds. They consist of guide rails which are attached to window casing or wall and Guides which are attached to the Bottom Rail and approximately every twelfth slat on the Controlite brand, and on every sixteenth slat on the Residential.

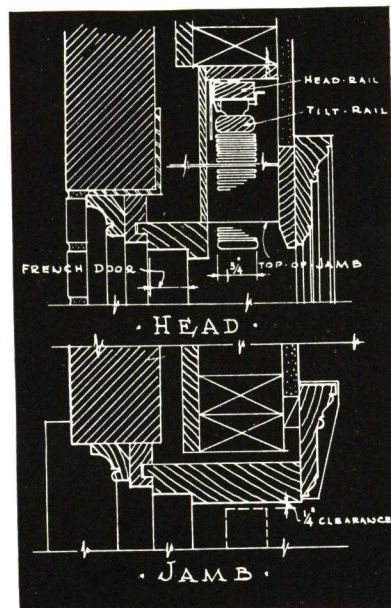
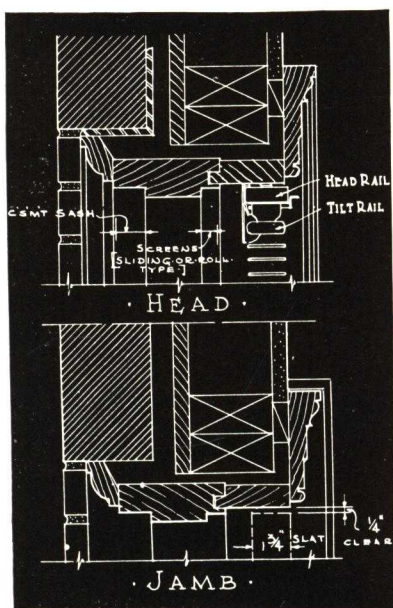
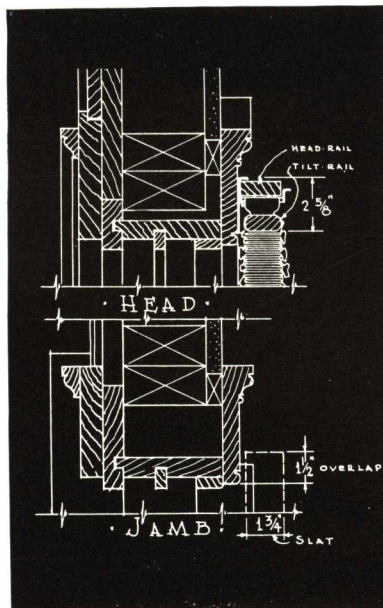
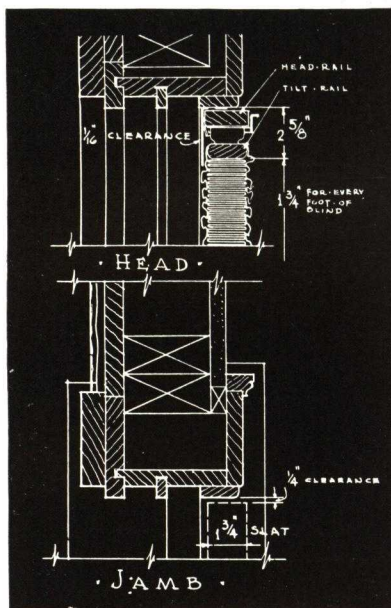
To meet the varying conditions of installation Slider guides are made in three types, illustrated above. Backing strips for the Guide Rail can be furnished to compensate for uneven wall or casing surfaces.

Slider Guide equipment is bright zinc-plated to match other hardware on the blind.

ROD AND RING GUIDES. Rod and Ring Guides may also be furnished where desired. These serve the same function as the Slider Guide Equipment but naturally not as efficiently.

SILL BRACKETS. These are small brackets used to hold the blind from swaying. They can be used only with the blind in one position, usually fully lowered. They are fastened to the sill and engage pins in the ends of the Bottom Rail. We recommend them especially for installations on French Doors.

INSTALLATION OF

Columbia
VENETIAN BLINDS*The Four Most Usual Residential Installation Conditions***STOP BEAD**

This method of installation is recommended where window reveal is shallow or entirely eliminated. Curtains may be hung in the usual way or under valances. Drawing above shows detail for Residential Blind. For dimensions on Controlite Blind see specifications on page 8.

INSIDE CASING

Where reveal or inside casing is sufficiently deep, this type of installation is recommended. Where a battery of windows occur having a total area of 80 sq. ft. or over, either two or more blinds should be used, or a single blind with roller lift, see page 7. Drawing above shows detail for Residential Blind. For dimensions on Controlite Blind see specifications on page 8.

FACE OF CASING

With this arrangement of securing blinds to trim, it is advisable to hang draperies or curtains under a valance board covered with same material or painted to match trim and blinds. Stock valance boards are available. See page 9. Drawing above shows detail for Residential Blind. For dimensions on Controlite Blind see specifications on page 8.

CONCEALED POCKET

A most satisfactory manner of installing Venetian blinds, particularly over French doors or at windows where in-swinging window screens are to be used. For height of pocket see bundle space allowances on page 8. The illustration above shows detail for Residential Blind. For Controlite Blind see specifications on page 8.

Columbia Venetian Blinds may be installed at any type window, transom or glass door. However, the most satisfactory installations are made when proper provisions for blinds have been made in the preliminary and finished drawings for the type of installation most suited to the job. A reveal too narrow to accommodate the blinds makes them project into the room beyond the window opening. Face-of-casing installations can be very satisfactory when trim has been designed to accommodate the brackets.

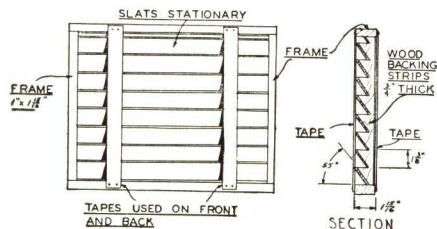
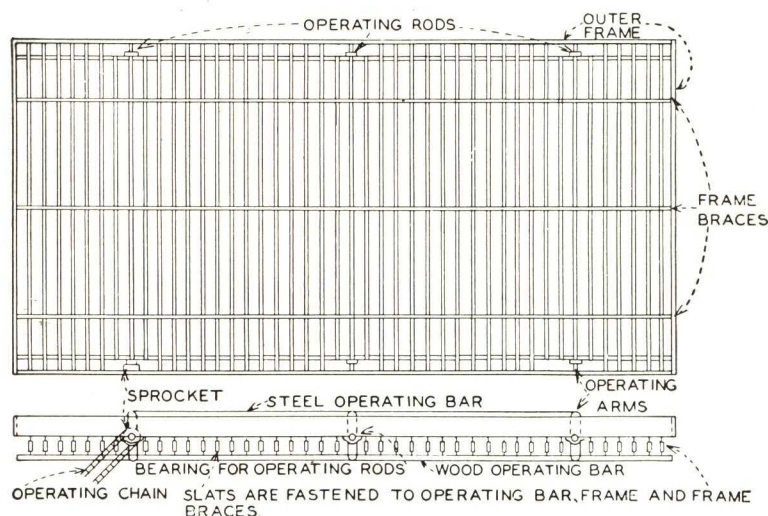
In planning blinds for steel sash casement windows consideration should be given to the need for hanging the blinds clear of all window hardware.

For full window corners, bays or other window angles, Columbia blinds may be mitred at one or both ends so that they will butt closely.

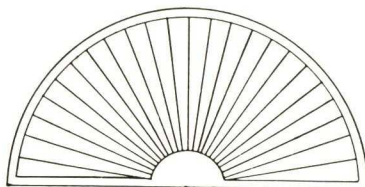
Standard fascia are available for inside-of-casing installations to hide head and tilt rails and mechanism. For outside-of-casing installations the fascia can be made with returns and service as a cornice. In both instances the fascia are attached to the blind which is installed with the usual Universal Brackets. Sections of standard fascia will be furnished upon application.

Illustrations at the left show the four most usual Residential installation conditions. More information is given in Columbia Architectural Data Sheets which may be had on application.

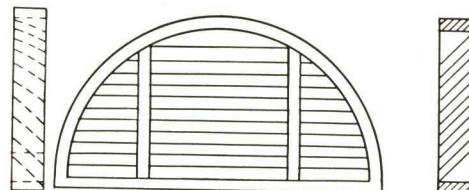
SPECIAL TYPES OF *Columbia* VENETIAN BLINDS



Rectangular Transom Blind with Frame



Sunburst Blind with Radial Slats



Circle Top Blind with Horizontal Slats

The illustrations on this page show special types of Columbia blinds for circle top and Gothic windows, transoms, store fronts and skylights.

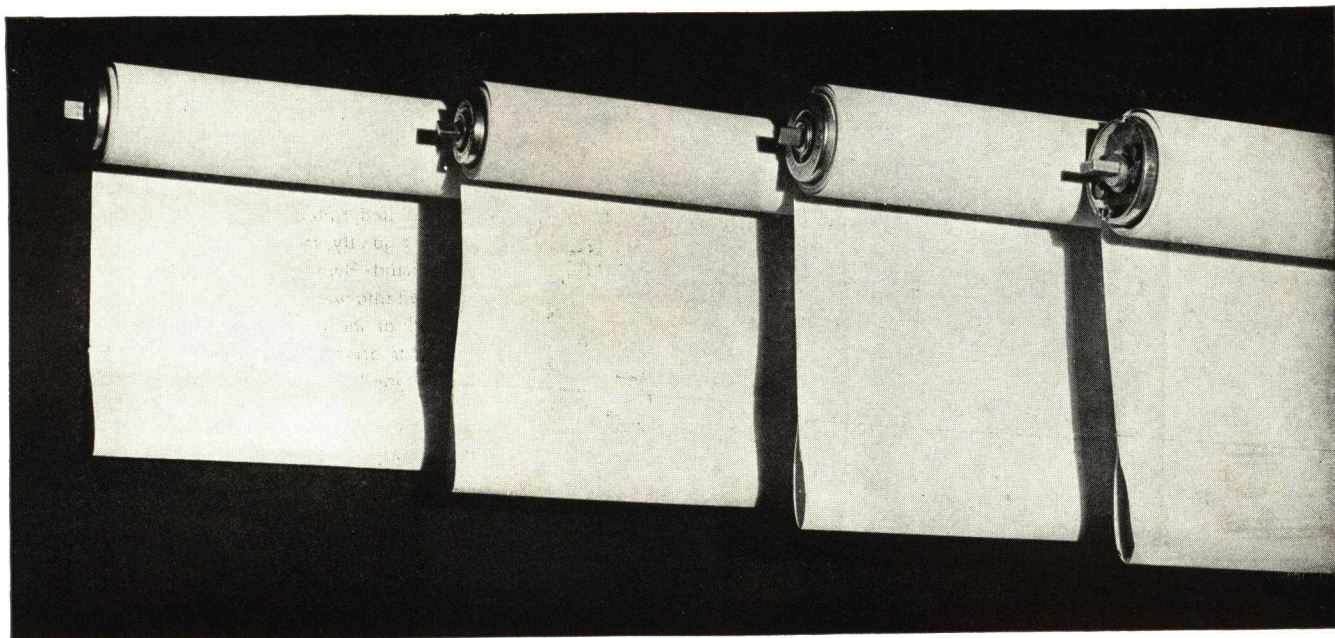
For circle top windows either a sunburst in which the slats radiate from a hub, or a circle top blind with horizontal slats may be used. In both cases the slats are set in a wooden frame at a proper angle.

Blinds for Gothic windows are made in the same manner as the circle tops. The regular blind is suspended beneath them.

The slats in Circle top, Gothic and Transom Blinds are held in position by wooden backing strips which are always on the street side of the blind. Where desired dummy tapes may be included on the room side for appearance.

Valance blinds are recommended for store fronts. These are short stationary blinds used solely for decoration. Tapes are replaced by metal hanging strips. The slats fit into these strips at a fixed angle of 45 degrees. The slats are removable and metal strips fold up for window cleaning.





Columbia WINDOW SHADES

Columbia window shades are made in a variety of grades to suit practically every taste and purpose. There are several qualities in particular that are of interest to the architect. These qualities are described in detail on the following pages.

RIGIDLY SUPERVISED MANUFACTURE

The manufacture of Columbia window shades is carried out in Columbia's modern factories. Each step is carefully supervised and the cloth and rollers are put through rigid inspection tests to insure uniformity of quality.

IMPORTANT POINTS ABOUT WINDOW SHADES

The quality and service of window shades for any particular purpose depends upon several important factors, each of which should be taken into consideration when drawing up specifications. The cloth base should be of sufficient thread count to withstand heavy service. Loosely woven fabrics must be filled to give the cloth weight, and this results in a shade that may be nice to look at, but is sadly lacking in wearing qualities. The suggested fabrics on the following pages are made of closely woven muslin, tested to stand up under severe service.

As important as the base cloth are the finishing processes. For the architect's purpose, two types of shades are recommended. First, those which are painted and finished by hand. Such cloths are of sturdy construction, yet are pliable and hang flat at the

window. Crescent Tinted Cambric and Damasko Hevi-Duty are the Columbia cloths in this classification. Crescent is finished with a light coat of paint, thoroughly brushed into the cloth by hand. It has a warm, translucent appearance at the window. This type is especially desirable for fine homes. Damasko is treated in much the same manner, but with a heavier finish that makes it so desirable for school and public building work. The second general type of cloth for the architect's consideration, is a pyroxylin impregnated fabric. Niagara and Columbia Pyroxylin cloth are in this classification.

In addition to the four qualities mentioned, there are many other Columbia grades. Water colors, Hollands, Machine Oils and Hand-mades, each made to the same high standards of materials and workmanship. They vary in price and wearing quality, yet each has its definite place. Most standard colors are matched in all grades. Samples and specifications on request.

ROLLER IS IMPORTANT

A window shade is no better than the roller on which it is mounted. Columbia rollers are made in a variety of diameters to supply the correct amount of lifting strength for any particular purpose. Columbia rollers are made in both wood and metal. All Columbia springs are made to have constantly a liberal amount of reserve strength so that the entire strength of the spring is not exhausted in operation.

Our representatives are available at all times to assist the architect in drawing up specifications and installation details.

Columbia

SHADE CLOTH

PYROXYLIN—This is the newest of the fine Columbia shade fabrics. Made on high count, specially woven shade muslin, it is thoroughly impregnated with pyroxylin through and through. Each fibre in the fabric is thus completely waterproofed.

Columbia Pyroxylin is made in a variety of usable colors, some of which are new to shade fabrics. Repeated washing does not injure the colors or damage the surface of this cloth. There is no tendency for this fabric to lose its shape or finish even after complete immersion. Even boiling will not injure it.

Columbia Pyroxylin conforms to the U. S. Bureau of Standards specifications No. CCC for type III shadings. It is recommended for any type of installation where beauty, wear and low maintenance are desired. Width to 72 inches.

NIAGARA—A washable, waterproof shading of the finest quality. Its translucent, warm, clear colors, and velvety texture, combined with the fact that it can be easily washed without injury to finish, shape or texture, make it a beautiful as well as economical window shade. It

hangs flat and will not stretch; it will not crack, show pinholes, or flake, even after numerous washings.

The high quality of this shading is preserved indefinitely at an extremely low maintenance cost. Its washability insures the permanence of its beauty.

It may be used for all purposes where a high grade, durable, and attractive shade is desired. It is especially recommended for residences, and for apartments, hotels, schools, and other public buildings. Meets U. S. Bureau of Standards Spec. No. CCC, type III. Width to 72 inches.

CRESCENT TINT—An unfilled, tinted cambric. The base is a 72x80-count cambric of the highest quality, made especially for the purpose. It is sized and painted by hand. Being translucent, it allows the sunlight to filter through it, toned into warm soft colors. It is weatherproof, cleanable, and will not crack or show pinholes. It is recommended for fine public buildings and for private homes. Meets U. S. Bureau of Standards Spec. No. CCC, type I. Width to 150 inches.

DAMASKO HEVI-DUTY CAMBRIC—Made from the same base as Columbia Crescent Tint, a highest grade, 72x80-count cambric. Like Crescent, it is hand sized, hand painted and cleanable, but it is more opaque and heavier in weight. This quality renders it especially appropriate for withstanding continuous hard usage. It will not crack or show pinholes.

Recommended for schools, office buildings, hospitals, and other places where a heavy duty shade is necessary. Meets U. S. Bureau of Standards Spec. No. CCC, type I. Width to 150 inches.

VELLMO (Light-Proof)—Where complete exclusion of light is essential Vellmo is recommended. It will completely exclude light without the sacrifice of color scheme, and is a light-proof shade of real beauty. It is ideally adapted for use in dark rooms, X-ray rooms, and auditoriums where pictures are shown. Width to 150 inches.

COLORS—Color books of the Columbia shadings will be sent on request. In addition to regular standard colors Crescent, Damasko and Vellmo can be made to match any special color desired.

WINDOW SHADE AND AWNING ROLLERS



Columbia GUARANTEED WOOD ROLLERS

Columbia Full Round Wood Rollers are made from carefully selected, well-seasoned, kiln-dried wood, and are fitted with durable metal ends which are absolutely rustproof. Extra weight springs give more than ample lifting power and have great reserve strength. Special semi-closed end construction protects the pawls from dust, moisture, and ravellings. They are made in standard sizes of $1\frac{1}{8}$ in. to $1\frac{1}{4}$ in. in diameter and 18 in. to 6 ft. in length.

Columbia GUARANTEED METAL ROLLERS

Columbia Metal Rollers are manufactured of specially selected prime open-hearth tin-plate. The barrel is lock-seamed, doing away with sharp edges and giving the barrel strength and rigidity. Sagging and buckling of the rollers is prevented by this lock-seam, consisting of four plies of metal.

Brackets for metal rollers are of aluminum alloy. They are lighter, stronger, and of better appearance than the heavy cast iron type.

Metal rollers are made in the following sizes: 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, $2\frac{1}{4}$, 3, 4 and 5-in. in diameter, and in lengths from 18-in. to 26 ft.

Columbia GALVANIZED AWNING ROLLERS

Columbia Awning Rollers are made with galvanized iron barrels. All other parts have a rust-proof, zinc-plated finish except the pawls, which are of brass.

They are constructed throughout for heavy work and are provided with unusually powerful spring mechanisms. Awning roller brackets are sherardized and rust-proof.

All Columbia rollers are guaranteed against defects in materials and workmanship.

STANDARD SPECIFICATIONS FOR WINDOW SHADES

Window Shade Specification for(name)
Building(address)

GENERAL—These specifications shall cover the manufacture and correct installation and operation of all window shades. Shades shall be made in a thoroughly workmanlike way, cut square and true, and mounted on rollers in the same manner, using suitable substantial fasteners. The materials used in the manufacture of these shades shall be commercially perfect and of first quality.

All shades shall be clean and free from dirt, finger marks, and other imperfections due to faulty handling. A complete shade shall be submitted with bid as a sample and will be held until job has been approved.

The contractor shall be responsible for any damage to the building, which is caused by him or his employees; he must also protect his work from damage until released by its final acceptance and must clear away all surplus material or scaffolding used in the erection of the shades.

CLOTH—All shades shall be made of (Columbia Pyroxylin) (Niagara, Washable-Waterproof), (Damasko Hevi-Duty Hand-made Unfilled Cambric), (Crescent Hand-made Unfilled Tinted Cambric), (Vellmo Light-proof Cloth), as manufactured by The Columbia Mills, Inc.

The above cloth to meet Government specifications CCC-C-521 of August 27, 1937.

COLOR—Shall be(as selected)

LENGTH—All shades shall be finished 12 in. longer than actual height of the window frame.

ROLLERS—All shades shall be mounted on *Columbia* Guaranteed Metal Rollers of () diameter and shall be constructed with lock-stream reinforced barrels.

Alternate clause for wood rollers: All shades shall be mounted on *Columbia* Guaranteed Wood Rollers of () diameter.

SLATS—All shades shall be equipped with smooth, kiln-dried wooden slats of either $\frac{7}{8}$ in. or $1\frac{1}{4}$ in. in diameter as the conditions demand. Shades over 5 ft. in width shall be equipped with smooth, kiln-dried wooden 2-in. slats in hems.

EYELETS—All shades shall be equipped with stainless aluminum eyelet in center of hem for cord.

CORD—All shades to be equipped with No. (...) cord, same to match color of shades, and securely fastened in the center eyelet, allowing enough length to permit the shade to be drawn to the bottom of the window and rolled to the top without going over the roller and fastened 24 in. above the sill on the left side.

CORD HOLDERS—Cord holders are to be installed 24 in. above the sill. To consist of Parker hollow metal screw-eyes in the event that the casings are of steel or other metal. On wood casings, Cramp-ton cord holders are required.

BRACKETS (for Metal Rollers)—On steel or other metal casings, aluminum brackets are to be installed in the proper location at the top of the window, and are to be securely fastened in this location by the use of hollow metal or machine screws. In the event that the casings are of wood, brackets are to be fastened by means of brass wood screws

BRACKETS (for Wood Rollers)—Brackets for wood rollers shall be stamped nickel-plated steel brackets fastened with brass wood screws if the casings are of wood. On steel or other metal casings, brackets shall be securely fastened either by use of machine or hollow metal screws.

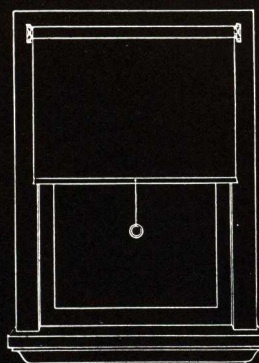
DELIVERY—All shades shall be completed 30 days after receipt of contract or date agreed upon.

Note: This quotation covers labor, materials and all appliances herein specified above for the necessary installation and complete operation of the shades.

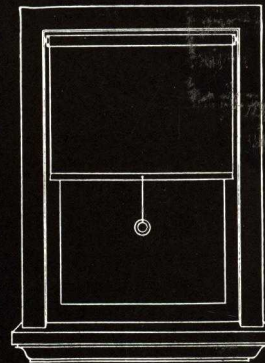
INSTALLATION SUGGESTIONS

Columbia shades may be installed at any type window opening. The illustrations below indicate the most widely used types of windows and the manner in which shades are installed.

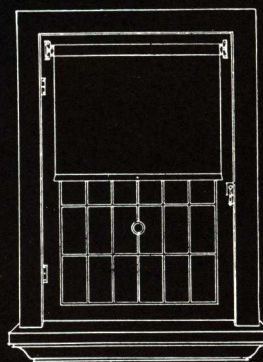
In addition to the shade brackets shown here, there are many varieties for special purposes and unusual conditions. Columbia Architectural Service Department will gladly cooperate in planning shade installations best suited to the proper shading of any job.



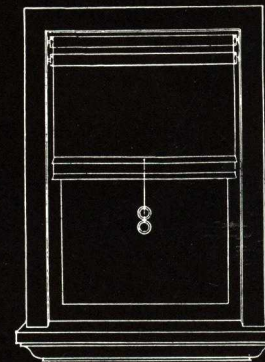
OUTSIDE HUNG
Brackets fastened to the face of the casing



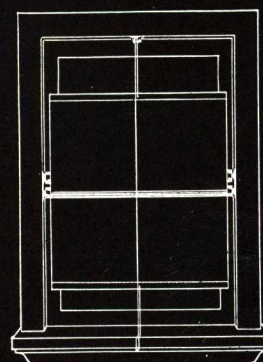
INSIDE HUNG
Brackets fastened to the inside of the casing



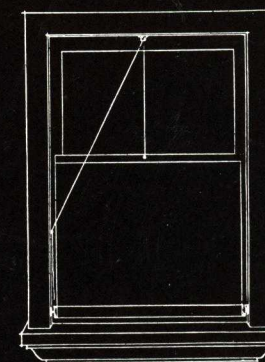
CASEMENT HUNG
Brackets fastened to top rail of casement sash



TWO SHADES
Hung on the inside of the casing



DOUBLE HUNG
One shade pulls up and the other down. May be inside or outside the casing



BOTTOM-UP
Inside or outside with stop pulley

THE COLUMBIA MILLS I N C O R P O R A T E D

225 FIFTH AVENUE, NEW YORK

B R A N C H E S

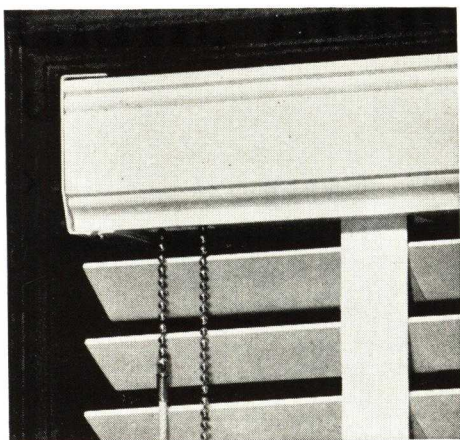
BOSTON	470 Atlantic Avenue
CHICAGO	1541 Merchandise Mart
CINCINNATI	205 W. 4th Street
DALLAS	2401 S. Harwood Street
DENVER	1863 Wazee Street
DETROIT	3297 Hubbard Avenue
JERSEY CITY	18th & Grove Streets
KANSAS CITY	710 Central Avenue
LOS ANGELES	2620 Lacy Street
MINNEAPOLIS	400 First Avenue North
NEW ORLEANS	816 Howard Street
PHILADELPHIA	South & Water Streets
PITTSBURGH	1841 Forbes Street
PORTLAND	408 N. W. 5th Avenue at Flanders Street
ST. LOUIS	11th & Clark Streets
SAN FRANCISCO	32 Otis Street
SEATTLE	1716 Yale Avenue

HIGGIN PRODUCTS, INC.

Venetian Blinds
NEWPORT, KENTUCKY

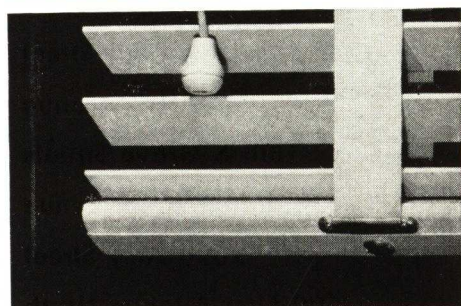
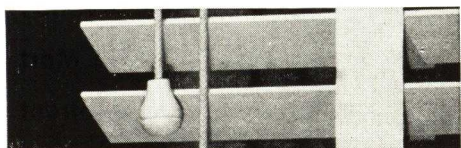
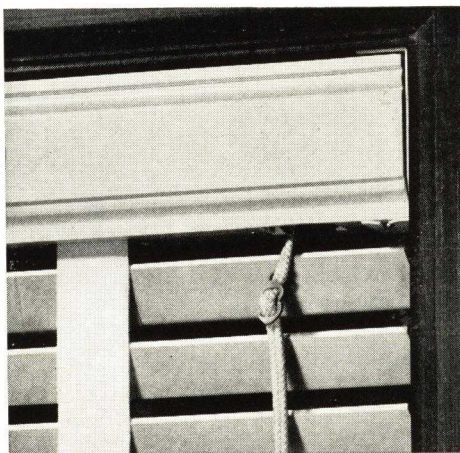
AGENCIES AND DEALERS THROUGHOUT THE COUNTRY

For Metal Frame, Wood Frame and Rolling Screens, Lightproof Shades, Access Panels and Weatherstripping, see our page in File Index



HIGGIN VENETIAN BLINDS

Illustration at left shows head of blind with hardware concealed behind a $\frac{3}{4}$ in. thick wood fascia which is permanently attached to a base $1\frac{1}{8}$ in. thick. Hardware is concealed at back also by removable fascia. Below: Wood tassels are finished like slats. Detachable tape and cord clips. Right: Head of "Newport" blind showing lifting cords



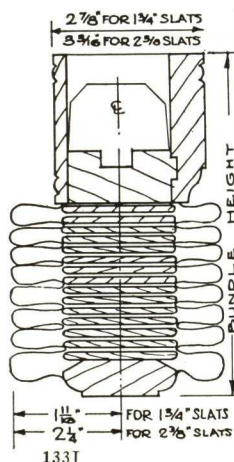
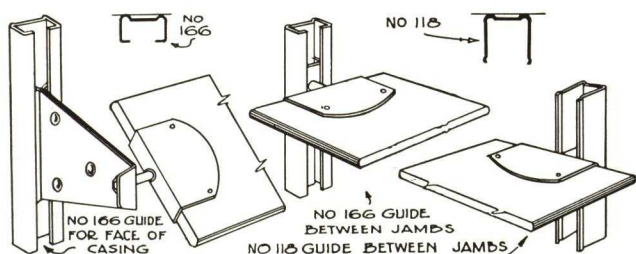
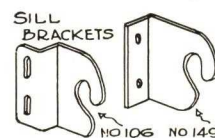
Two types of Venetian blinds are manufactured. The deluxe "Newport" type illustrated and described on this page and a standard quality blind with open head. Both are quality blinds with wood parts of seasoned basswood finished with a linseed oil prime and two coats of high-grade synthetic enamel smoothly applied. Hardware is of exclusive Higgin design and manufacture. Tilts have worm gears machine cut from hard drawn brass. They are actuated by strong bead chain which cannot slip. Blinds may be tilted from one extreme to the other with less than 14 in. of chain travel. Lifting cord locks have extruded brass pawls, positive in action, yet easy on the cord.

Ladder tapes and cords are detachable. The exclusive Higgin Tape Clips permit adjustment of heights. Tapes are of best quality with cable ladders interwoven into sidewalls. Lifting and tilting cords are of best quality hollow braid with glazed thread.

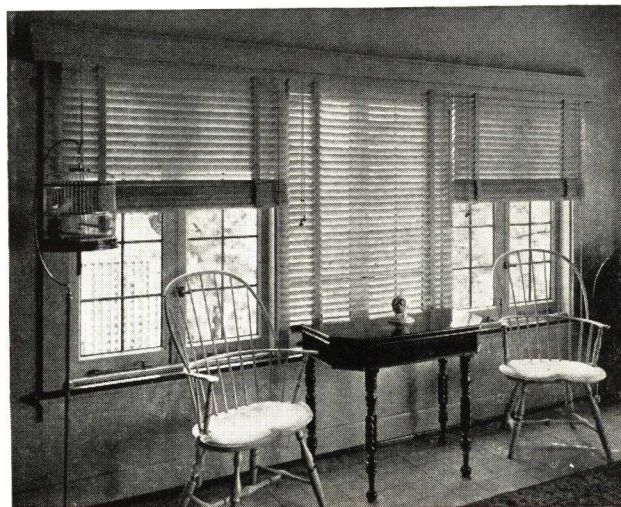
A full range of colors for tapes, cords, slats and other wood parts is available. Several types of side guides, all Higgin made, can be provided. HIGGIN PRODUCTS, INC., maintains complete wood and metal working shops. Sunbursts, facias and transom blinds of all kinds can be furnished.

Higgin Venetian Blinds are available with slats $1\frac{1}{4}$ in. wide or $2\frac{3}{8}$ in. wide. Slats are approximately $\frac{1}{8}$ in. thick. Bottom bars are $\frac{1}{8}$ in. thick and same width as slats.

To the left are illustrated channel guides available with both the "Newport" and the Standard Higgin Venetian blinds. The No. 166 is small and inconspicuous and may be used between jambs or on face of casing. The No. 118 is an open channel. Rubber ferrules on approximately every tenth slat engage the guides, furnishing a silent installation.



OPENING HEIGHTS	BUNDLE HEIGHTS	
	$1\frac{3}{4}$ " SLATS	$2\frac{3}{8}$ " SLATS
48"	10"	8 $\frac{1}{2}$ "
60"	11 $\frac{1}{2}$ "	9 $\frac{1}{2}$ "
72"	13"	10 $\frac{1}{2}$ "
84"	14 $\frac{1}{2}$ "	11 $\frac{1}{2}$ "
96"	16"	12 $\frac{1}{2}$ "
108"	17 $\frac{1}{2}$ "	13 $\frac{1}{2}$ "

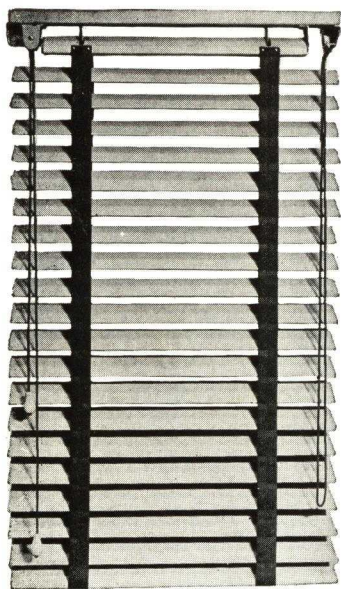


GERMAIN MANUFACTURING CO.

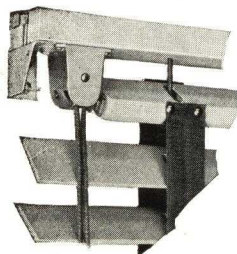
VENETIAN BLIND DIVISION

SAGINAW, MICH.

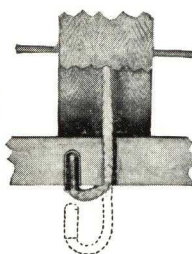
AN OUTSTANDING VENETIAN BLIND OF DEPENDABLE QUALITY



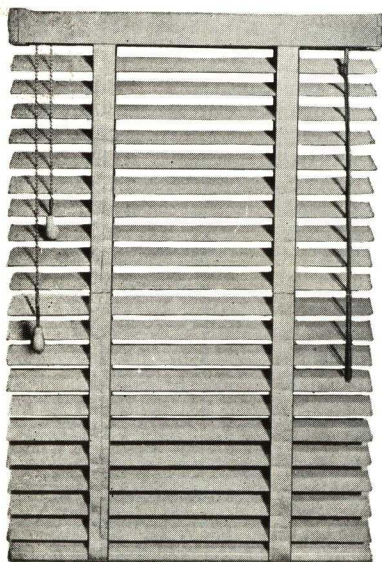
Open Head Type



Tilt Device



Removable
Cord



Metal Enclosed Head Type

All types of GERMAIN Venetian Blinds are built to a very rigid quality standard, complete in all details, in our large modern plant by experienced workmen. A finish room with the latest appliances of our own design enables us to apply a satin finish of incomparable beauty to each blind. GERMAIN Venetian Blinds are custom built only, so that each order, regardless of size, receives the same careful attention.

TYPES

GERMAIN Metal Enclosed Head Blinds.

GERMAIN Oscillating Roller Lift Blinds for openings exceeding 100 sq. ft. in area.

GERMAIN Open Head Blinds with or without fascia.

GERMAIN Skylight Blinds. We specialize in the manufacture of hand operated and motor driven blinds for different types of skylight. Full particulars upon request.

GENERAL SPECIFICATIONS

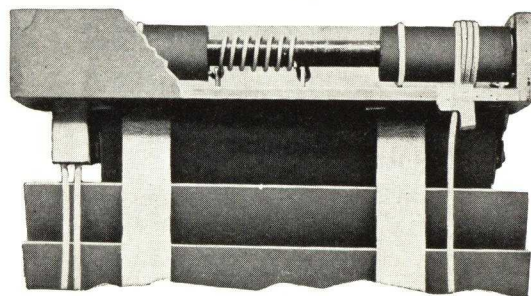
All wood parts of GERMAIN Venetian Blinds are of clear basswood, kiln dried in our own plant.

Head Rails—Metal Enclosed Head consists of a metal box $2\frac{1}{4} \times 2\frac{1}{4}$ in. closed on three sides and open at the top for accessibility. This box houses a worm gear tilter, equipped for either cord or chain pull, which operates a steel shaft to which the tapes are attached by special clamps. The cord brake is positive and automatic. The box and installation brackets are carefully finished to match the blinds. (These Metal Heads are built under a license agreement covered by U. S. patents.)

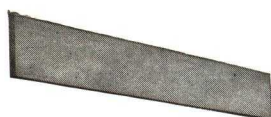
Oscillating Roller Lift Head for blinds of 100 sq. ft. or more consists of a horizontal shaft on which spools are mounted for winding the cords and which is operated by a winch. This shaft oscillates to insure even winding of the cords. The entire mechanism is enclosed in a wooden or metal box ranging in size from $4\frac{1}{2} \times 4\frac{1}{2}$ in. to $6\frac{1}{4} \times 6\frac{1}{4}$ in.

Head Rails and Tilt Rails for Open Head blinds are $\frac{7}{8} \times 1\frac{1}{4}$ in. for Home blinds; $\frac{7}{8} \times 2$ in. for Utility blinds, and $1\frac{1}{8} \times 2\frac{3}{8}$ in. for Commercial blinds. Attached to the Head Rail is the distinctive GERMAIN Tiltor consisting of a steel worm and brass gear, this mechanism including the operating pulley, being completely housed in an aluminum casting. Cord tilt is standard, but chain tilt will be furnished without charge when requested. The head rail contains a cord brake, automatic and positive on both cords to prevent slippage. Installation brackets are self-locking, allowing instant removal of blinds and no part extends beyond the front of the head rail. Brackets and cord brake are cadmium plated. Fascia attached by clips, instantly removable.

Slats—Are $\frac{1}{8}$ in. thick and are $1\frac{1}{4}$ in. wide for Home blinds, 2 in. wide for Utility blinds, and $2\frac{3}{8}$ in. wide for Commercial blinds. Cord slots are cleanly cut and slot edges are painted to prevent absorption of moisture.



Oscillating Roller Lift



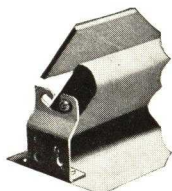
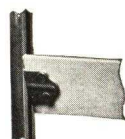
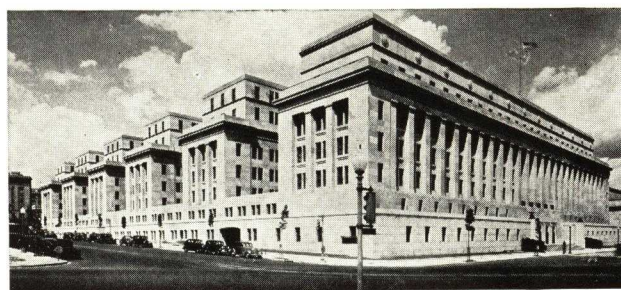
Plain Fascia



Moulded Fascia

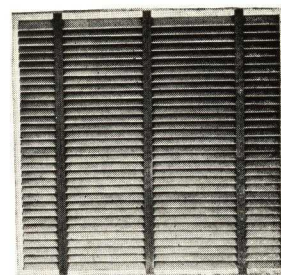


Scalloped Fascia

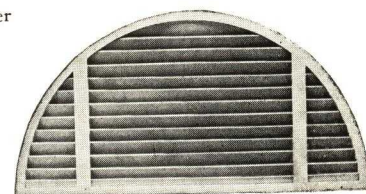
Fascia
ReturnHold Down
BracketChannel Guide
and Slat Clip

Department of Interior Building, Washington, D. C.

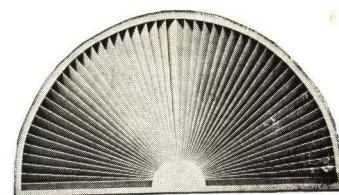
This building completely equipped with Germain Oscillating Roller Lift Blinds. Installation comprises 4436 windows



Transom



Circle Top



Sunburst

GENERAL SPECIFICATIONS

(Continued)

Bottom Rails—For Single Pull blinds are $\frac{3}{4}$ in. thick. On Compound Pull blinds, they are $\frac{7}{8}$ in. thick for Home or Utility slats, and $1\frac{1}{8}$ in. thick for Commercial slats. Their widths are the same as the head rails and slats.

Single Pull Operation—Used on Home and Utility blinds under 36 sq. ft. in area and less than 60 in. in width, and on Commercial blinds less than 70 in. in width.

Compound Pull Operation—Used on all blinds exceeding 36 sq. ft. in area or wider than specified above. Ball-bearing pulleys are used on compound pull blinds.

Detachable Cords—Furnished on single pull blinds only. The ends of the cords are metal tipped and fit into a metal-lined slot in the bottom rail, allowing quick removal of the slats for cleaning. This equipment is optional and furnished only upon request at no charge.

Cords—Only the best grade of Venetian Blind cord is used in colors to match the tapes.

Tapes—The best quality of ladder tape with interwoven webs is used on GERMAIN Venetian Blinds. Number of tapes and center supports are as follows:

	Tapes	Center Supports
All Blinds up to 39 in.....	2	None
All Blinds 39 to 64 in.....	3	1
All Blinds 64 to 70 in.....	4	1
All Blinds 70 to 87 in.....	4	2
All Blinds 87 to 95 in.....	5	2
All Blinds 95 to 111 in.....	5	3
All Blinds 111 to 121 in.....	6	3
All Blinds 121 to 137 in.....	6	4

Center Supports—For Tilt, Rails are used on blinds over 39 in. wide as shown on the table above, and our special U Head Rail bracket is furnished with each center support. Cadmium plated.

Colors—Sixteen standard slat colors and seventeen standard tape colors. Special colors at a small additional cost.

Channel Guides or Hold Down Brackets—May be had on all types of GERMAIN Venetian Blinds at an additional cost.

Minimum Blinds—Containing less than 12 sq. ft. are figured as 12 sq. ft.

Minimum Widths—Open Head Blinds 12 in. Metal Head Blinds 16 in.

Maximum Widths—Open Head and Roller Lift Blinds 16 ft. Metal Head Blinds 10 ft.

Bundle Spacing—The formula for computing the extra blind length needed for clearing the top of opening when bundled is: Home and Utility blinds $2\frac{1}{2}$ in. plus $1\frac{3}{4}$ in. per foot of blind length; Commercial blinds $3\frac{1}{2}$ in. plus $1\frac{1}{4}$ in. per foot of blind length.

Guarantee—GERMAIN Venetian Blinds are guaranteed against defects in workmanship and material for a period of 90 days.

PARTIAL LIST OF PROMINENT INSTALLATIONS

The Department of Interior Building (New), Washington, D. C.
 New Internal Revenue Building, Washington, D. C.
 United States Post Offices—too numerous to mention separately.
 General Motors Buick Plant, Flint, Mich.
 General Motors Chevrolet Plants, Flint, Mich., and Buffalo, N. Y.
 Chrysler Motor Company's East Jefferson Plant, Detroit, Mich.
 Chrysler Motor Company's Highland Park Plant, Detroit, Mich.
 Niagara Hudson Company, Niagara Falls, N. Y.
 Weather Head Company, Cleveland, Ohio.
 Cleveland Securities Corp., Cleveland, Ohio.
 First National Bank Building, Detroit, Mich.
 Detroit Savings Bank Building, Detroit, Mich.
 General Shoe Corp., Nashville, Tenn.
 Dow Chemical Company, Midland, Mich.
 Buckingham Communities, Inc., Arlington, Va.
 Cafritz Construction Company, Washington, D. C.
 B. L. Jackson, Inc., Washington, D. C.

SAMPLES AND INFORMATION

Write for color samples and our Manual containing full specifications, instructions for measuring and installing, and a convenient table for computing square footage.

INTERSTATE SHADE CLOTH COMPANY

Manufacturers of Interstate Venetian Blinds and Window Shade Products

812-820 Jefferson Street, Hoboken, N. J.

TELEPHONE: Rector 2-3840; Hoboken 3-1848-49

SALES REPRESENTATIVES FOR

THE LAPSLEY-INTERSTATE SHADE CLOTH CO.

39-45 Hopkins Place, Baltimore, Md.

TELEPHONE: Plaza 3290

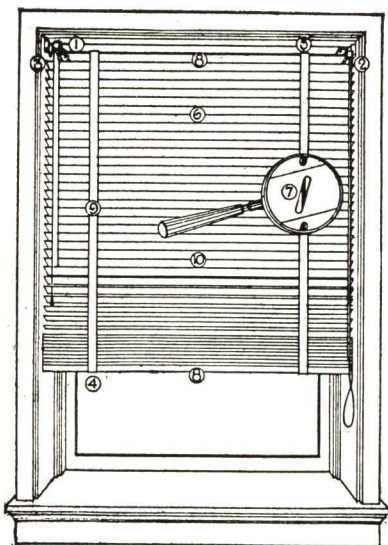
INTERSTATE VENETIAN BLINDS

Universal Type (2 $\frac{3}{8}$ -in. Slats)

1. **Improved Gear Tilting Device** . . . Compact . . . reduces light streak between head and tilt rails.
2. **Automatic Cord Brake** . . . a single pull one way keeps the blind in place and a pull the other way releases it. This device eliminates the old cord knob fastener.
3. **Head Holding Bracket** . . . a simple snaplock holds the blind in place. Entire blind can be removed instantly.
4. **Improved Tape Fastener** . . . eliminates the use of objectionable upholstery tacks and allows easy removing of slats for cleaning.
5. **Self Lubricating Pulleys** . . . over which the cord travels, will not squeak nor rust under any climatic condition. An improvement over the other types.
6. **Port Orford White Cedar** . . . no other wood is equal to Port Orford

Home Type (2-in. Slats)

- Cedar for Venetian Blinds. Its use throughout is your insurance against warping.
7. **Holes in Slats** . . . are routed out smoothly for free cord action. Punched holes produce ragged edges which wear out the cords quickly.
 8. **Tilt and Bottom Rails** . . . so shaped and bored that blinds pull up freely and close tightly.
 9. **Ladder Tapes and Cords** . . . only the finest qualities are used. The best ladder tape, cross tapes interwoven . . . Samson's special hollow braided non-twisting glazed Venetian Blind Cord.
 10. **Color Combinations** . . . Slats and tapes in contrasting colors are most effective. Our high-grade lacquer produces a beautiful and lasting finish.



INTERSTATE WINDOW SHADE CLOTHS AND ROLLERS

Specify Interstate Products by Trade Marked Brands.

Inter-Twill—Sunlite—Paragon—No-Lite Shadowless Cloth, Rolrite Guaranteed Roller

Inter-Twill—the Long Wearing Shade Cloth



An improved type of shade cloth with the strength in the twill. We believe it is the toughest and strongest shade cloth and will outwear them all. It will stand abuse and rough usage. The threads will not "burn" when exposed to the sun's rays. It has special Interstate protective coating which makes it easily cleanable, reversible and long wearing. Soil is easily removed from its surface. The manner in which the twill fabric is woven insures the extra years of service. It is pure finished, and unfilled, no clay or other fillings used in the manufacture. Made in any color tone and in any combination of colors.

Architect's Specifications

Shade Cloth—"Inter-twill" [Sunlite] [Paragon] [No-Lite] as manufactured by the INTERSTATE SHADE CLOTH COMPANY shall be used for all windows, and of a color to be selected (state if a solid color or duplex color is being considered).

Rollers—Interstate "Rolrite" guaranteed wood rollers of the proper diameter (for shade wider than 63 in. specify metal rollers).

Interstate Shade Cloth is Painted by the Hand Process

Cloth, in one piece of 60 yds. or less, and in widths from 36 to 150 ins., is glued on frames. The next operation is the application of a high grade hide glue size. The cloth is then stretched by hand—an important operation—since hand stretching permits the full width to be framed out, all fullness removed and prevents

Deterioration in shade cloth is principally due to the sun's burning action. In Interstate Hand-painted Shade Cloths the color, being ground in linseed oil, affords maximum protection to the fabric. Experience has demonstrated that hand-painted shade cloths can be successfully cleaned the same as any painted surface.

Interstate Cambric Shade Cloths

The cambric cloth used has a thread count of 72x80 and exceeds the technical requirements of the United States Government specifications as to thread count and tensile strength.

Like all Interstate Shade Cloths the following brands are pure finished, unfilled; no clay or other fillings are used in their manufacture. They are cleanable and color fast.

Sunlite, a Cambric Tint—This is lightly tinted shade cloth made on unfilled cambric cloth in all the popular tints. It is translucent in lighter colors (light without glare) and semi-translucent in darker colors.

Paragon Heavy Duty Cambric—A heavier coated shade cloth, unfilled cambric, semi-opaque in lighter colors and opaque in darker colors. Paragon is a "heavy duty" shade cloth especially adapted for office buildings. Many attractive colors to choose from.

No-Lite, a Shadowless Shade Cloth—This a triplex process shade cloth—made on unfilled cambric cloth and is absolutely opaque in all colors. Any color combination. The undercoat is black, making it shadowless and lightproof. Used extensively for auditoriums, X-ray rooms, and hospital laboratories. No-Lite is used in hotels and residences where shadows would be objectionable. Specify No-Lite when total exclusion of light is desired.

curling and bagging of the finished window shade. Color is applied the following day—one coat to each side (No-Lite is given three coats).

Any desired color can be applied, either the same color on both sides or a different color on each side.

If "Holland" type of window shade cloth is desired, specify JOHN KING & SON'S IMPORTED SUNPROOF SCOTCH BEETLED HOLLAND or NONFADE SCOTCH BEETLED HOLLAND, spun, woven, dyed and beetled in the U. S. A.

SIMON VENTILIGHTER CO., INC.

(ALSO KNOWN AS VENTILIGHTER CO.)

Patented Vane Systems for Scientific Light Control of Skylights and Windows
101 Park Avenue, NEW YORK, N. Y.

Product and Service

VENTILIGHTER, a scientific light controlling device adapted to skylights, windows and sleeping porches, and encompassing within its uses the complete control of light in all its phases.

We shall be pleased to consult with you concerning special requirements.

Estimates and Installation

In writing for information, please submit a sketch illustrating conditions. For skylight Ventilighters, show construction of skylight opening and possible obstructions, such as columns, piping, etc. For window Ventilighters show section of jamb, head and sill.

We furnish blue prints showing a simple method of installation. Our staff, if desired, will undertake complete installation. Catalogue upon request.

Principle of Ventilighter

Ventilighter consists of a series of specially woven fabric vanes, mounted in a metal lattice framework, although metal or other material may be substituted in special instances. The vanes may be opened or closed so as to overlap, ventilation remaining unimpaired, excepting where the all-metal skylight Ventilighter described below is used for complete darkening. The use of various types of vanes corresponding to the individual problem, permits the concentration, diffusion or elimination of light rays.

Fabric Skylight Ventilighters

Ventilighter for skylights is a special louvre construction as illustrated, with the louvres or vanes adjustable within the area covered, so that they overlap or open wide at will. When fabric is used the heat of the sun is tempered and a soft diffused light results, which can be controlled in the desired direction.

Glare and shadows are absolutely eliminated. When the vanes are completely closed they overlap but do not touch, hence ventilation is unimpaired. To emphasize again, light is perfectly controlled, heat reduced, glare eliminated, and ventilation unimpaired.

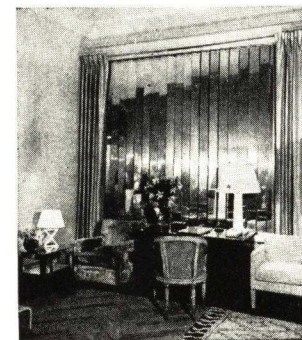
All-metal Skylight Ventilighters (Darkening)

A most important phase of our work is the use of metal vanes flanged at the edges so that when the louvres are closed they overlap and darkness is instantly effected. Ofttimes skylights in auditoriums must be darkened when motion pictures are shown and the value of causing instant darkness by merely pulling a cord or turning a crank is apparent.

Reversing the above, very often the vanes are made similar in design but enameled white. Thus the vanes when closed act as a big reflector to the artificial lights, creating an ideal indirect lighting system, yet when daylight is strong enough to be used, the vanes are opened at the proper angle to reflect natural light to the proper location. Ventilighters may be operated from predetermined points of convenience when proper provision is made; electrically also if desired.

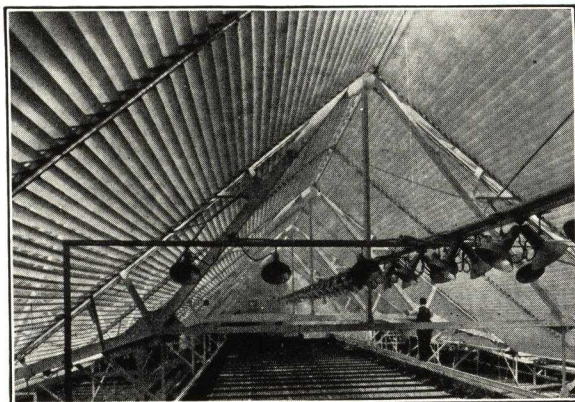
Window Darkening Ventilighters

We also manufacture a special sliding sheet steel device electrically or manually controlled for darkening purposes, so devised that a battery of windows may be darkened at one time, such as proves necessary in auditorium work. When not in use the plates collapse into a pocket out of sight and at the press of a button or the turn of a crank reappear and extend so as to completely cover the openings.



Vertical Vane Ventilighter (Patented)

Vaness usually made of aluminum. Blind collapses from center to side similar to draw curtain.



View Above Ceiling Sash of Gallery of Fine Arts, Yale University, New Haven, Conn.

EGERTON SWARTWOUT, Architect

FRENCH & HUBBARD, ENGS.

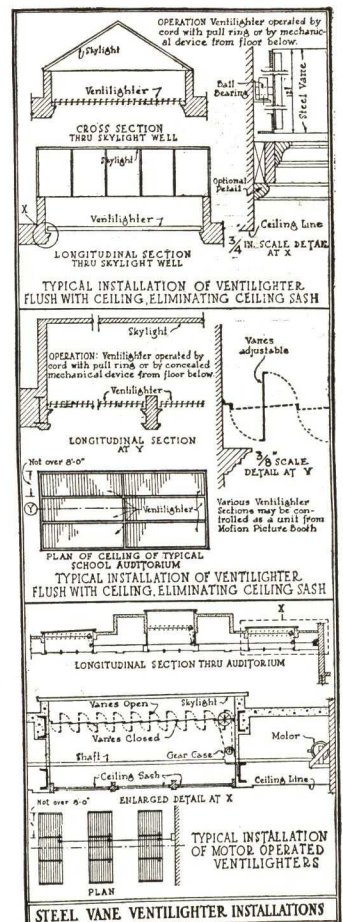
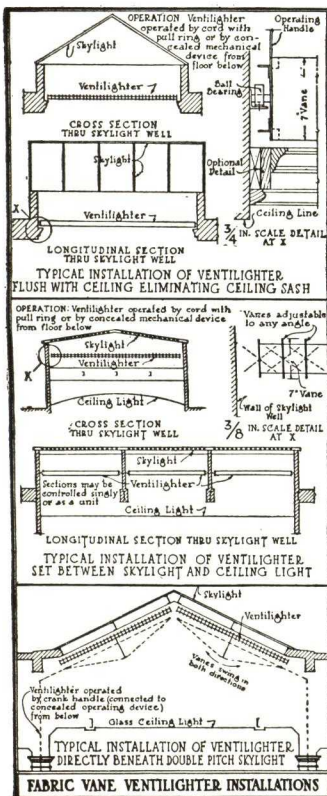
Some Buildings Where Ventilighters Are Installed

BUILDING AND LOCATION
Law Building, University of Virginia
San Jacinto War Memorial, Houston, Tex.
U. S. Post Office, Westport, Conn.
Fine Arts Center, Colorado Springs, Colo.
Charles Deering Library, Northwestern University
Annex, Pierpont Morgan Library, New York
Conn. Mutual Life Ins. Co., Hartford, Conn.
Trinity College, Hartford, Conn.
L. Cass Ledyard Jr. Residence, Syosset, N. Y.
Metropolitan Museum of Art, New York, N. Y.
Sterling Library, Yale University
New Haven Savings Bank, New Haven
Hall of Geography, Harvard University
Savings Bank of Newport, R. I.
Wildenstein & Co. Bldg., New York, N. Y.
Museum of Natural History, New York
Mitsui Bank, Tokio, Japan
Chemical Laboratory, Princeton University
Schools, Wilmington, South Orange, etc.
Packard Memorial, Lehigh University
First National Bank of Hawaii, Honolulu
New York State Office Bldg., Albany
Philadelphia Museum of Art, Philadelphia

Federal Office Bldg., New York, N. Y.
Providence Institution for Savings, Providence
Providence County Courthouse, Providence
Savings Bank of New Britain, Conn.
Payne Whitney Gymnasium, Yale University
D. A. R. Building, Washington, D. C.
U. S. Depart. of Commerce Bldg., Washington
Government Museum, Quebec, Canada
Union Trust Co., Baltimore, Md.
Hon. Alfred E. Smith Apartment, New York
The Frick Collection, New York, N. Y.
New York Central R. R. "Mercury" Train
Corpus Christi Church, New York, N. Y.
New York Edison Co., New York, N. Y.
State Capitol, Salem, Ore.

ARCHITECT
Architectural Commission
Alfred C. Finn
Lansing C. Holden, Jr.
John Gaw Meem
James Gamble Rogers
Benj. W. Morris
Benj. W. Morris
McKim, Mead & White
Chas. A. Platt
John Russell Pope
Jas. Gamble Rogers
Egerton Swartwout
Horace Trumbauer
Thos. M. James
Horace Trumbauer
Trowbridge & Livingston
Trowbridge & Livingston
Day & Klauder
Guilbert & Betelle
Visscher & Burley
York & Sawyer
Wm. E. Haugaard
Trumbauer, Zantinger & Borie
Cross & Cross
Howe & Church
Jackson, Robertson, Adams
Hutchins & French
John Russell Pope
John Russell Pope
York & Sawyer
Wilfrid Le Croix
Smith & May
Shreve, Lamb & Harmon
John Russell Pope
Henry Dreyfuss
Wilfred E. Anthony

Trowbridge & Livingston



SWEDISH VENETIAN BLIND CORPORATION

Manufacturers and Distributors of Swedish Venetian Blinds

TELEPHONE
PALISADES 6-6244

OFFICE AND FACTORY
949 Dell Avenue, NORTH BERGEN, N. J.

CABLE ADDRESS
"Venetblind"

For Our Page on Rolling Wood Partitions, see File Index

SWEDISH VENETIAN BLINDS

For All Sizes and Types of Windows—Interior and Exterior

Swedish Venetian Blinds are as satisfactory and durable a blind as there is on the market. They are made of the highest grade material—Port Orford Cedar, thoroughly kiln dried, the best imported interwoven tape, good quality cord, and neat brackets and hardware for hanging. Either wood fibre rollers, brass pulleys or ball-bearing pulleys to prevent cord from wearing, are used.

The experience of years of practical service has developed different systems of operation according to the individual job—guaranteed to give perfect service and easy control in all installations.

Blinds can be adjusted to any angle by a patented regulating device, and can be put up and taken down as easily as a roller shade, requiring no tools. Side attachments such as brass rods or heavy wire, or metal guides with attachments on intermediate slats are recommended for blinds attached to doors or swinging transoms and wherever exposed to a strong wind. Installation is very easy. All necessary materials are furnished.

Used Wherever Perfect Shading and Ventilation Are Desired

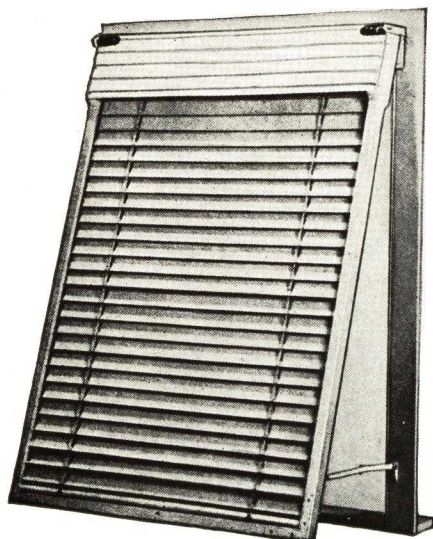
Swedish Venetian Blinds are used in private residences, sun porches, libraries, offices, hotels—in fact any place where the most satisfactory distribution of light, perfect ventilation and excellence of appearance are desired. Furnished for outside or inside purpose, with or without guides. Also made with extensions, taking the place of awnings. They answer the purpose of shutter to a certain degree when let down.



Channel guides for inside blinds

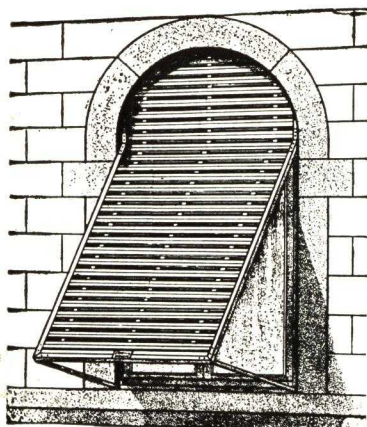


7/8-in. rod guides for inside or outside



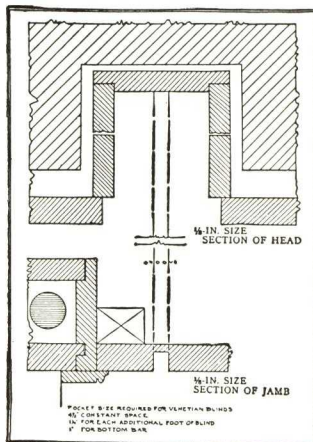
Outside Venetian Blind

Easily and quickly adjusted to control light, ventilation and privacy



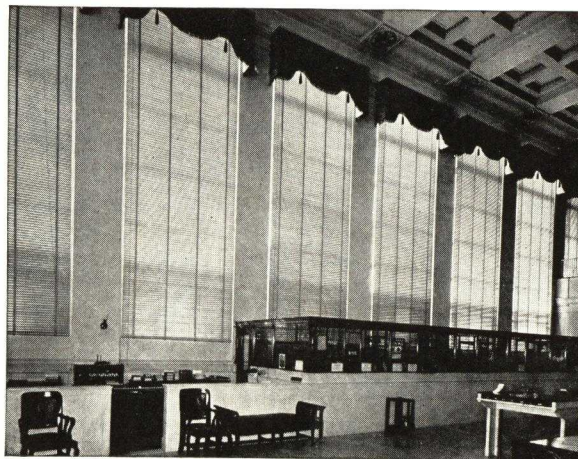
Outside Roller Blind

Made of heavy wood slats (Swedish Pine) connected with non-rustable metal connectors. The slats slide in a neat metal groove. Slats can be adjusted so as to give ventilation and privacy, with only one tape operation inside. Rolls completely out of the way up into a pocket on the inside



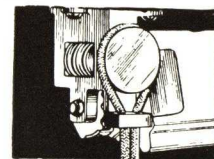
Detail of Jamb and Pocket

When above is followed, it will result in a most satisfactory blind installation either outside, between screen and sash, or on the inside, giving a better service than any other blind of its kind

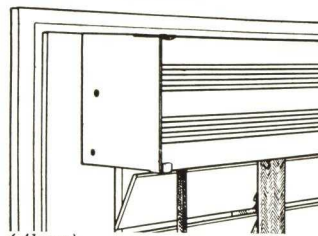


Daylight Control Plus Ventilation

Three Outstanding Exclusive Features

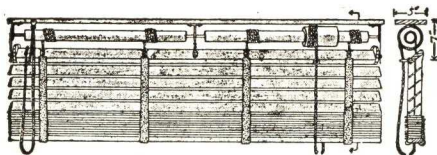


Worm Gear Tilting Device



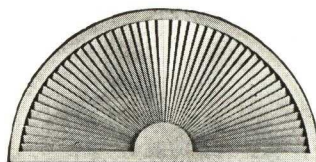
(Above)
Enclosed Head Bracket and Facia Board

(At Right)
Rubber Cushioned Automatic Cord Stop



Traverse Roller Type

All blinds containing over 100 sq. ft. area shall be mounted with the traverse roller shown above. This roller maintains the slats in position exactly parallel to the window sill at all times. As it turns it travels from side to side and all the cords wind and unwind evenly



Sunburst Blind



Arch Blind

UNITED METAL BOX CO., INC.

168-186 Seventh Street

BROOKLYN, N. Y.

For United Apartment House Mail Boxes, Bathroom, Sink and Kitchen Cabinets, see File Index

"UNITED" ALL METAL VENETIAN BLINDS

Builders, architects, decorators and retailers are invited to consider, one by one, the striking advantages of United Metal Venetian Blinds—their beauty, durability, operating smoothness, silence, fireproof and weatherproof qualities and finally their extraordinary economy. Made for all standard size windows. Available for all custom-built sizes. Finished in all popular colors.



are used. Slats touch with a soft, muffled sound, hardly perceptible. Individual slats are clipped firmly to the tapes, instead of merely resting upon them so that all move together in quiet unison. Non-twisting cords are specially made to resist wear. Cords cannot creep up out of reach.

Fool-proof—As simple to install as the roller shade. By means of compensating brackets, the blind adjusts itself to variations in size of standard windows.

Light-Proof—Slats are 2 in. wide, of equal length. None cut short to provide for brackets. When shut, the thin steel slats mesh tightly. No wind can blow them open. Here, at last, are Venetian Blinds that offer the privacy of a wall of steel.

Fireproof—If United Metal Venetian Blinds offered no other feature except their fireproof merit, this single, predominating advantage would justify their widespread use. Already, builders, seeking to reduce fire hazards, specify them as standard equipment.

Rattle-proof—The tilting, lifting and lowering mechanism is silent. Noiseless, self-lubricating pulleys

An automatic stop holds the blind where you want it. The metal slats are tilted down, up or horizontal by a gentle pull at the cord. An automatic tilting device locks slats at any angle and prevents wind from blowing them closed.

Weatherproof—Because metal will not absorb moisture—rain or dampness cannot damage the slats. Slats cannot sag or split, twist or warp. All mechanism is rustproof and neatly concealed in upper housing. Entire blind is enameled and baked at intense temperatures so that no sun can crack or peel the surface.

"UNITED" SELF-CLOSING UTILITY RECEPTACLE

The United, Self-closing, Utility Receptacles are made of furniture steel in standard sizes to meet practically every requirement.

The top is fitted with two independently free swinging doors mounted on brass pin hinges which are noiseless in operation and closely fitted to the openings. Both doors can be used simultaneously. There are no sharp points, corners or edges on any part of the receptacle, eliminating all danger of damage to articles inserted in the receptacle or injury to the user.

Each receptacle is furnished with an inner container; either paper bag, burlap bag or galvanized container as noted in the specification schedule.

The top of the receptacle is mounted on heavy concealed hinges which act as stops to retain the top in open position for removing the inner container, thus eliminating the use of chains for this purpose.

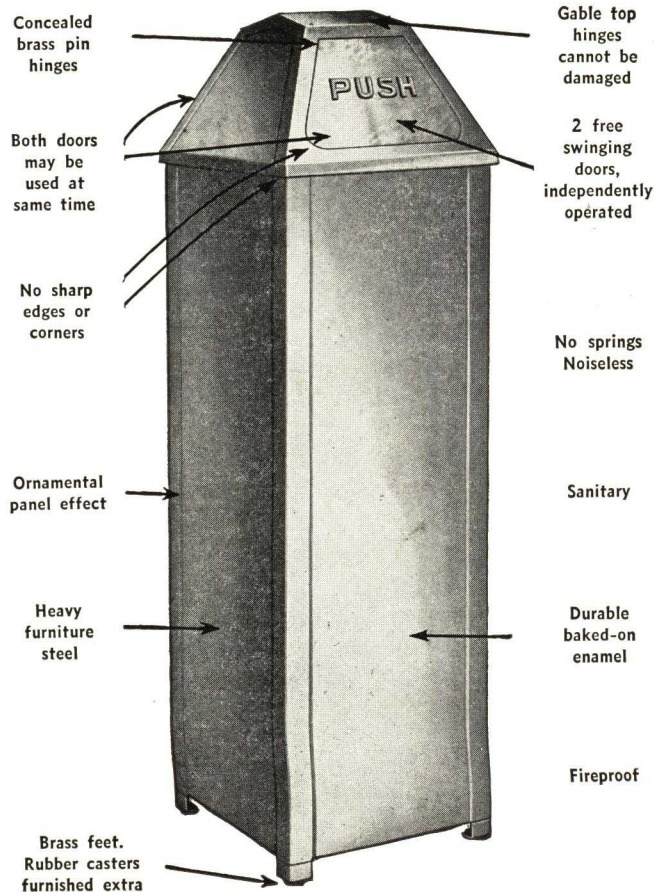
The No. 140 and No. 160 models are for outdoor use and are made of heavy galvanized steel. United Receptacles are finished in high grade baked enamel in colors as indicated in schedule.

The entire receptacle is symmetrically designed and presents the appearance of a finished furniture-like product.

SPECIFICATION SCHEDULE

Cat. No.	Size of base, in.	Body height, in.	Over-all height, in.	Approx. capacity, gals.	Inner container furnished	Approx. shipping wgt., lbs.
110	11 1/2 x 11 1/2	18	24 3/4	9 1/2	12 paper bags	24
112	11 1/2 x 11 1/2	28	34 1/2	18	1 galv. can	32
115	11 1/2 x 11 1/2	35	41 3/4	23	1 galv. can	39
130	16 x 16	27	35 1/2	27	1 burlap bag	42
*140	16 x 16	31	39 1/2	31	1 burlap bag	61
150	21 x 21	35	46	65	1 burlap bag	99
*160	21 x 21	37	47 3/4	65	1 burlap bag	110

*For outdoor use—made of heavy gauge galvanized steel. Gray or Green, White Enamel or Grained Mahogany.



WARREN VENETIAN BLIND CO.

Manufacturers of Venetian Blinds—Wood Fabric Porch and Industrial Shades
2907 East Hennepin Avenue, MINNEAPOLIS, MINN.

REPRESENTATIVES IN PRINCIPAL CITIES

WARREN'S VENETIAN BLINDS

Used in Many Types of Buildings—Venetian blinds are today specified by leading architects, contractors and builders, for many types of industrial and residential buildings. Office buildings, hotels, schools, colleges, halls, clubs, civic centers, public buildings are included in the first group; while homes (to a much larger extent than formerly) now use Venetians in every room.

Venetians not only replace, but are an improvement upon, roller shades. This is because, by easily tilting the slats at the desired angle, all direct sunrays are deflected to the ceiling, thus flooding the room abundantly with soft, diffused light; and, in the same manner, completely controlling air currents that enter the window, thereby eliminating draft.

Simplicity of Operation—Warren's Venetian Blinds embody improvements which make them extremely easy to operate and which reduce wear to a minimum. These features are illustrated (as much as possible) in the drawing and are listed in opposite column.

The blinds are raised or lowered by the braided cord at right. At any desired height they may be stopped and held firmly by means of the new, automatic cord stop, thus doing away with the old style cord holder.

The slats are easily tilted to any desired position by slightly pulling the tilting cord (usually at the left). The slats may be held at any desired angle by the worm-gear tilt lock, controlled by the tilting cord, which prevents the slats opening when fully tilted in either direction.

Easy to Install—Warren's patented installation brackets greatly simplify the process of placing the blind. No screws are necessary to hold the blind in position, and, when once installed, it may be taken down (for cleaning, etc.) and re-inserted in the brackets as easily as a roller shade. Warren's Venetian Blinds are individually made and assembled. Each order is handled separately and shipped completely assembled, ready to be installed. With detailed instructions, installation is easily and quickly done.

Samples and Data Furnished—We will gladly furnish to architects, contractors or owners, upon request, sample blinds and complete specifications as to construction, operation, materials, color range, etc. But, please send window sizes when estimates are wanted. It saves time and unnecessary correspondence.

Materials and Specifications

Wooden Parts—All wooden parts are of clear white basswood. This wood is free from pitch and sap, light in weight, and does not cup or twist. Slats may be obtained in any of the following widths: 1½, 2, or 2½ in.

Ladder Tape—We use only best quality interwoven cotton tapes. Tape is eyeleted with cadmium eyelets and secured to the rails with cadmium screws to allow for easy dismantling.

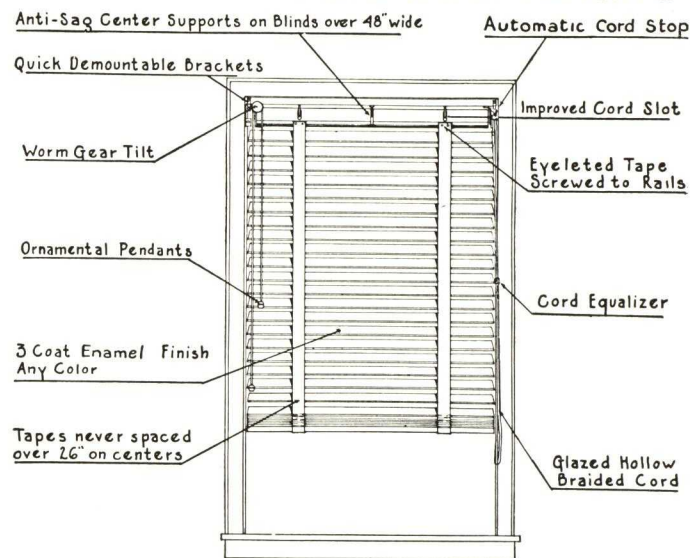
Cords—All cords are of the best grade of tubular woven glazed cord.



Minnesota State Office Building, St. Paul, Minn.

One of many public buildings where Warren's Venetian Blinds were specified and installed

WARREN VENETIAN BLINDS COMBINE ALL OF THESE IMPROVEMENTS



'Easy Lift' construction used on all Blinds over 40 sq. ft. in area.

All Hardware Cadmium Plated Steel.

All Parts and Workmanship
Guaranteed for one year.

The tubular weave eliminates twisting and snarling; the glazing prolongs the life of the cord.

Hardware—All parts are of heavy gauge auto body steel, cadmium plated to resist rust.

Automatic Cord Stop—A simple but effective friction brake, which instantly stops and holds the raising cord firmly, thus securing the blind at any desired height. An outstanding improvement over old style cord hooks.

Pulleys—Pulleys on all blinds are ½x¾-in. steel, and mounted on ½-in. shafts. Ball bearing pulleys supplied when specified.

Worm Gear Tilt—All blinds are provided with a positive action worm gear tilting device guaranteed to hold the slats at any angle in all sized blinds. It is of extremely simple construction. Tilting cords are finished off with ornamental pendants.

Anti-sag Center Support—All blinds over 48 in. in width are provided with center supports to insure against any sag in the tilting rails.

Side Guides—When desired, blinds can be furnished with a special channel side guide. Pins attached to each end of every sixth slat engage into a ¾x¾-in. guide channel.

Finish—All wooden parts are given full three-coat special enamel finish which is extremely durable. They can be had in a wide range of standard colors or finished to match sample submitted. Ladder tapes and cords can be dyed to match the slats.

Typical Installations

Partial list of buildings equipped with Warren's Venetian Blinds:

The Baker Building, Minneapolis, Minn.
Nicollet Hotel, Minneapolis, Minn.
Flour Exchange Building, Minneapolis, Minn.
Minneapolis Post Office, Minneapolis, Minn.
State Office Building, St. Paul, Minn.
St. Thomas College, St. Paul, Minn.
The St. Paul Hotel, St. Paul, Minn.
The Lowry Hotel, St. Paul, Minn.
St. Paul Athletic Club, St. Paul, Minn.
The Wilshire Hotel, Detroit, Mich.
The Curtis Building, Detroit, Mich.
Film Exchange Building, Detroit, Mich.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Milwaukee Athletic Club, Milwaukee, Wis.
Forestry Service Building, Madison, Wis.
Tolerton & Warfield Co., Sioux City, Iowa.
Medical Arts Building, Duluth, Minn.
Roosevelt Hotel, New Orleans, La.



WARREN'S WOOD FABRIC SHADES

Warren's Wood Fabric Shades for Industrial or Porch installation are available in all standard widths and in practically all regular tints. Write for details and prices.

WESTERN VENETIAN BLIND CORPORATION

EASTERN OFFICE AND FACTORY

949 Dell Avenue, NORTH BERGEN, N. J.

Service from Coast to Coast—Agencies in All Principal Cities

CABLE ADDRESS

Westblind

FACTORY LOCATIONS

WESTERN (GA.) VENETIAN BLIND CORP., ATLANTA, GA.

WESTERN (ILL.) VENETIAN BLIND CO., 351 East Ohio Street, CHICAGO, ILL.

WESTERN (MO.) VENETIAN BLIND CO., 2125 Indiana Avenue, KANSAS CITY, MO.

WESTERN VENETIAN BLIND CORP., 926 Howard Street, SAN FRANCISCO, CALIF.

NEW YORK DISTRICT SALES OFFICE: 230 Fifth Avenue, NEW YORK, N. Y.

ADVANTAGES OF WESTERN VENETIAN BLINDS

For Homes, Offices, Banks, Libraries, Schools, Hospitals, Auditoriums, etc.

Why Western Venetian Blinds?

Daylight Without Glare—Western Venetian Blinds permit an even diffusion of light all over the room. Thus, glare, streaked patterns, "twilight zones," dark corners and shadows are eliminated, protecting the eyesight of the occupants of the room.

Ventilation Without Draft—Western Venetian Blinds regulate ventilation by deflecting air currents upward. This eliminates drafts without sacrificing fresh air or necessary light. An obvious aid to health, especially in nurseries, bedrooms, schools and hospitals.

Temperature Control—Western Venetian Blinds aid in regulating temperature. They shut out heat by deflecting the direct rays of the sun as they enter the room. In winter they keep the room warmth from escaping, the wood slats being an excellent non-conductor of heat. Yet, at all times they permit adequate ventilation.

Architectural Harmony—Western Venetian Blinds are now being supplied in a variety of colorful hues, in wood parts, tapes and cords. The present vogue for color suggests a score of new uses to architects, contractors and interior decorators. Western Venetian Blinds in color bring out the true tone values of your decorative plan. The foremost decorators of the country are installing Western Venetian Blinds in many of America's finest homes.



Distinctive Interior Decoration—

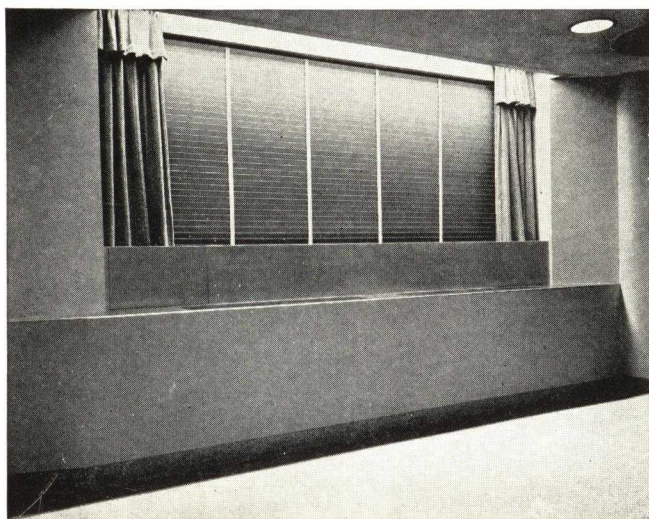
Western Venetian Blinds provide a soft, perfectly controlled light which enriches and brings out the full color tones of rugs, drapes and furniture in a charming manner. Can be obtained in any color or shade. Our color chart will be brought to you by our representative, or mailed on request.

Privacy and Protection—Western Venetian Blinds meet every requirement for absolute privacy. By angling the slats it is impossible for anyone on the outside to see into the room. Street lights, electric signs, etc., cannot be an annoyance at night. In addition, Western Venetian Blinds present a hindrance to burglars, prowlers or housebreakers.

Quiet—Western Venetian Blinds keep noises down to a minimum even in a brisk wind, when furnished with fibre channel glides. They are quiet and perfectly noiseless in operation. Moreover, they shut out traffic noises and other disturbances to a marked degree.

Economy—Western Venetian Blinds are economical. The original cost is the only one for a long period of time. Western Venetian Blinds, over a period of fifteen years, cost 46% less than the old obsolete shades and awnings, yet serve the purpose of both. Repairs, winter storage, and frequent replacement are practically unknown where Western Venetian Blinds are used. Cleaned quickly and easily with our exclusive *Venetian Blind Cleaning Brush*.

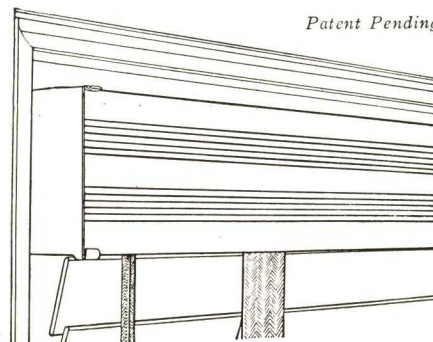
FOR 30 YEARS—MAKERS OF OUTSTANDING VENETIAN BLINDS



The New "Enclosed Head" Bracket

Takes the place of an enclosed head blind. Permits instant access to all moving parts, no screws, no levers, a flick of the wrist and the front is off.

Furnished with either a plain or beaded fascia.



TYPES OF WESTERN VENETIAN BLINDS

The types of Western Venetian Blinds, illustrated on this page, are constructed to fit practically every type of window opening, as well as transoms, circles and doors.

Likewise, ornamental openings are readily treated. The facilities of this company for the treatment of unusual and difficult openings are well known.

Type "B"—Single Lift Type (Straight Lift)—For windows less than 60 in. wide and for windows from 60 to 80 in. wide, which contain 35 sq. ft. or less.

Type "B" Single Lift Western Venetian Blind is ideal for the narrow type window. Type "B" is particularly recommended for homes, apartment houses, hotels and dwellings where narrow windows are used. Type "B" because of its narrow characteristic, is particularly adaptable for striking and individual color effects. Because of this fact, Type "B" installation can readily become the focal point of any room.

Inverted Type "LO" Oscillating Roller Type—For any size window, width or area. Should be used in all cases on windows containing over 100 sq. ft.

Our Oscillating Roller Type is designed for very large openings; and for all openings where great ease in operation and freedom from cord replacement is desired. Blinds are lifted by means of a wire cable wrapping about a roller, oscillating to prevent piling up of cable. Rollers is operated by one sash cord, winding on operating spools, the cord traveling up with bottom rail, thereby eliminating surplus cord length. Wear and tear is eliminated and life of blind prolonged due to easy and precisely controlled mechanism. Movable parts are enclosed in wood or metal housing with removable front, giving access to working parts, and a finished appearance to top of blind.

Type "A"—Double Lift Type ("Easy-Lift")—For windows 80 in. or more in width which contain more than 35 sq. ft. Not recommended for windows containing more than 100 sq. ft.

Our Type "A" Double Lift West-

ern Venetian Blind is ideal for large windows, such as found in all banks, public buildings, large show windows, dust backs for large windows, hotel lobby windows, libraries, school buildings, etc.

Type "A" blind is raised by four cords. The arrangement of cords causes the blind to raise six inches for each one foot pull. This means a minimum of effort is required to raise the Type "A" blind. Hence, the name "Easy-Lift."

Type "F"—Irregular Shaped Types with Stationary Slats (Non-operating)—This irregular shaped type is often called a "circle-head" blind. Designed primarily to cover the curved or irregular arched openings above the rectangular parts of windows and doors. This type of blind is made with stationary slats tilted to a 45 degree angle, housed into a solid circular laminated frame $\frac{5}{8} \times 1\frac{3}{4}$ in. in section.

Type "SUNB"—This type carries the same specifications as Type "F" with the following additions: The slats are all fanned out from a common center. With this extreme rigidity there is no need for tapes or center supports. This fan type design is one of great beauty and may be used effectively in the interior decorative scheme of a large room with circle-head windows or doorways.

Type "SKY" (Skylight) Venetian Blinds—The slats shall be suspended from a specially built frame. This frame shall consist of a series of cross members $\frac{7}{8} \times 2\frac{1}{8}$ in. of suitable number to prevent sagging. Tilting bars shall be correctly placed at right angles and attached to each slat not more than 36 in. apart, causing all slats to tilt simultaneously.

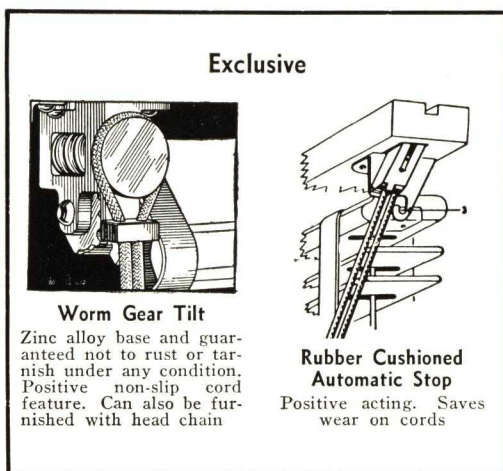
Type "MET" All Metal Venetian Blinds—Suitable for any window, preferably for outside use. Blind to be built on either type "LO" (Regular) or type "LO" (Inverted).

Slats—Shall be .032, 20 gauge aluminum $2\frac{3}{8}$ in. wide with lip on edges.

Bottom Rail, Tilt Rail and Housing for Mechanism to be of Port Orford Cedar sprayed to match slats.

Tape—To be solid Bronze or Aluminum (Extra, Optional).

Finish—Natural Aluminum Finish.



10 POINTS OF STRUCTURAL SUPERIORITY

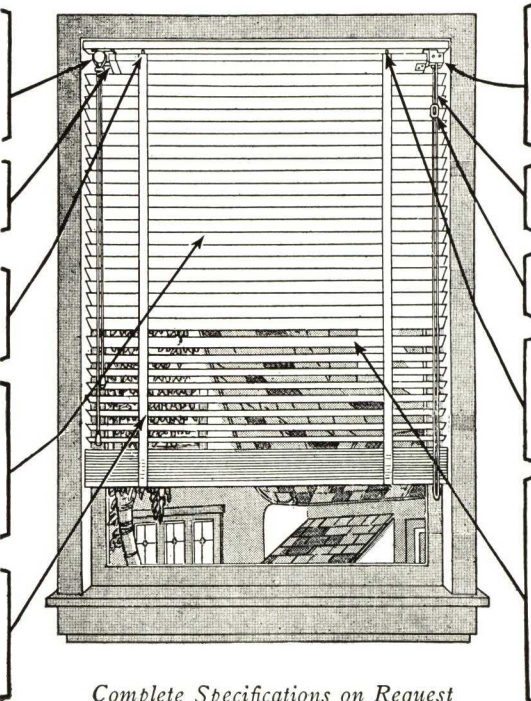
1. New Tilting Device—New worm gear tilt exclusive to WESTERN Venetian Blinds enables you to keep slats locked firmly in desired position. Operating device furnished in accordance with weight of the blind. Even largest blinds operate easily.

2. Removable Head Brackets—Make it possible to take blind down and reinstall easily.

3. Exclusive Tilt Rail—Tilt rail so bored that blinds pull up freely without wearing the cord no matter at what angle they are tilted—exclusive to WESTERN.

4. First Grade Port Orford Cedar—Slats and other wooden parts are made from clear selected Port Orford White Cedar. (No seconds permitted.) Kiln dried in our own plant to prevent warping. Guaranteed not to split, break or warp from ordinary usage during entire life of blind.

5. Imported Tape—Carr's imported interwoven tape—highest grade in the industry—is used in WESTERN Venetian Blinds for greatest durability. Now obtainable in fifteen standard colors. Domestic tape supplied when requested.



6. New Automatic Cord Stop—Exclusive to WESTERN Venetian Blinds enables you to raise or lower blind to any height desired without tying or untying cord, and which guarantees positive action by merely moving cord to left or right.

7. Cords Won't Twist—All cords filled braided $\frac{1}{8}$ in. diameter, glazed to prevent wear. This assures long life.

8. Slats Always Even—A special cord equalizer makes blind raise evenly no matter whether one or both strands are pulled.

9. Ball Bearing Rollers—Rollers; over which all lifting cords pass are steel, double race ball-bearing type, except where climatic conditions make use of fibre desirable. Even a child can easily raise or lower a WESTERN Venetian Blind.

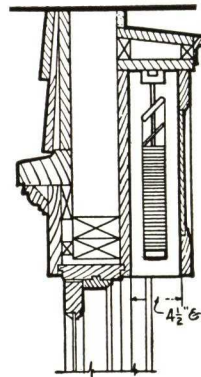
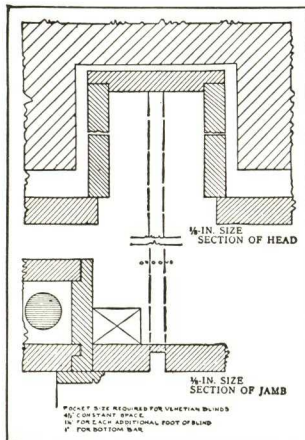
10. Durable Finish—Each slat receives a series of coats of special high-grade enamel by a patented process which insures an even and uniform coating not possible by other methods. Scientific research by nationally-known authorities strongly recommends No. 82 Standard finish for best results in daylight control. See our standard color chart for additional finishes.

Complete Specifications on Request

INSTALLATION OF WESTERN BLINDS

Detail of Jamb and Pocket

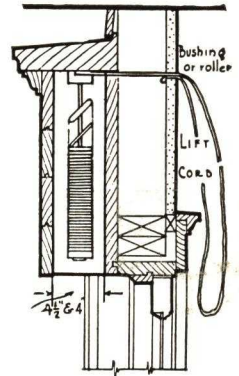
When below is followed, it will result in a most satisfactory installation of Venetian Blind, either outside, between screen and sash, or on the inside, giving a better service than any other blind of its kind.



Section Showing Blind Concealed Inside of Room

DATA FOR USE IN DESIGNING POCKETS

Type	Minimum pocket width			Accumulated space		
	2 3/8" slats	2" slats	1 1/2" slats	2 3/8" slats	2" slats	1 1/2" slats
"A"	4"	3 3/4"	3 1/2"	1 1/4" for each foot in blind height plus 3"	1 1/2" for each foot in blind height plus 3"	2" for each foot in blind height plus 3"
"B"	4"	3 3/4"	3 1/2"	1 1/4" for each foot in blind height plus 3"	1 1/2" for each foot in blind height plus 3"	2" for each foot in blind height plus 3"
"LO" Regular Oscillator	7"	7"	7"	1 1/4" for each foot in blind height plus 7"	1 1/2" for each foot in blind height plus 7"	2" for each foot in blind height plus 7"
"LO" Inverted Oscillator	7"	7"	7"	1 1/4" for each foot in blind height plus 6 1/2"	1 1/2" for each foot in blind height plus 6 1/2"	2" for each foot in blind height plus 6 1/2"
"U"	4"	3 3/4"	3 1/2"	1 1/4" for each foot in blind height plus 4"	1 1/2" for each foot in blind height plus 4"	2" for each foot in blind height plus 4"



Section Showing Blind Concealed Outside—Operating From Room

COLOR SELECTIONS

Western Venetian Blinds can be supplied in any color to match the decorative scheme of any room.

The greatest efficiency in light control is derived from Western Venetian Blinds enameled in colors that do not absorb the light, such as aluminum, the various shades of ivory or the very light shades of other colors.

If it is necessary to employ dark colors for a Western Venetian Blind in order to harmonize with the color scheme of a room, it is desirable to specify two-tone slats, making the surface of the slat which faces the window and reflects the sunlight, a cream color. The other side of the slat, as well as the hardware and bottom and top rails, which are seen from within, may then be enameled the dark color desired without losing the important sunlight reflection qualities. See our Standard Color Chart which will be furnished promptly on request.

The following table gives the comparative reflection values of various colors:

Aluminum	84%	Sage Green	40%
White	80%	Sky Blue	35%
Ivory	70%	Olive Green	20%
Buff	65%	Cardinal Red	20%
Black	5%		

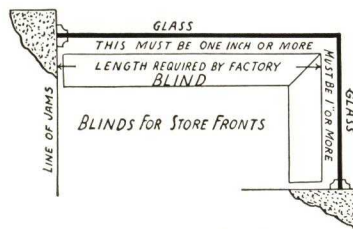
The difference between the percentages given and 100% indicates the light absorption.

Western Venetian Blinds are also supplied with cords and tapes in harmonizing colors to match the room and the color of the blinds. This is a point to remember when specifying colored Western Venetian Blinds. Tapes are now obtainable in twelve standard colors.

OPTIONAL FEATURES

(1) **Mitred Blinds**—These blinds are designed for conditions where two windows meet at an angle, such as store fronts, etc. Such blinds are mitred to allow free operation of each—maintaining minimum amount of operating clearance and eliminating light streaks.

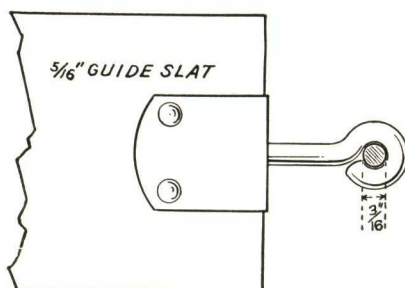
(2) **Brass Rods**—Brass clips attached to heavy guide slat and connected to rod by brass ring which prevents the blind from swaying in the wind. Recommended for outside use.



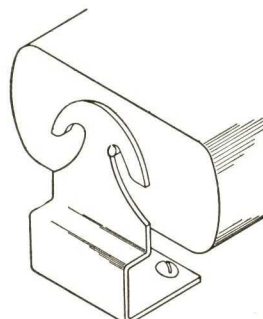
(1) Mitred Blinds

(3) **Sill Bracket**—This bracket, screwed to the sill holds the blind securely and noiselessly in lowered position.

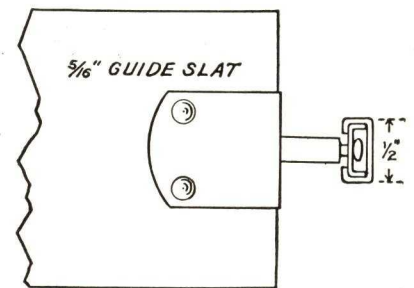
(4) **Standard Channel Guides**—Our standard channel guides are made of solid brass. Brass clips placed on heavy guide slats at intervals of approximately 18 in. and attached to brass slider in channel by a brass key which permits detaching at will, and which prevents billowing and swaying of the blind.



(2) Brass Rods



(3) Sill Bracket



(4) Standard Channel Guide

MEMORANDA

YARDLEY VENETIAN BLIND COMPANY

Specialized Woodworkers for 59 Years

COLUMBUS, OHIO

REPRESENTATIVES IN PRINCIPAL CITIES

VENETIAN BLINDS—FOR BEAUTY AND UTILITY



For more than half a century, the name YARDLEY has enjoyed an enviable reputation in the field of woodworking.

Venetian Blinds by YARDLEY are truly custom-made and embody simplicity, neatness, compactness and trouble-free operation. Their quality has been proved by many years of continual good service.

STANDARD SPECIFICATIONS OF YARDLEY IMPROVED VENETIAN BLINDS

Wood—Selected and well-seasoned Port Orford Cedar or Northern Basswood is used. Splitting and warping are practically eliminated through careful selection and rigid inspection.

Slat size $\frac{1}{8} \times 2\frac{3}{8}$ in. or 2 or $1\frac{3}{4}$ in. width
Head rail $1\frac{1}{8} \times 2\frac{3}{8}$ in. or 2 or $1\frac{3}{4}$ in. width
Tilts $\frac{7}{8} \times 2\frac{3}{8}$ in. or 2 or $1\frac{3}{4}$ in. width

Tapes—Of best imported English and domestic weaves, guaranteed against imperfections. Seventeen colors available without extra charge.

Cord-Tape Release—Permits easy removal of slats, tapes and cords for cleaning. Although this feature carries a slight extra charge it more than pays for itself in length of service.

Standard Cord—Glazed, No. $4\frac{1}{2}$, guaranteed perfect and offered in 15 colors.

Elevating Cord Brake—This feature allows blind to be stopped at any height and still leave cords hanging free without the necessity of a wall cord cleat.

Finish—An old base enamel offered in 15 colors, each guar-

anteed against checking and cracking. Lacquer finish is also available.

Hanging Brackets—Can be supplied to provide for every type of construction.

Hardware Parts—Of cadmium-plated steel unless otherwise specified. Brass, bronze or nickel sprayed finish is available.

Tilting Device—An improved worm-gear type, a feature of exclusive Yardley design, that is positive in action and holds blind at any angle desired. Bead chain operation can also be furnished.

Re-Order Service—Yardley maintains a permanent record of size of each blind, numbering each unit, so purchaser may at any time order either slats or tapes by stating serial number of blind.

Other Types—Besides the free-swinging type of blind, Yardley makes channel-guided blinds, oscillating roll-head blinds and blinds for circular and segment-headed windows. Blinds with metal slats and enclosed metal heads are also available.

A FEW OF THE MANY SATISFIED USERS OF YARDLEY IMPROVED VENETIAN BLINDS

Residences

Boake Carter, Philadelphia, Pa.
P. S. Dupont, Westover Hills, Wilmington, Del.
Robert Lazarus, Columbus, Ohio
Mrs. J. Ogden Armour, Traverse City, Mich.

Government

Post Office, Fort Lauderdale, Fla.
Police Court Bldg., Washington, D. C.
Gold School and Ancon Schools, Panama Canal Zone
U. S. Naval Air Station, Lakehurst, N. J.
Veterans' Hospital, Dayton, Ohio
State Capitol, Charleston, W. Va.
Navy Yard, Charleston, S. C.
Courthouse, Fort Worth, Tex.

Industries

Cadillac Motor Car Co., Detroit, Mich.
General Motors Bldg., Pittsburgh, Pa.
Wright Flying Field, Dayton, Ohio
Youngstown Pressed Steel Co., Warren, Ohio
Westinghouse Air Brake Co., Chicago, Ill.
WTAM Broadcasting Station, Cleveland, Ohio
DuPont-Longwood Farm, Wilmington, Del.

Clubs and Restaurants

Duquesne Club, Pittsburgh, Pa.
Baltimore Country Club, Baltimore, Md.
Plantations Club, Providence, R. I.
Midlothian Country Club, Chicago, Ill.

Institutions

Jefferson Hospital, Philadelphia, Pa.
Board of Education Bldg., Philadelphia, Pa.
Ohio State University, Columbus, Ohio
Villa Nova College, Philadelphia, Pa.
Industrial Bank, St. Louis, Mo.
Frick Library, New York, N. Y.

Buildings

Argonaut Realty Co. (subsidiary of General Motors), Detroit, Mich.
Grant Bldg., Pittsburgh, Pa.
Land Title Bldg., Philadelphia, Pa.
Jackson Tower, Jackson, Miss.
Minnesota Bldg., St. Paul, Minn.
Kanawha Bldg., Charleston, W. Va.
Court Square Bldg., Baltimore, Md.

Utilities

Detroit-Edison Co., Detroit, Mich.
Appalachian Power and Light Co., Charleston, W. Va.
Bell Telephone of Pennsylvania
Norfolk & Western R. R., Roanoke, Va.

Hotels

Belvedere Apartments, Cincinnati, Ohio
Fort Pitt Hotel, Pittsburgh, Pa.
Netherland Plaza, Cincinnati, Ohio
Ambassador Hotel, Atlantic City, N. J.
Royal York Apartments, Columbus, Ohio



A Yardley Blind For Every Requirement

ATHEY COMPANY

Perennial Window Shades and Disappearing Skylight Shades
6035-6045 West 65th Street, CHICAGO, ILL.

BRANCHES AND DISTRIBUTORS

BOSTON, H. E. Holbrook Company, 49 Federal Street
BUFFALO, Howard T. Cary, 293 Voorhees Avenue
CHICAGO, Wilson & Scott, Merchandise Mart
CLEVELAND, Consolidated Screen & Weatherstrip Company, 202 Columbia Building
DAYTON, Glawe Mfg. Co., 515 E. Herman Avenue
DETROIT, LeSage & Company, 1720 12th Street

HARTFORD, Hartford Wire Works, 90 Allyn Street
LOS ANGELES, CALIF., Jack Drew, 127 So. Normandie Avenue
LOUISVILLE, V. C. Glass Carpet Co., 1004 W. Main Street
MEMPHIS, Cheers Building Specialty Co., 884 Adams Avenue
MILWAUKEE, Willer Screen & Weather Strip Co., 1459 No. 40th Street
NEW YORK, Franklin H. Keese, 7 E. 42nd Street

PHILADELPHIA, W. D. Reading, Inc., 2202 Chestnut Street
ST. LOUIS, A. A. Klutho Co., 915 Syndicate Trust Building
ST. PAUL, Metal Weatherstrip Co., 503 Minn. Mutual Life Bldg.
SAN DIEGO, A. N. Baird, 1760 Kettner Boulevard
SPRINGFIELD, ILL., A. N. Krebs Co., 2201 So. 8th Street
TORONTO, Cresswell Pomeroy, Ltd., 989 Bay Street

CANADIAN OFFICE AND FACTORY: Cresswell Pomeroy, Ltd., 604 De Courcelles Street, MONTREAL

For our page on Weatherstrips, see File Index

ATHEY PERENNIAL WINDOW SHADES

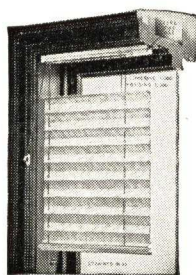
The Athey Accordion Pleated Window Shade has been on the market for over 17 years, the manufacture of same having been taken over by this company in 1920. Since then many important improvements have

been made so that the present shade is a perfected article in both materials and mechanism.

The cloth used is a herringbone weave coutil cloth, manufactured especially for Athey Shades, the thread count is 124x76 or 200 threads to the square inch, weight 1.98 lbs. to the yard. It is calendered to a smooth, dirt resisting finish; the lasting quality of Athey Shades is obtained from the cloth itself and not from artificial filling materials.

Athey Shades are furnished in the following colors: tan ecru, orange ecru, light green, dark green, taupe, black, and white, all colors being of sunfast dye.

The cloth is pleated in 1½ in. folds, stitched along the edges of each fold thereby assuring the proper collapsing of the pleats when the shade is operated. When collapsed, very little space is occupied by the shade, about 3% of the total height.



Athey

Athey Shades are decorative, enduring and practical and are the intelligent solution of light control and ventilation as they can be lowered from the top as well as raised from the bottom, thereby permitting the shading of any part of the window as desired.

Construction and Operation—The mechanism consists of a steel cord case 1½x1½ in. at the head, painted in duco to match the color of the cloth. In this cord case are the brass rollers over which the cords operate and the brass adjusting sleeves for tightening the guide wires. The shade is gravity operated, weight bars being used at the top and bottom of the shade. These bars are invisible, being covered by the hem of the shade. The cord used is a hollow braided cord, all attachments made to the bars by the use of screws in the ends of the cord, no knots being used in the assembly. Guide wires, sill plates and cordhooks are all of polished brass.

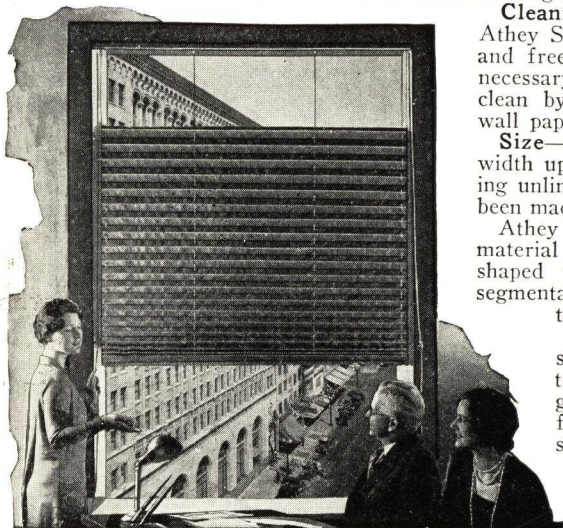
Special finishes for residence work, lacquered in gold, silver, copper or any metallic colors, also chintz faced shades of cloth as may be selected by the purchaser.

Cleaning—The constant operation of Athey Shades tends to keep them clean and free from dirt. When cleaning is necessary, brush off surface, dust and clean by same method as in cleaning wall paper.

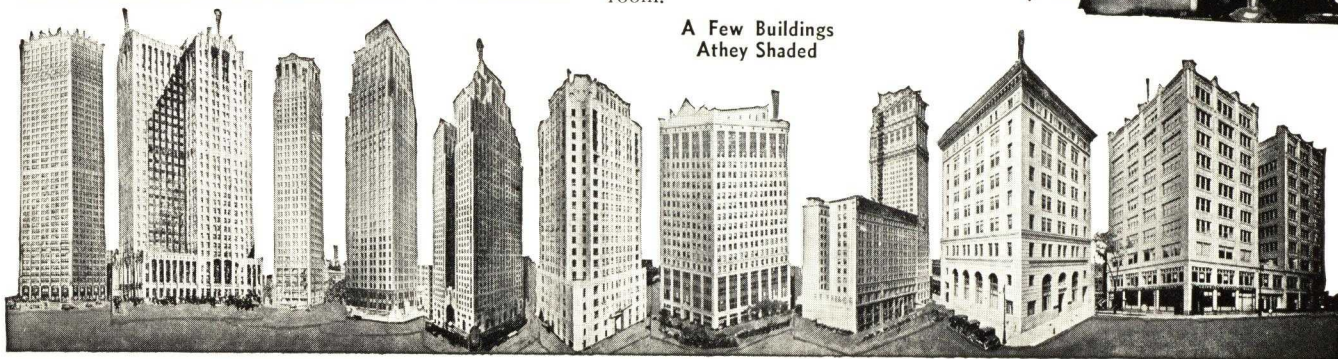
Size—Shades can be made in any width up to 17 ft. wide, the height being unlimited, in many instances having been made as high as 20 ft.

Athey Sunburst Shades of the same material can be made for irregular shaped window heads and transoms; segmental, elliptical, gothic or rectangular.

Natural Ventilator—The shade acts as a natural ventilator when the sun is on the glass. By lowering the window from the top and raising the shade from the bottom, the intermediate air becomes superheated causing an upward current which ventilates the room.



A Few Buildings
Athey Shaded



ATHEY DISAPPEARING SKYLIGHT SHADES

The Athey Skylight Shade is used to shade skylight openings, greenhouses, natatoriums or any other type of ceiling opening where a shade might be required. With the variety of non-fading colors available, it is possible to secure this shade in a light color fabric to eliminate glare and diffuse light or in an opaque fabric for purposes of darkening auditoriums or laboratories for projection work.

All materials used in this type of shade are the same high quality as those used in the regular Athey shade shown on preceding page. The Athey Skylight shade, however, operates in a horizontal position and instead of the cords and wires running through the cloth, the pleats are suspended below the taut brass wires by means of bronze clips and the cords operate above the shade. When the shade is extended across the opening, all cords and wires are invisible from below. When the shade is collapsed it occupies about 3% of the length of the well affording practically full use of light coming through skylight opening on dark days.

The cost of skylight shades varies with the installation conditions. The most simple and economical installation is to have the shade operated from a point directly below the well—the operating cord loop dropping down from one corner of the well to about 6 ft. from the floor where it may either hang free or be fastened to any convenient wall or pillar.

When the operating cords below the well are objectionable, they can be diverted from the well to the nearest wall or column on a direct line, providing the distance is not more than 10 ft. When necessary to operate the shade from a greater

distance, cables are used and operation effected by the use of a geared winch which naturally is more expensive to install.

In making preparations for Athey Skylight Shades, when laying out the building plans, we ask that architects consider where the shade is to be located and to keep this space clear of radiators and piping and eliminating hanging rods, if possible. If piping for skylight radiation or sprinkling systems is necessary, locate it as close to the wall as possible and preferably at

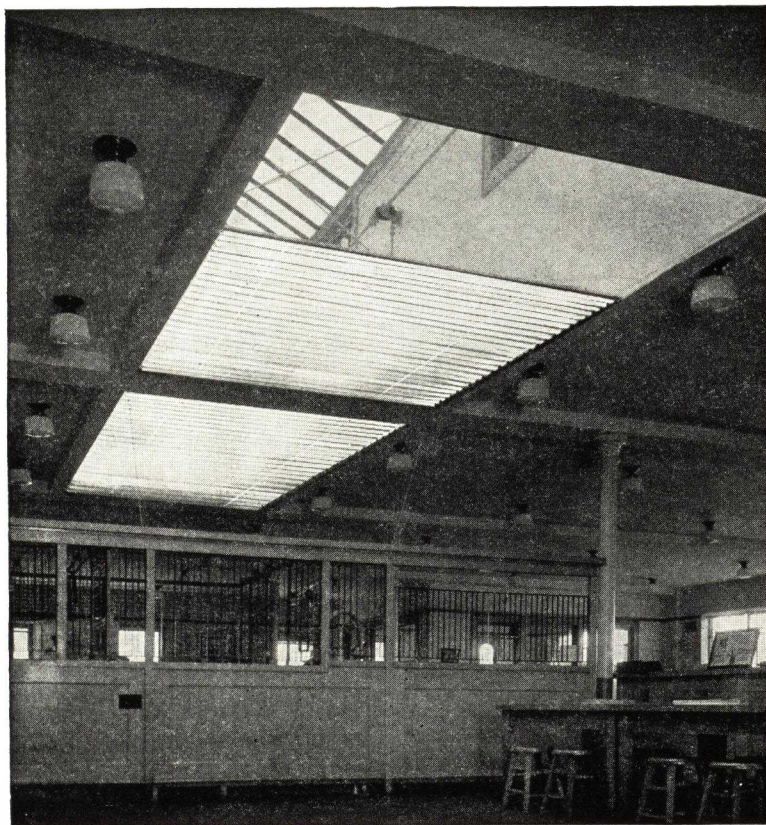
the narrow end of the well. All skylight shades are made to the narrowest width of the well and operate the long way. Where operating cords are to hang free, we suggest the shade be located in the lower 6 ins. of the well. Where cords are to be diverted to any great distance, we suggest the shade be located so cords can run in a direct line to a point where they are to be diverted downward.

If skylight wells are of concrete we suggest the insertion of 4 in. wood grounds at each end to provide anchorage for the shade as this will simplify installation considerably.

In shading greenhouses, natatoriums or other glass roofed buildings, the same type of shade is used; however, if the pitch of the roof is as great as 45 degrees, the installation can be simplified as the shades will lower of their own

weight, thus dispensing with one set of draw cords.

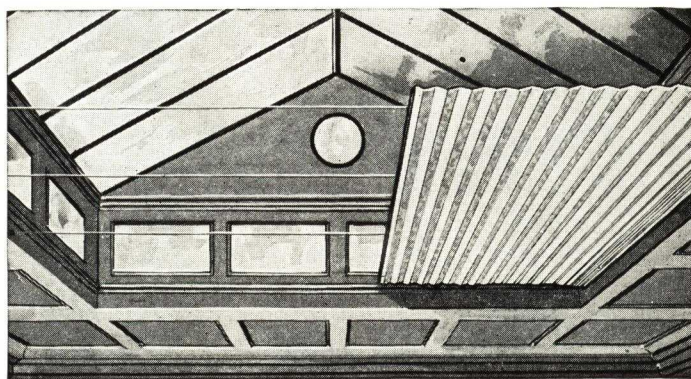
Owing to the excessive number of cords that would be necessary to operate the shade from both ends of the well towards the middle, the shade operates from one end only, the other end anchored to the well. Send your plans direct to Chicago for estimate or confer with our nearest representative.



Offices of Bowman Dairy Co., Chicago, Ill.



The E. H. Allen Private Natatorium, Chicago



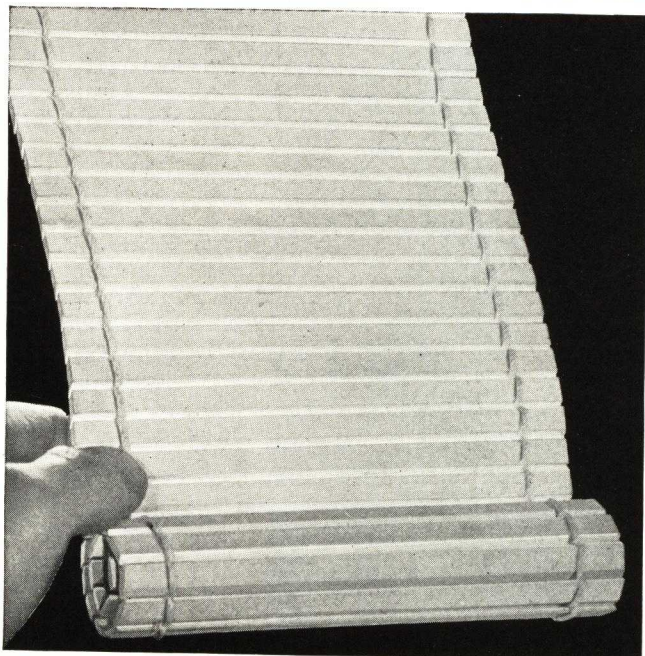
Skylight Shade

THE AEROSHADE COMPANY

3992 Oakland Avenue
WAUKESHA, WIS.

AGENTS IN PRINCIPAL CITIES

TEMLITE WOOD-FABRIC WINDOW SHADES



The New E2 Fabric Shown Above—Composed of splints only $\frac{1}{4}$ in. wide. With its 33 openings in every foot of height, it provides an abundance of well diffused light.

Its beveled edges block direct sunlight, yet reflect good light far back into rooms. A practical fabric which meets exacting requirements of offices, schools, hospitals, laboratories and factories which need an extra amount of light.

Heavy Duty Fabric—A hard-service favorite in factories throughout America. Made from $\frac{7}{8}$ in. splints. Standard Weave (square edged splints) suitable for use with diffusing glass. Suntite Weave (beveled splints) generally used with clear glass—eliminates "barred" light.

Where Used—Temlite Ventilating Shades are ideal equipment for most every kind of public, institutional, commercial or industrial building—any place where protection against sun's heat and glare must be combined with good light, ventilation, appearance and durability.

Construction—The fabric consists of thin basswood splints woven together with best fish net twine—heavy mouldings at top and bottom. Operated by cords and automatic lock pulleys which hold shade at any desired height. Lower ends of raising cords roll up with shades—no cords to dangle below sills.

Features—Good light, gently diffused over large area. Cooler rooms—heat effectively blocked and reflected back through the windows.

Full ventilating.

Most economical. Lowest cost per year.

Practically no maintenance—many in use over 20 years.

Banish awning trouble.

Improved appearance.

For Every Type of Sash, Monitor or Skylight—

On double-hung or projected sash, shades are usually hung direct to the sash or trim.

On center-pivoted windows, long brackets suspend shades away from sash to clear open ventilators, guards protect shades from damage by ventilators and guide cords draw lower ends of shades toward sills. All fixtures fastened to muntin bars—we loan punch to punch necessary holes. Skylight shades roll on T bars or are suspended on wires.

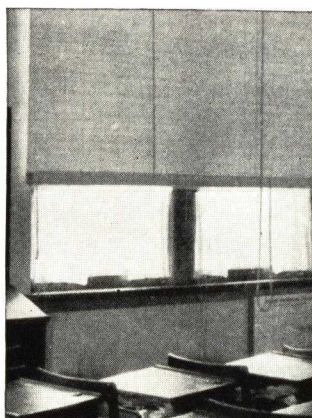
Any Finish—Any Width to 20 Feet—Stain, aluminum or enamel finishes are available. Temlites are made-to-order only in any width up to 20 feet and in almost any height.

Estimates—Our engineers, with 25 years' experience in industrial shading, will willingly co-operate in solving your shading problems and supplying estimates.

When inquiring, please send specifications of sash or blue prints and state whether glass is clear or diffusing.



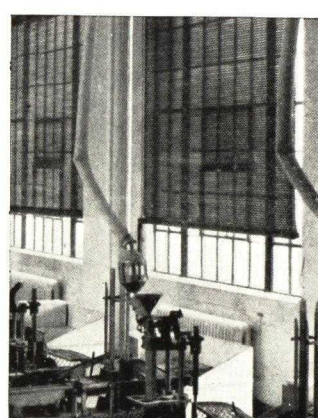
Provide Good Light and Sun Protection for Exacting Work



Good Light, Ventilation, Easy Control, Great Economy



Perfectly Adapted for Most Every Type of Monitor and Skylight



Have Protected Machines, Processes and Workers for 25 years

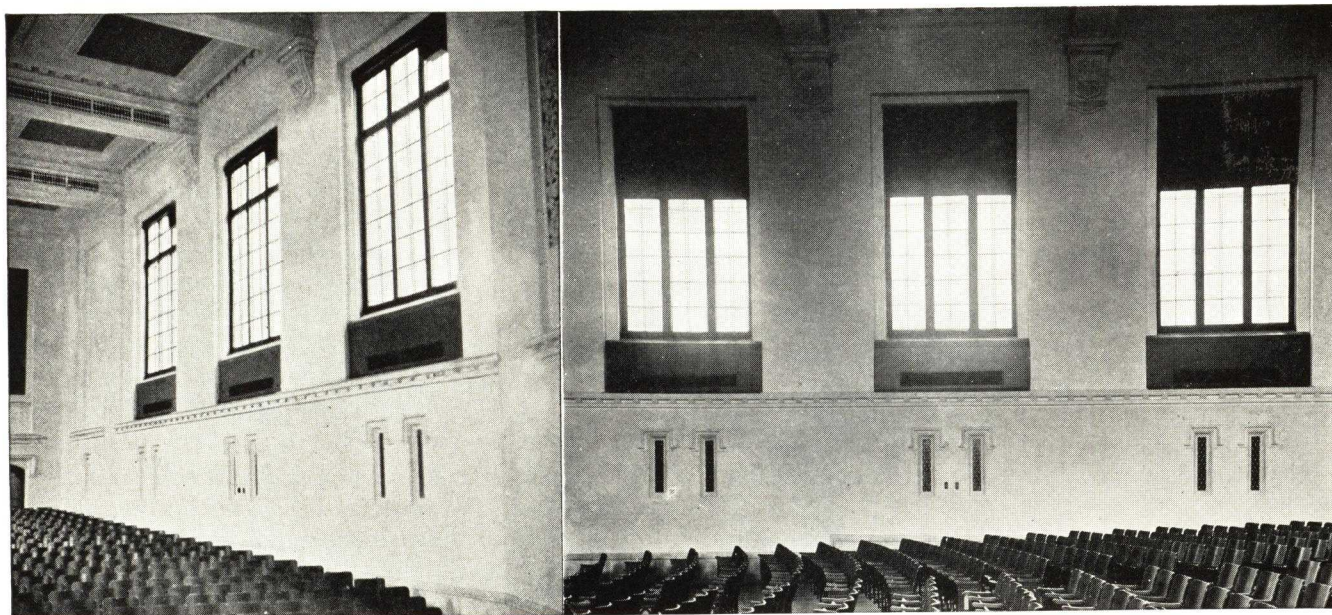
ESTABLISHED 1909

BABCOCK-DAVIS CORPORATION

Iron, Steel, Mechanical and Electrical Specialists

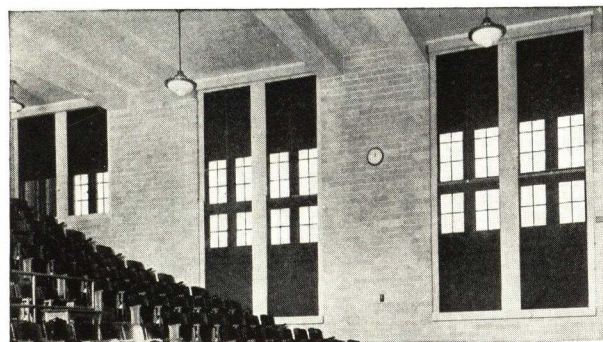
474 Dorchester Avenue, BOSTON, MASS.

For other Babcock-Davis pages, see File Index

MOTOR DRIVEN LIGHTPROOF CURTAINS

Light Proof Curtains Open and Partially Closed—Mount Pleasant Regional High School, Providence, R. I.
Individual motor drives operating from one or more stations

By operating a switch at the desk all windows are covered with Lightproof Curtains. Used in conjunction with the combination blackboard and projection screen at right. Installations have been made at Massachusetts Institute of Technology, Wellesley and Harvard Colleges. Curtains can be arranged to operate individually or collectively.



Divided Motor Lightproof Curtain Partly Closed
These curtains are "Grouped Type" operated from one power unit.
Installed at Wellesley College

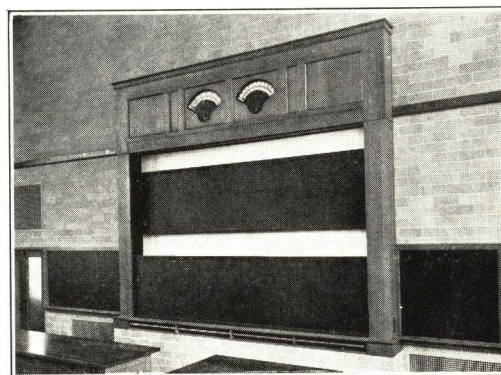
**MOTOR DRIVEN BLACKBOARD WITH PROJECTION SCREEN**

Illustration above shows blackboard and part of screen. By turning the rod below the blackboard one or both blackboards may be raised or lowered out of sight leaving the projection screen exposed.

Send us your problem (before construction is started if possible) and let our engineering staff work with you on proper clearance, framing and architectural details.

COLUMBUS COATED FABRICS CORPORATION

DEPARTMENT SC

COLUMBUS, OHIO

For Wall-Tex Washable Wall Covering, see File Index

BONTEX

Washable Window Shade Cloth

THREE TYPES—27 PATTERNS—HIGHEST QUALITY PYROXYLIN SHADE CLOTH

Bontex does more than meet the most exacting requirements of quality in shade cloth. It fits into the architect's ideas of modern planning. It gives him colors, patterns and designs for a wide range of decorative needs and provides three types of shade cloth for *properly controlling daylight* in any room, whatever its use may be. Thus Bontex Shade Cloth of highest quality provides a more useful everyday service for rooms and buildings of all kinds. Service at low cost per year.

Controlled Daylight with Bontex

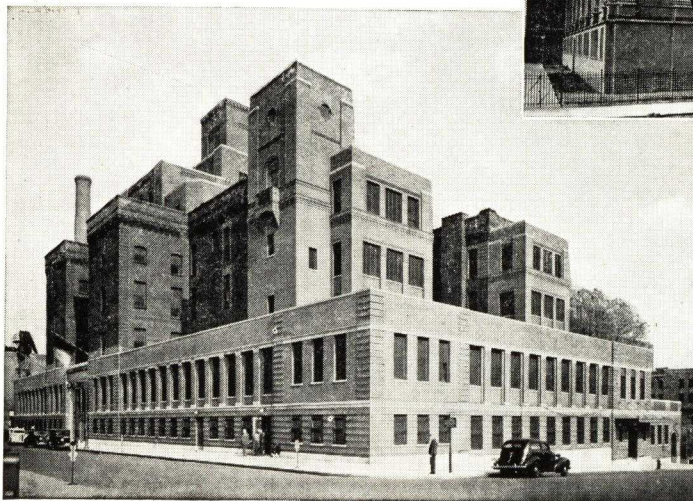
The function of the window shade is an all-important consideration in the manufacture of Bontex. Controlled daylight with Bontex means light of the right intensity—no sun glare—no disturbing light reflections from varnished, enameled, metal or other highly reflective finishes in common use.

Bontex provides tempered sunlight—toned down to the right intensity by three types of shade cloth to meet specific needs—for less eyestrain in schools, for restfulness of patients in hospitals, for higher efficiency in laboratory or office, for greater comfort in the home, for each and every daylighting requirement in any building or room.

Bontex TRANSLUCENT Shade Cloth lets in maximum light without glare. Bontex SEMI-OPAQUE provides a softer, more diffused light. Bontex OPAQUE, absolutely black, excludes all light.

Below:

Lincoln Hospital and Home, Bronx, N. Y.,
Equipped with Bontex Shades

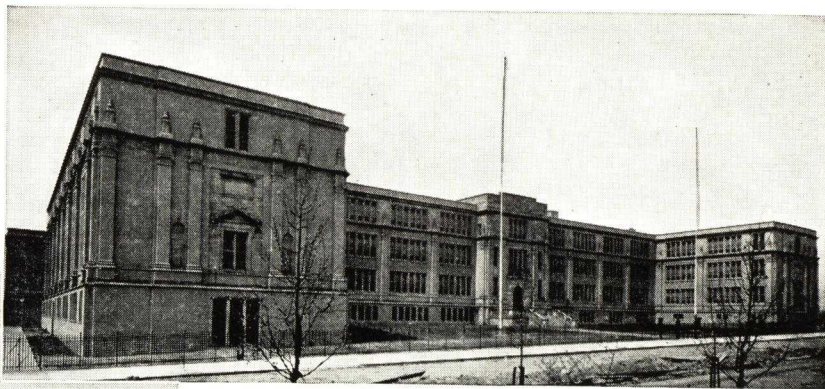


Durable, Scrubbable, Colorfast

Bontex pyroxylin-impregnated shade cloth has never been known to pinhole, fray or crack. It is built to endure beating sun, wind and rain, and hard everyday usage. Can be scrubbed twenty times or more with soap and water and a brush without impairing the quality or original finish. Tested and approved by the Delineator and Lux Laboratories and proved colorfast by the Florida Test Service. Its quality is guaranteed by the Government label.

The Economical Shade Cloth

The long life of Bontex and its small extra cost clearly make it an economical investment. Figuring the cost of cutting, measuring and installing as part of each replacement, there is little to be saved by skimping the quality of shade cloth. The real saving comes by avoiding frequent replacement—a saving made possible by time-tested Bontex quality.



Bontex Shades Were Installed in this Large, Modern Bayside High School, Bayside, L. I., N. Y.

Write for Sample Book

Sent free to architects on request. Shows the complete line of 12 plain colors, 5 beautiful corded designs, 5 duplex colors, and 5 modern printed patterns, translucent, semi-opaque and opaque black.



E. I. DU PONT DE NEMOURS & CO., INC.

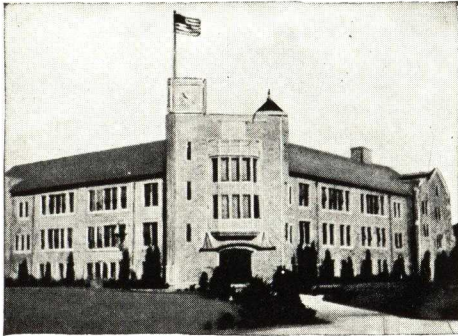
Du Pont "Tontine" Washable Shade Cloth
NEWBURGH, N. Y.

THE IMPORTANCE OF THE PROPER SELECTION OF SHADES TO THE ARCHITECT AND BUILDING OWNER

Architects have always realized the importance of the proper selection of window shades, as the color of the shade should be harmonious with the inside as well as the outside color scheme of a building.

Du Pont "Tontine" owes a lot to American architects,

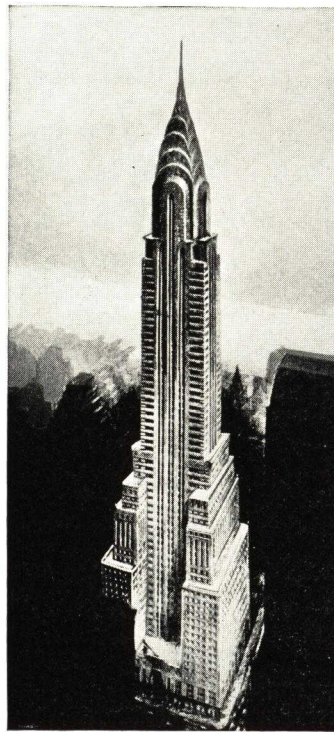
for they were the first to be impressed with the fact story behind du Pont "Tontine" and specify it for buildings built in the boom period between 1923 and 1930. Women have followed the lead of this preference by the architectural profession.



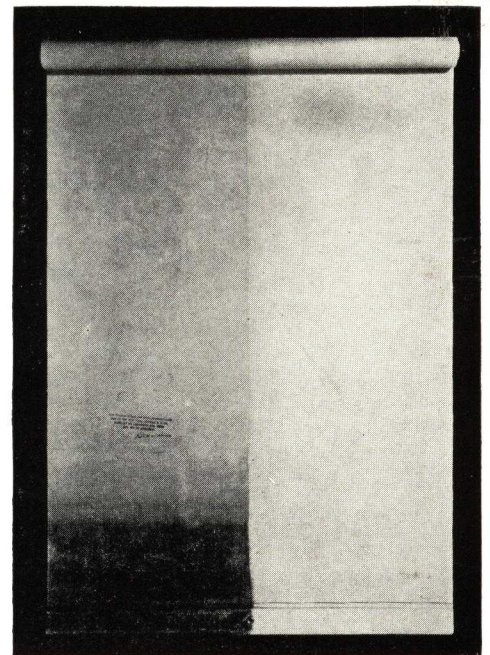
High school at Pelham Manor, N. Y., has proved the architects made a wise choice when they specified "Tontine."



The Hotel Commodore, New York, washes its "Tontine" shades regularly.



The Chrysler Building, New York City, washes its du Pont "Tontine" shades on a regular schedule.



This "Tontine" shade has seen nine years service. It has been half washed.

SOME OF THE ADVANTAGES OF "TONTINE"

(1) **Washable**—Du Pont "Tontine" is truly washable; washable with a brush, soap and warm water.

(2) **Durable**—Du Pont "Tontine" is rugged and durable, built to stand fraying wind pressure in high buildings or in the home.

(3) **Color-fast**—Du Pont "Tontine" is a beautiful piece of shade cloth, and color-fast. Replacements do not jar the eye with off-color blocks of new shading.

(4) **Translucent or Opaque**—Du Pont "Tontine" is trans-

lucent. While it bars glare, it admits toned sunlight. "Tontine" also may be opaque.

(5) **Wide Range of Colors**—Du Pont "Tontine" is available in a wide range of translucent and opaque colors, and in the duplex type, giving the architect wide latitude for his choice.

(6) **Economical**—Du Pont "Tontine" is only a few pennies higher than ordinary shade cloth, but its cost, figured against its long life and enduring good looks, makes it truly economical.

A listing of du Pont "Tontine" installations would read like a Blue Book of America's fine buildings. It is on performance in these buildings that du Pont "Tontine" rests its case.

Architects not familiar with du Pont "Tontine" or its performance story will be referred to architectural firms and building managers who have closely observed du Pont "Tontine."

For samples and full information write to E. I. du Pont de Nemours & Co., Inc.

Department S. C.



Newburgh, N. Y.

STEWART HARTSHORN COMPANY

ESTABLISHED 1860

Window Shade Rollers and Window Shade Cloths

250 Fifth Avenue, NEW YORK, N. Y.

SUBSIDIARIES

OSWEGO SHADE CLOTH COMPANY

OSWEGO, N. Y.

CALIFORNIA SHADE CLOTH COMPANY

SAN FRANCISCO, CALIF.

AMERICAN SHADE CLOTH COMPANY

CHICAGO, ILL.

DETROIT, MICH.

COLUMBUS, OHIO

HARTSHORN DEALERS

We shall be glad to recommend to you a reliable Hartshorn dealer in your community.

Hartshorn dealers are practical business men who have found that quality pays better than low prices. Their prices will be

based on good materials plus reliable workmanship plus a fair profit. There may be dealers in your city who will quote you lower prices than the Hartshorn dealer, but in the end you get just what you pay for.

HARTSHORN WINDOW SHADE ROLLERS AND WINDOW SHADE CLOTHS

Specializing in Shade Cloth and Rollers

STEWART HARTSHORN COMPANY specializes in the manufacture of automatic spring rollers and shade cloth for use in window shades. All of their efforts and inventive genius are directed to the improvement of the quality and mechanical parts which go into making an efficient window shade.

Hartshorn Shade Rollers Since 1860

The Hartshorn Company manufactured the first automatic spring shade roller ever made in 1860. For over three-quarters of a century, they have been improving on the original design and have been solving problems in this field given to them by architects and engineers.

Hartshorn Window Shade Cloth

Nearly twenty-five years ago, STEWART HARTSHORN COMPANY purchased the Oswego Shade Cloth Company which had at that time been manufacturing high quality shade cloths for over thirty years.

Hartshorn Spring Awning Rollers

In addition to manufacturing window shade rollers for residences and other types of buildings, the Hartshorn Company make a variety of automatic spring rollers for automobiles, railway cars, insect screens, etc. One of the most important is their awning spring roller which quickly rolls the awning up, working on window shade roller principle.

HARTSHORN WINDOW SHADES

Their Importance to the Occupants and the Building

Control of Light by Proper Shading

Hartshorn shade cloths are made in a variety of grades and colors. Among the grades listed opposite are shade cloths to control any lighting problem. We made translucent, semi-opaque, opaque and lightproof shade cloths. Colors used in each of the grades also vary in opacity. Light translucent colors let maximum light in but keep out glare. Medium and dark opaque colors and duplex combinations keep out glare and darken the room.

Hartshorn Window Shades Can Keep Out Glare or Keep Out Light

Joanna Cambric, Oswego Tint Cloth, Washable Diana Cloth and Hartshorn Satin Finish Cloth are translucent in the lighter colors, semi-translucent in medium colors and opaque in dark colors and duplex combinations. Chouaguen Hand Made Opaque and Oswego Opaque Cambric are semi-opaque in light colors and opaque in medium and dark colors and duplex combinations. Vulcan Shadowless Triplex is absolutely opaque and lightproof in all colors and duplex combinations.

Shades Can Keep Out Heat in Summer and Cold in Winter

Depending on type of shade cloth used, rooms with window shades can be kept from 10 to 30 degrees warmer in winter and cooler in summer. It has long been common practice to pull window shades down completely during cold winter nights and hot summer days. By doing this an air pocket is formed between window and shade, keeping warm air of the room from contact with the cold windows in the winter and keeping the hot rays of the sun from entering the room in the summer.

Relation of Shades to Air Conditioning

Research in conjunction with general air-conditioning manufacturers, has produced a special type of shade which adds to the efficiency of air-conditioning units.

Importance in Color Scheme of a Building

There is nothing more attractive than a building or residence where the window shades have been chosen so that their color and texture harmonizes with the building. Some tenants like to install innovations in color and design which may be attractive when seen from the interior of the tenants' rooms but which detract from outside appearance of the building. For this situation, two sets of shades may be installed—one color to match building exterior and the other to match the interior color scheme.

Preference as to Color

The architect should pay as much attention to the color selection of shades in a residence as he does to the exterior color of the house or the color of blinds or trim. Bedrooms should have two sets of shades—one dark opaque or semi-opaque color to be drawn in the nighttime and early morning and one light cheerful neutral color for daytime. In living rooms, dining rooms, etc., the trend is to light cheerful colors that let in light but keep out glare. In sun rooms, kitchens and pantries, vivid bright colors are most popular. STEWART HARTSHORN COMPANY manufactures two types of shade colors in their better grade cloths: solid color shade cloth with the same color on both sides; Duplex (2) color shade cloth with one color on one side of cloth and another color on the other side.

TYPES OF SHADES AND ROLLERS FOR VARIOUS TYPES OF BUILDINGS

Type of Use	Hartshorn Rollers		Hartshorn Shade Cloths						
	Wood	Metal	Joanna Cambric	Oswego Tint Cloth	Oswego Opaque Cambric	Washable Diana Cloth	Vulcan Shadowless Triplex	Satin Fin. Shade Cloth	Chouaguen Hand Made Opaque
Residences—Better Grade									
General Use Translucent Shades		✓	Light Solid Colors	Light Solid Colors	Light Solid Colors	Light Solid Colors or Stripes			
Bedrooms Semi-Opaque or Opaque Shades		✓	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Light, Dark or Duplex Colors		
Residences—Inexpensive									
General Use Translucent Shades	✓							Light Solid Colors	Light Solid Colors
Bedrooms Semi-Opaque or Opaque Shades	✓							Dark, Solid Colors or Duplex	Dark Solid Colors or Duplex
Apartments—High Grade									
General Use Translucent Shades		✓	Light Solid Colors	Light Solid Colors	Light Solid Colors	Light Solid Colors or Stripes			
Bedrooms Semi-Opaque or Opaque Shades		✓	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Light, Dark or Duplex Colors		
Apartments—Low Rental									
General Use Translucent Shades	✓					Light Solid Colors		Light Solid Colors	Light Solid Colors
Bedrooms Semi-Opaque or Opaque Shades	✓					Dark or Duplex Colors		Dark or Duplex Colors	Dark or Duplex Colors
Schools (Double Hung Shades)									
Offices and Classrooms		✓	Light Solid Colors	Light Solid Colors	Light Solid Colors	Light Solid Colors			
Auditoriums Laboratories Dark Rooms		✓					Light, Dark or Duplex Colors		
Hotels									
General Use		✓	Light Solid Colors	Light Solid Colors	Light Solid Colors	Light Solid Colors or Stripes			
Bedrooms		✓	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Dark Solid Colors or Duplex	Light, Dark or Duplex Colors		
Hospitals (Double Hung Shades)									
Bedrooms Laboratories X-Ray Rooms		✓					Light, Dark or Duplex Colors		
Offices—Public Buildings—Libraries									
General Use		✓	Light Solid Colors	Light Solid Colors	Light Solid Colors	Light Solid Colors or Stripes			

HARTSHORN SHADE CLOTHS

What Determines Quality in Shade Cloths

The better grade shade cloths are manufactured on a closely woven cotton fabric containing 124 to 152 threads to the square inch, and have no filling material in them. In this country where the extremes of temperature and climate are great, it has been found that unfilled, hand painted and pyroxylin impregnated cloths are most efficient in many ways.

The Difference Between Hand Painted and Pyroxylin Impregnated Shade Cloths

Hand Painted Shade Cloth—Are literally painted by hand with linseed oil paints. They can be manufactured in an endless variety of solid colors and two-color combinations to match any color scheme required.

Pyroxylin Impregnated Shade Cloths—Are processed on a machine which forces colored pyroxylin—a cellulose material—into the fibres of the cotton fabric. Pyroxylin shade cloth is made in a limited number of colors and two-color combinations and stripes.

Hand Painted Shade Cloths Are Most Satisfactory

They have long been recognized in industry as the most durable of all shade cloths. The pure linseed oil which is used in the paint preserves the fabric, protects it from the sun's heat rays, and tends to keep the shade cloth pliable and flexible for years. Colors are sun-proof, and the cloth will not crack

or curl. Shades can be brushed clean or cleaned with standard dirt removers.

Although pyroxylin impregnated shade cloths can be scrubbed and washed with soap and water, they do not have the wearing qualities of the hand painted unfilled shade cloths due to the absence of the linseed oil preservative.

In order to cut the cost of manufacture, less expensive shade cloths are made on loosely woven cotton fabric, and, to make up for the lack of high thread count, are filled with various fillers and binders which give them weight and body.

When samples of filled shade cloth are rubbed together in the hand and the filling drops out, there will be exposed a loosely woven cotton fabric foundation; in the unfilled piece of shade cloth, after the paint is rubbed off, the fabric left will be closely woven and strong.

Types of Shade Cloth Manufactured by Hartshorn

STEWART HARTSHORN COMPANY manufactures, in their own factories, the following:

Hand Painted Unfilled Shade Cloth
Pyroxylin Impregnated Shade Cloth
Triplex Lightproof Shade Cloth
Satin Finish Shade Cloth
Filled Machine Painted Shade Cloth
Filled Holland Shade Cloth
Filled Water Color Shade Cloth

as well as variations of all of the above types.

TYPES AND QUALITIES OF HARTSHORN WINDOW SHADES

Note: In the listing of types below, "Solid Color" means that the same color is on both sides. "Duplex Color" means one color on one side and another color on other side.

Finest Quality—144 to 152 Threads to the Square Inch

(Conforms to Federal Specification CCC-C-521)

Hartshorn Oswego Tint Cloth

Suitable for all types of buildings, residences, schools, public buildings, offices and factories. Similar in quality to Joanna Cambric, but has no waterproofed glossy finish. Hand painted, unfilled, sun-proof and moisture-proof. Wide variety of colors, solid and duplex—translucent and semi-opaque.

Hartshorn Oswego Opaque Cambric

Suitable for hotels, schools and other public buildings where subject to hard usage. Same in quality as Tint Cloth, but, due to heavier coating of paint, is more opaque. Hand painted, unfilled, cleanable, sun-proof and moisture-proof. Wide variety of colors, solid and duplex—semi-opaque and opaque.

Hartshorn Diana Cloth (Washable)

Pyroxylin impregnated. Suitable for all types of buildings, residences, schools, public buildings, offices and factories. Washable with soap, water and scrubbing brush. Complete line of

attractive colors, solid, duplex and striped—translucent and semi-opaque.

Hartshorn Joanna Cambric

Suitable for all types of buildings, residences, schools, public buildings, offices and factories. Hand painted, unfilled, cleanable, satin finish, sun-proof and waterproofed. Wide variety of colors, solid and duplex—translucent and semi-opaque.

Hartshorn Vulcan Shadowless Triplex

Made especially for school auditoriums, dark rooms, X-ray laboratories, etc., where all light must be excluded. Suitable also for hotels and residential bedrooms and in places where opaque, durable window shades are required. Hand painted, unfilled, cleanable, sun-proof and moisture-proof. Wide variety of colors, solid and duplex—absolutely opaque. Shadow boxes are usually installed for this type of shade. The benefit of our long experience is offered to architects.

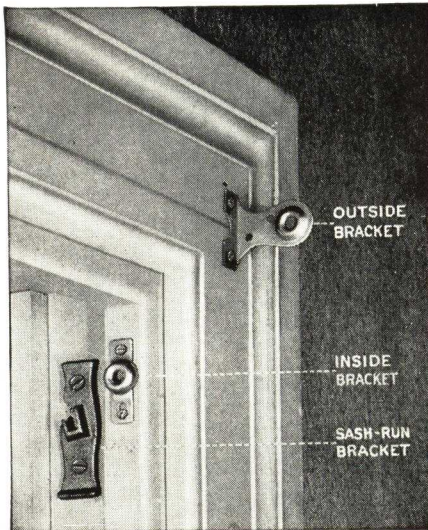
Good Quality—124 Threads to the Square Inch**Hartshorn Satin Finish Shade Cloth**

Suitable for medium priced residences. Hand painted, satin finish, unfilled, sun-proof and waterproofed, cleanable. Wide variety of colors, solid and duplex—translucent and semi-opaque.

Hartshorn Chouaguen Hand Made Opaque

Suitable for medium priced residences. Hand painted, unfilled, sun-proof, cleanable. Wide variety of colors, solid and duplex—semi-opaque and opaque. Similar in quality to Satin Finish shade cloth, but has no waterproofed glossy finish.

RELATION OF SHADE TO THE WINDOW OPENING

**Shades to Lap Over Opening or Jamb Reveal to Be Efficient**

To definitely control the entrance of light into the room, window shades should be mounted on the face of the casing. Width of cloth should be at least 3 in. more than opening, leaving a minimum of $1\frac{1}{2}$ in. lap on each side of casing. Use outside brackets.

If construction of window or drapery arrangement does not allow above type of installation, shades should be mounted on stop or bead of window. Cloth should be cut and mounted within $\frac{1}{8}$ of an inch of end of roller barrel so as to prevent as much light as possible from coming around edges of shade. Use inside brackets.

If construction of window does not permit shade to be mounted on casing or bead, shade should be mounted on sash run of the window and Hartshorn Special Sash Run No. 374 brackets should be used. Cloth should be cut and mounted $\frac{1}{8}$ of an inch from end of roller barrel.

All shades installed on casing should be cut 12 in. longer than window openings. Shades installed on bead or sash run should be cut 9 in. longer than window openings.

Relation to Screens

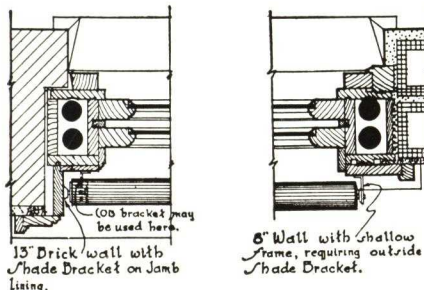
Where possible, metal insect screens should be installed outside the window sash. On some special type of windows it is necessary to allow for installation of screens inside of sash between the sash and the window shades.

Window Shades for Schools, Offices, Hospitals and Public Buildings

Where complete control of light and ventilation is necessary and where decorative values are not quite so important, double hung window shades equipped with Hartshorn light shields (see illustration at left) are found to be most satisfactory. Both shades and light shield in this Hartshorn equipment can be removed and replaced easily when windows are being cleaned.

Finish in Edges of Shades

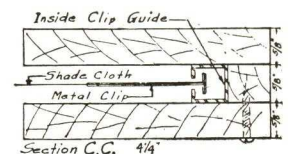
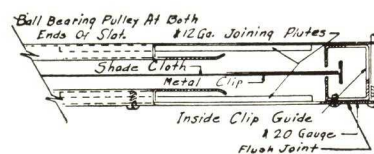
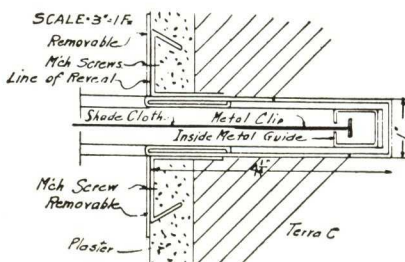
High grade shade cloths even when the shades are mounted on the bead or sash run of the window do not fray at the edges unless badly abused. It is practical, however, and sometimes quite attractive to have side hems used on even the best grade of shade cloth. Reinforcing pockets at the bottom and sides of shades prevent tearing of shades edge above the bottom hem containing the wood slat. This is especially recommended for schools, office buildings, public buildings, etc. See reinforcing pockets on double hung shades at side of page.

**Shades for Light-Proof Requirements in Laboratories, Auditoriums, X-ray Rooms, etc.**

Information regarding such installation, together with approved types of shadow boxes to keep light from coming in around the edges of the shades, will be supplied on request.

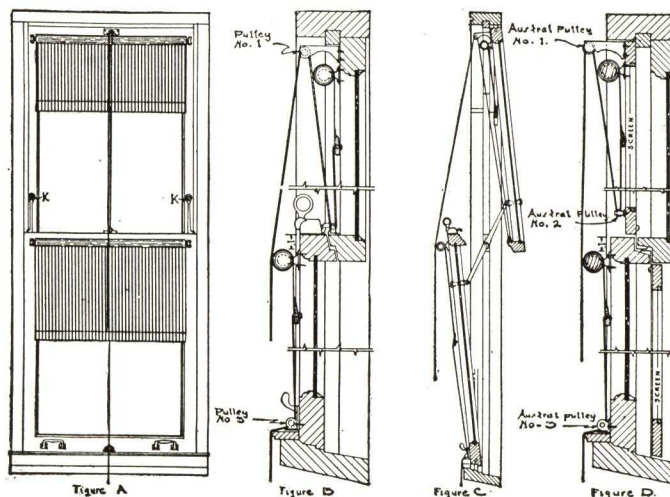
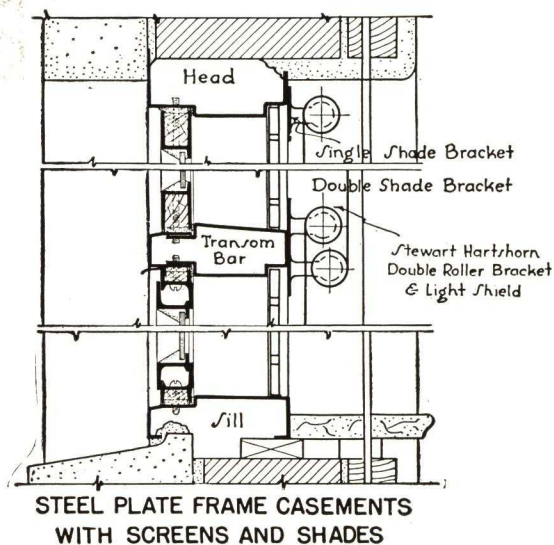
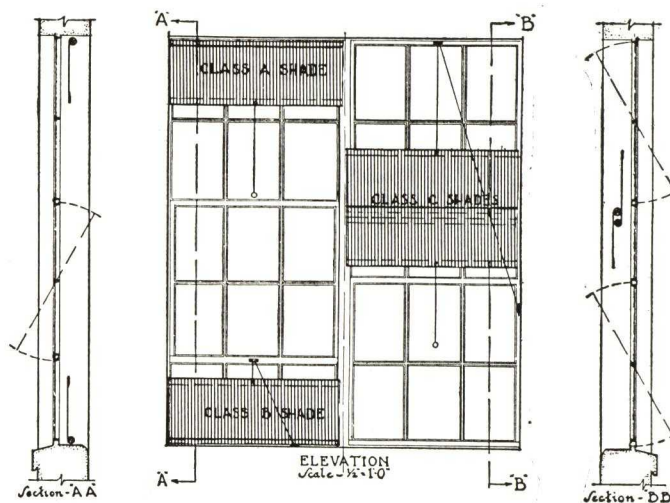
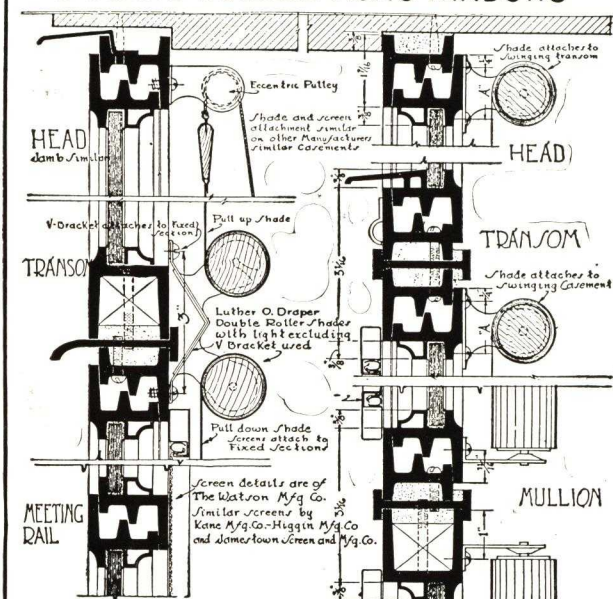
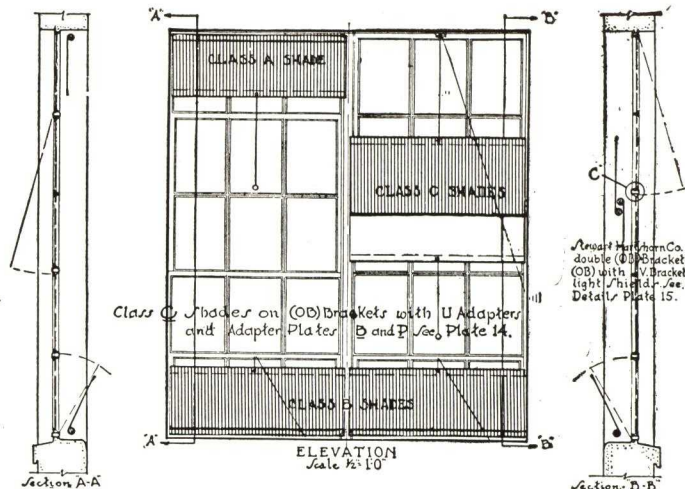
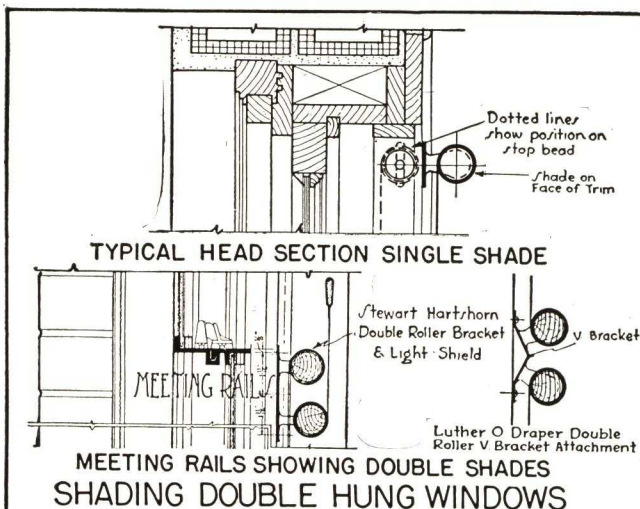
Shades for Special Conditions—Skylights, etc.

Practical information on special installations is available at all times at the General Office of STEWART HARTSHORN COMPANY, 250 Fifth Avenue, New York, N. Y.



Three Types of Jamb Installations of Shadow Boxes
(Details Courtesy of National Window Shade Co.)

DETAILS OF VARIOUS METHODS OF INSTALLING SHADES



HARTSHORN SPRING SHADE ROLLERS

The Standard Roller of Architects, Decorators and Owners Since 1860

STEWART HARTSHORN COMPANY has been manufacturing high grade automatic spring shade rollers since 1860. During that time Hartshorn Rollers have been recognized by architects and builders as standard equipment for all types of buildings. Steel wire tempered to high specification in Hartshorn's own wire mill and wound into more durable springs than are found in ordinary rollers have made Hartshorn Rollers the standard of comparison.

Hartshorn Springs—A most vital part of the shade roller, Hartshorn Springs are produced from wire manufactured by Hartshorn in its own wire mill. A very carefully selected high carbon rod to Hartshorn Specification is procured from the steel mills. All cold drawing, intermediate heat-treatment, cold rolling and tempering operations are conducted in Hartshorn's own mill.

The furnaces employed in all heat-treating operations are fired by gas of Hartshorn's own manufacture. All temperatures are automatically controlled, which results in a very uniformly tempered steel wire approximating 300,000 pounds per square inch ultimate tensile strength.

Controlling the manufacture of our own wire, accounts for the fact that Hartshorn Springs do not break down. Springs made for Hartshorn metal rollers are of larger wire than those for use in Hartshorn wood rollers, since the metal rollers are expected to give longer service and to handle heavier loads. *The most important factor in the shade roller is the life of the spring.*

Hartshorn Automatic Spring Wood Shade Rollers—Have barrels made from well seasoned kiln dried white pine; finely tempered steel wire springs, produced in Hartshorn's own wire

mill. Moving parts, which consist of brass pawls and rivets mounted on a copper plated steel cup that revolves on a brass bearing, will not rust or stick, and insure smooth, silent action. Aluminum shells which will not rust or tarnish enclose the mechanism at one end of the roller. Aluminum pin ends protect the solid end.

Hartshorn Adjustable Metal Rollers (for Most Satisfactory Service)—Made of high grade open hearth steel heavily tin plated. Powerful springs made of finely tempered steel wire produced in Hartshorn's own wire mill. Brass pawls and copper plated stamped steel parts make this roller smooth running and rustproof. Extension plugs in the ends permit the lengthening of these rollers in proportion with the diameter of the roller.

Type of Roller to Select—On most residential types of buildings where light-weight, translucent or semi-opaque shades are used, and where window sizes are fairly small, Hartshorn wood barrel shade rollers have sufficient spring power to handle shades satisfactorily.

Where window widths are over 4 ft. and height is over 10 ft., or where the shade cloth used is heavy opaque cloth, Hartshorn metal rollers are recommended. They should be specified on all schools, hotels, offices, factories, or other public buildings regardless of size of window and type of shade cloth used. Their sturdy construction and excess spring power, added to the fact that they can be used again and again with new sets of shades, make them much more economical for these types of installations.

Send for our schedule showing diameter and style of roller recommended for use on various sizes of window shades.

HARTSHORN SPRING AWNING ROLLERS

All-Metal Rust-Proofed, Adjustable Length

Hartshorn All-metal Galvanized Spring Awning Rollers are made with patented all-metal extension. Rust-proof and easily adjustable. Can be used for several sets of awnings. Made in 1½, 1¾, 2¼, 3 and 4-inch diameters. (The 3 and 4-inch diameters are made only with the regular wood plug extension.)

All exposed parts are electro-galvanized, making them completely rust-proof. The powerful springs of finely tempered steel wire, produced in Hartshorn's own wire mill, can be adjusted to lift the heaviest awning. The awning canvas can be sewed to a strip of strong Holland shade cloth supplied with each roller.

TYPICAL SPECIFICATIONS FOR WINDOW SHADES

General—These specifications cover manufacture and correct installation of window shades (including labor, material, and all appliances and accessories) at given address, so as to provide a complete installation ready for use. Accurate measurements shall be taken at building and all conditions noted by contractor. Shades shall be made in a thoroughly workmanlike manner, cut square and true and mounted on rollers in same manner. Materials used in manufacture of these shades shall be commercially perfect and of first quality. All shades shall be free from dirt, fingermarks, etc., and subject to final acceptance by owner.

Charge of Work—Owners shall have the general supervision and direction of work. They shall pass upon materials, workmanship and installation, and may reject such as in their judgment is not in accordance with contract or specification.

Scope of Work—State here whether shades are to be double hung—that is, two shades mounted in center of sash so that top shade rolls down and lower shade rolls up (school installation)—or whether shades are to be mounted at top of sash to roll down, or any other type of installation that may be required. State also windows that will not require shades or any other information bearing on installation and requirements pertaining to job.

Cloth—Shades shall be made of [Hartshorn Joanna Cambric] [Washable Diana Cloth] [Hartshorn Oswego Tint Cloth] [Vulcan Shadowless Triplex]—(if lightproof window shades are desired)—as manufactured by the STEWART HARTSHORN COMPANY. Hartshorn Joanna Cambric shall have a smooth, satin finish, and be sun-proof, waterproofed, and free from filling.

Length—Cloth for all shades shall be finished 9 in. longer than actual window openings and of correct width. (Optional: Shades to be installed on face of casings shall have the cloth cut 4 in. wider than width of window opening, so as to allow a 2-in. lap on each side.

Color—Shall be specified by architect. (State whether solid or duplex color is required.)

Rollers—All shades shall be mounted on genuine Hartshorn Script Label (wood or metal rollers). Metal rollers shall be made of the best grade open hearth steel heavily plated with tin and fitted with a groove for attaching shade fabric. Rollers shall be of a diameter guaranteed to carry the shade. (State diameter required.)

Slats—[¾] [1¼] [1½] [1¾] [2] [2½]-in. white pine slats shall be placed in hems of all shades. Slats shall be cut ¼ in. less than width of cloth.

Eyelets—Shades shall be equipped with stainless metal eyelets fastened through the center of slat for attaching shade cord or shade pull.

Cord—All shades shall be equipped with [No. 2] [No. 3½] [No. 4] braided cord [ring pull] to match color of shade, and shall be attached to slat and fastened to window jamb with suitable length of cord to allow for operation of shades.

Hems—Shades shall be equipped with [side hems] [plain side] [reinforced pocket]. Slat hems for all shades shall be securely sewed, back-stitched and tied.

Brackets—If attached to solid metal sash or frame, screw holes shall be drilled and tapped and brackets installed with machine screws. If hollow metal sash and frame, screw hole shall be drilled and brackets installed with Hartshorn's Expansible Screw Grips or a case hardened self-threading screw. If attached to wood sash or frame, brackets shall be installed with regular wood screws. Brackets shall be installed in such a manner as to assure true alignment when rollers are placed therein. (On installations where stop pulleys are required, the same method of attaching them shall be used as stated in the installation of brackets.)

Delivery—All shades shall be installed complete by or any other date agreed upon in writing by the owner.

MEMORANDA

HIGGIN PRODUCTS, INC.

NEWPORT, KENTUCKY

AGENCIES IN PRINCIPAL CITIES

For Metal Frame, Wood Frame and Rolling Screens, Venetian Blinds, Access Panels
and Weatherstripping, see our pages in File Index

LIGHT-TIGHT SHADES FOR ALL DARK ROOM REQUIREMENTS

Three types are available—Spring Roller, Crank Operated and Motor Driven. All three types are photographically lightproof, with light locked sides, top and sill.

Shades may be de detailed and built into window construction or employed in openings already constructed in new building or old.

Best quality materials throughout.

Lightproof cloth made in two thicknesses of fabric thoroughly united and coated both sides. Crackproof and fadeproof. Long wearing. Standard color neutral green.

Guides and assembly boxes of .0375-in. thickness steel, enameled inside and out. Inside of guides and assembly box finished dark light absorbing gray. Exterior parts standard brown or color as selected.

Disappearing brace feature permits use of small assembly boxes as only lightproof cloth enters boxes.

Openings up to 65 in. wide, 92 in. high take 2½-in. square boxes for spring roller shades. Other sizes require 3, 3½, 4 and a few 5-in. sizes. Minimum for crank operated 3-in.

All shades are custom built.

Spring Roller Shades—May be controlled with cord loop. Spring roller shades have automatic locking spring latch with ring grip. Spring roller shades have special music wire springs with external tension adjusting features.

Crank Operated Shades—Accurately adjustable to stop top and bottom. These shades spring suspended.

Shades cannot drop.

Electrically Controlled Shades—Operated by individual motors, relays, limiting devices, etc. No shafting connecting shades. All parts of shades accessible. Shades may be controlled from several points by momentary contact switches. Wiring between shades should be done by electrical contractor. Wiring in shades is done at factory. Write for details and specifications.

Darkening Shades

A darkening shade of a more simple design and construction is manufactured for use where rigid economy must be practiced. These shades are limited in size to a maximum of 65 in. wide, 120 in. high. Write for details.

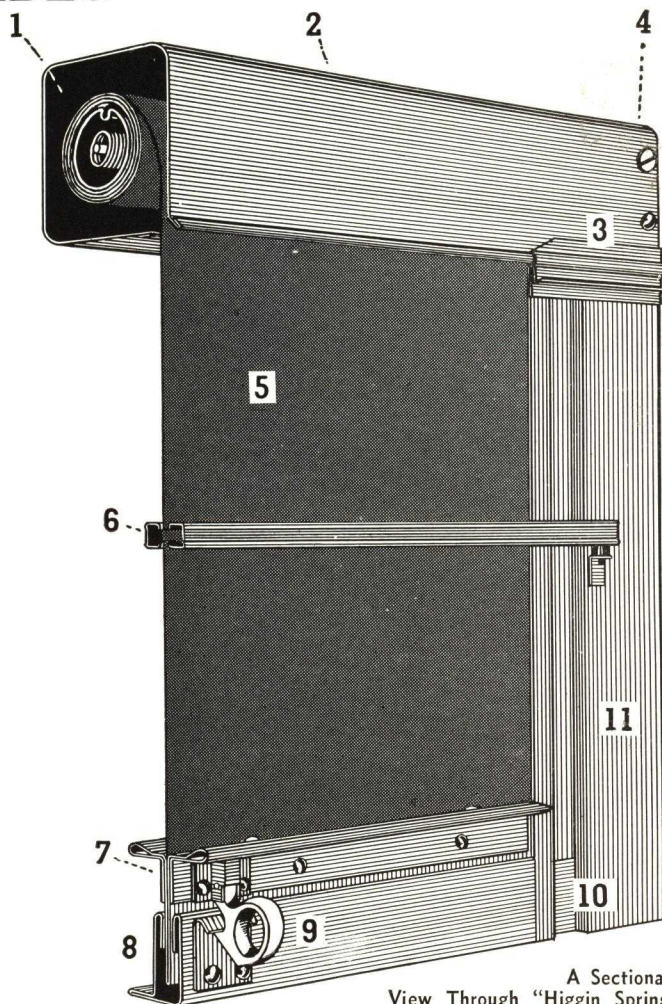
Features of Higgin Light-Tight Shades

- (1) One-piece metal roller tube with light proof cloth attached. Coil spring of music wire .08 in. diameter, grease coated for protection.
- (2) Assembly box—sizes vary with size of shade.
- (3) Light locks between assembly box and side guides. Similar light locks on opposite side of guides.
- (4) Tension on coil spring for spring roller shades may be readily adjustable by turning screw head worm, clockwise to add tension and counter-clockwise to lessen it.
- (5) Light proof cloth is built up of two layers of fabric thoroughly united and coated both sides. Coating is crack and fade proof, odorless and pliable under varying weather conditions.
- (6) Disappearing braces prevent any likelihood of cloth being forced from side guides by wind pressure. Braces disappear to head of opening when shade is raised.
- (7) Substantial bottom bar equipped with tongue to engage sill light lock, barring all light at bottom of shade.
- (8) Sill light locks secured to window stool.
- (9) Spring catch. Spring roller shades may be operated directly by hand—by cord or window pole. Spring latch is substantially constructed.
- (10) Light lock between guides and sill light lock.
- (11) Side guides vary in width from 3 in. which is standard for shades of ordinary size to 6 in. for very large shades.

HIGGIN
LIGHT-TIGHT
SHADES

Patents

Higgins products are covered by patents which fully protect important features.



A Sectional
View Through "Higgin Spring
Roller Light-Tight" Shade

Some Higgin Light-Tight Shade Installations

- | | |
|---|--|
| Glen Park School,
Los Angeles, Calif. | Veterans Administration Home,
Virginia |
| U. S. Bureau of Motion Pictures,
Washington, D. C. | Jefferson Hospital,
Philadelphia, Pa. |
| City Hospital,
Louisville, Ky. | U. S. Coast Guard Academy,
New London, Conn. |
| St. Luke's Hospital,
Chicago, Ill. | Health Department Clinic,
Washington, D. C. |
| University of Missouri,
Columbia, Mo. | Penn Mutual Life Insurance Co.,
Philadelphia, Pa. |
| Board of Education,
St. Louis, Mo. | Norfolk State Hospital,
Norfolk, Mass. |
| University of Texas,
Austin, Tex. | University of Michigan Hospital,
Ann Arbor, Mich. |
| Mt. Sinai Hospital,
New York, N. Y. | Worcester Art Museum,
Worcester, Mass. |
| Eastman Kodak Co.,
Rochester, N. Y. | Naval Hospital,
Philadelphia, Pa. |
| General Hospital,
Cincinnati, Ohio | University of Maryland,
College Park, Md. |
| U. S. Reformatory,
Chillicothe, Ohio | Howard University,
Washington, D. C. |
| U. S. Marine Hospital,
Cleveland, Ohio | |

ALBERT D. SMITH & COMPANY

Selling Agents for Bancroft and Claysmith Shade Cloths

TELEPHONE
WOrth 2-3683

290 Broadway
NEW YORK, N. Y.

BANCROFT SUPERIOR QUALITY SHADE CLOTHS

(Manufactured by Joseph Bancroft & Sons Co.)

Bancroft Shade Cloths may be specified with absolute confidence whenever the requirement is for a shade cloth of the finest possible quality, durability, and beauty of appearance. There is no duplicate for these shade cloths because they are made by special patented processes, and every step of their production, from the spinning of the basic cloth to the final finishing, is done in Joseph Bancroft & Sons Co.'s own mills, plants and laboratories.

Bancroft Shade Cloths are absolutely guaranteed against fading by exposure to the sun. They are available in a wide variety of widths and in a complete line of colors, the beauty of which is enhanced by their smooth and lustrous finish.

Bancroft's Sun-Fast, Rock-Fast and Stand-Fast Shade Cloths conform to Federal Specification CCC-C-521a, and the various State Specifications.

SUN-FAST
TRADE MARK U. S. PAT. OFF.

Sun-Fast and Venetian Stripe Hollands

Sun-Fast and Venetian Stripes Holland Window Shades are waterproof, weatherproof, insectproof and cleanable with soap and warm water—wiped clean where they hang with a sponge or wet cloth. They will not crack, stretch, dry out or become brittle and tender when exposed to the sun and air. They are most economical, as due to strength and long wearing qualities frequent replacements are unnecessary. Manufactured in a wide range of colors to fit any requirements of decoration, translucency or opaqueness. Widths—from 28 in. to 72 in., and the most popular colors are also made in the 82 in. width.

(Pyroxylin Impregnated)

ROCK-FAST

Trade-Mark Reg. U. S. Pat. Off.

Rock-Fast Shade Cloths

Rock-Fast Shade Cloth is fully Pyroxylin Impregnated and finished with a highly lustrous and permanent beetled finish. Rock-Fast Shade Cloths are thoroughly covered and evenly finished to preclude any possibility of the whiteness of basic fabric showing. They are easily cleanable, smooth in finish, highly sanitary, grime resisting to the highest degree, because dirt and stains cannot get into the fabric. Rock-Fast is waterproof, fast to light, fast to sun and weather, fast to everything a window shade should encounter. Manufactured in ten plain colors, six duplex combinations, and White and Light Ecru Stripes in 32 in. to 72 in. widths.

(Pyroxylin Impregnated)

STAND-FAST

Trade-Mark Reg. U. S. Pat. Off.

Stand-Fast Shade Cloths

Stand-Fast is a thoroughly Pyroxylin Impregnated shade cloth, the basic fabric of which is completely covered so that white threads will not show through before or after it has been in use.

Stand-Fast is washable, weatherproof, sunproof, smooth in finish, strong and durable, and is manufactured in ten plain and three popular duplex colors in 32 in. to 72 in. widths. Cream, Light Ecru and Dark Ecru Stripes are also available in the same widths.

CLAYSMITH SHADE CLOTHS

(Manufactured by Smith Textile Corporation—Claysmith Division)

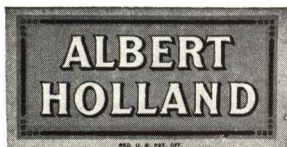
The manufacturers of the following brands and grades of goods have been continuously engaged in the finishing of window shade cloths for well over fifty years. They early realized that quality at economical prices was a prime requisite and that the general buying public must be instilled with a confidence in both the manufacturers and the superior qualities of their products.

With this in view, they have through research, testing and experimentation, always given to the consumer and the industry a leader, which has not as yet been surpassed. Whenever better methods or materials were available to maintain their supremacy, the Smith Textile Corporation—Claysmith Division, have always taken advantage of same, and thus have maintained their leadership in the manufacture of these types of goods, of which they are specialists.



Claysmith Stripe

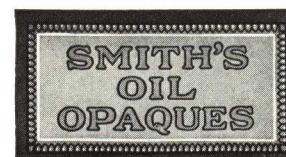
This shade cloth is an exceptional value where cost must be taken into consideration. The basic fabric is made from a very heavy, strong material that gives a good many years' satisfactory wear. It has an elegant, linen effect in its appearance, which together with its other superior qualities, makes it highly desirable for recommendation for good homes or apartment houses. Manufactured in three colors: White, Cream and Ecru. Widths, 28 to 54 inches.

**Albert**

Unsurpassed among medium-priced Hollands for window shades, due to the care in selection and rigid requirements of the basic material. The smooth, calendered finish makes a superior appearance, particularly so insofar as evenness of weave, and high standards of inspection. It is noted for its durability, and the full line of eleven colors ranges from 36 to 54 inches in width. Known in the trade as Dead Finish Hollands.

**London**

Universally recognized as one of the best low price Flat Finish Holland available for window shades. It is strong, has a fine finish, and is superior in its translucent qualities. The plain colors are manufactured in ten popular and attractive shades, while six of these colors are also available in stripes. Widths—32, 36 and 40 inches.

**Opagues**

These oil opaques are particularly desirable for window shades in the medium priced range. The basic fabric is especially selected to make them more durable, and they are finished in a modern, up-to-date plant, with all the latest machinery and processes to insure an even texture and the proper flexibility. They are made in twelve popular colors, plain and duplex, in widths from 32 to 54 inches.

"SCRUBIT" SHADE CLOTH

Waterproof — Economical — Cleanable



There had long been in the trade a desire for a cloth that would and could combine the qualities of an expensive window shade cloth in a product that could be sold at a reasonable price. The verdict was it could not be done, but after a long period of experimentation, study and testing by experts who had devoted a lifetime in the textile industry, this improved shade cloth, "Scrubit," has been produced for installation in homes or wherever it is necessary that a moderate-priced window shade be used. It has met with instantaneous approval in the trade because of its supervalues.

"Scrubit" has a smooth, beautiful, lustrous finish that adds attractiveness to the general appearance of not only the house itself from an exterior viewpoint, but also adds greatly to the beauty of the interior decoration. "Scrubit" is waterproof, withstands fog, humidity, rain and other inclemencies of the weather. It will not soil easily and can readily be cleaned by wiping with a wet cloth or sponge, thereby always having a clean, presentable window shade. "Scrubit" is durable, and it is so priced that it makes an exceedingly economical window shade.

"Scrubit" is manufactured in solid colors from 36 to 54 inches wide. The colors are, 2 (Cream), 5 (Ivy Green), 11 (White), 22 (Brown), 32 (Light Ecru), 35 (Linen), 46 (Gold), 48 (Dark Ecru) and 54 (Tan). "Scrubit" is also manufactured in the following Duplex colors in the 36-inch width only: 5/2 (Ivy Green-Cream), 5/11 (Ivy Green-White), and 5/46 (Ivy Green-Gold).

E. W. A. ROWLES CO.

CABLE ADDRESS: ROWLES

Manufacturers of Mastermade Window Shades
Double Roller, Single Roller, Folding, Adjustable Roller, Austral and Lite-Tite

TELEPHONE
Victory 3812

EXECUTIVE OFFICE
2500 Prairie Avenue, CHICAGO, ILL.

FACTORY
ARLINGTON HEIGHTS, ILL.

SALES REPRESENTATIVES THROUGHOUT THE UNITED STATES AND ABROAD

For Rowles Blackboard and Trim, see File Index

MASTERMADE WINDOW SHADES

MASTERMADE COTTON DUCK—Mastermade cotton duck is made from long staple cotton woven into a double filled enamelling grey goods, having a thread count of 84 x 28. By double filled we mean that the threads from which the cloth is woven are all double instead of single strands. After being woven the cloth is subjected to a shrinking and dyeing process in which no starch, clay, or filler of any kind, is used. The vat dyeing process is used. This method of dyeing produces the fastest color known to the dyeing industry.

One distinguishing feature of Mastermade cotton duck is the great degree of translucency. It does not darken the room but rather only tempers the light, excluding the direct sun rays. The tan color of Mastermade cotton duck is most satisfactory inasmuch as it gives no objectionable color to the light rays.

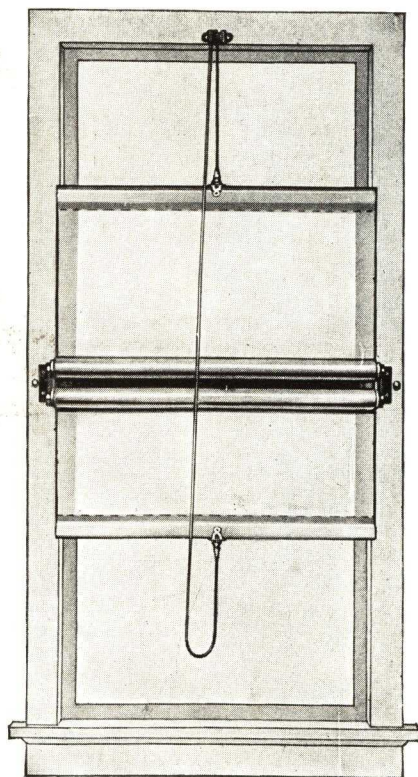
Mastermade cotton duck is easily washed or dry cleaned without the slightest injury. It can also be cleaned by the use of an ordinary vacuum cleaner.

CALUMET WASHABLE DUCK—Calumet washable duck is a specially woven canvas fabric thoroughly impregnated with waterproof age resisting chemical. It has such a permanent body that it holds its shape and is impervious to sunlight, moisture, and dirt.

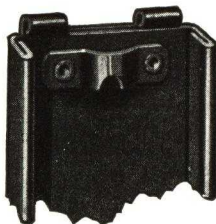
LASALLE AND ROLLTEX—LaSalle and Rolltex materials are of the "Cambric" type. They are made of the highest grade cotton sheeting having a thread count of 72 x 72. The principal difference is that LaSalle cloth has a metallic pigment and oil finish whereas Rolltex has a pyroxylin finish.

LITE-TITE—Lite-Tite canvas shades are made of the same specially woven canvas used for Calumet. To this fabric is applied a waterproof and completely opaque black finish. These shades are ordinarily furnished with black finish on both sides. However, for appearance they can be furnished with a black finish on one side and tan (to match Mastermade duck) on the other. The solid black finish is a trifle more opaque than the two tone finish.

STYLES—Shades are available in ten different styles, namely three styles of double roller shades, two styles of single roller adjustables, two styles of folding shades, two styles of single roller non-adjustable and the austral type. We make up special brackets and fittings to take care of special installations, such as arched windows, steel sashes, and extra wide windows.



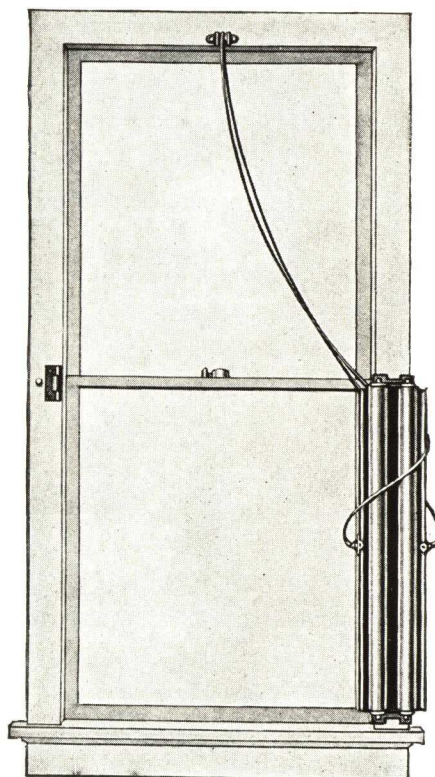
PROPER LIGHT DISTRIBUTION
ELIMINATES GLARE
PERFECT VENTILATION
EASILY INSTALLED
QUICKLY REMOVED
REASONABLY PRICED
ENDURING SATISFACTION



Small Detail of
Adjustable Steel
Light Shield

Patent No. 1876036
Other Patents Pending

May Be Installed Either Between or
Overlapping Window



STYLE GA MASTERMADE WINDOW SHADE

The Style GA shade is the result of many years of experience in shade design and construction. It consists of two shades for each window, hung at the meeting point of the sash. The upper shade is raised or lowered by means of a cord operating over a lock pulley fastened to

the top of the window frame. The lower shade is operated in the usual manner. A steel light shield is mounted back of the two rollers so that no light penetrates between them. Either shade may be operated independently.

TYPICAL SHADE SPECIFICATIONS

Scope of Work

This contractor is to furnish [and install] translucent [and opaque] window shades of either single or double roller type where called for in the accompanying schedule. He will have to take into consideration the construction of all windows so as to provide suitable brackets for an approved installation.

Cloth

- (A) Translucent shade cloth shall be unfilled cotton duck material weighing not less than 8 oz. per square yard and having a thread count of not less than 84 x 28 per square inch. It shall be a pre-shrunk, vat dyed material free from loading or filling and shall be sunfast tan in color. It shall be washable. All pieces of shade cloth are to be finished, whether or not of natural selvage width. Where the selvage edge is removed, it must be replaced with overcast stitching that is ironed flat with the surface of the cloth.
- (B) **OPAQUE**—The shade cloth shall be double filled cotton duck to which has been applied a waterproof and completely opaque black finish.

Rollers

Rollers shall be made of seasoned straight grained wood and finished to a straight smooth one piece roller with a minimum diameter of one inch. Each roller must be sufficiently large to operate the shade which is mounted upon it. All cloth shall be securely attached to the rollers with triple pointed fasteners. The roller shall be guaranteed against all defects of workmanship or materials and equal in quality to Hartshorn, Columbia, or Standard.

Cord

Cord shall be not less than 10 strand braided and glazed equal to Silver Lake special No. 4. All cords must be fastened to slats by means of nickel plated spring clamps securely fastened and all cord ends must be looped and neatly finished with nickel plated splice clips.

Slats

Slats shall be straight and of seasoned straight grained wood and of smooth finish 1 1/4 in. wide.

Type of Shading

- (A) Shades shall be double roller shades, the upper shade to roll upward and the lower shade to roll downward, operating in the same vertical plane close to the window casing but without touching each other. They shall be controlled by a continuous cord operating through an approved aluminum lock pulley at the head of the window. The brackets supporting the shades shall be riveted to a one piece channel shaped 22 gauge steel light shield. This light shield is to be mounted back of the rollers to prevent light penetrating between the rollers and is to be mounted on the window frame or casing by means of special fixtures which will permit the entire assembly of shades to be swung to one side or entirely removed from the window, leaving free access for cleaning, painting or replacement of broken glass. Shade cloth for this type of shading shall be cut to allow for six inches additional wrap on each roller when the shades are pulled completely up or down as the case may be.
- (B) Austral or pivot type windows are to be equipped with one shade for each sash, hung in approved bracket at top or bottom of each sash to pull upward or downward with suitable cord and lock pulley, permitting shade to hang taut to the window when opened.
- (C) Single roller shades are to be hung in approved brackets at the top of windows and are to pull down. Each shade is to be equipped with window length cord.
- (D) Lite-Tite or darkening shades are to be single roller opaque shades—[with metal roller boxes and side channels]—constructed to shade the entire opening. They shall have a flexible flap below the shade slat to prevent light entering at the window stool.

LITE-TITE SHADES AND METAL TROUGHS

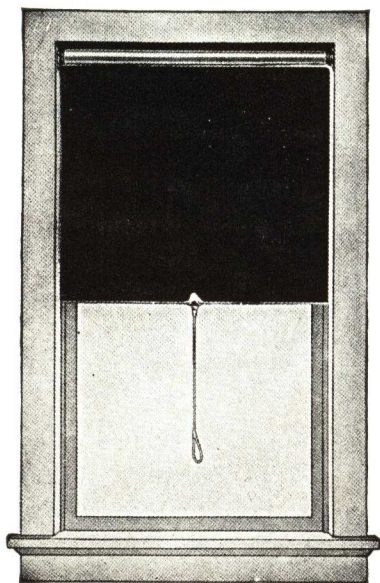
For darkening rooms where picture projectors are used, School Auditoriums, Laboratory and Science Divisions, etc. Send for samples.

Our Lite-Tite Shades, as illustrated below, are made of double filled duck with waterproof and completely opaque black finish. Their sturdy construction guarantees the lowest cost per window per year.

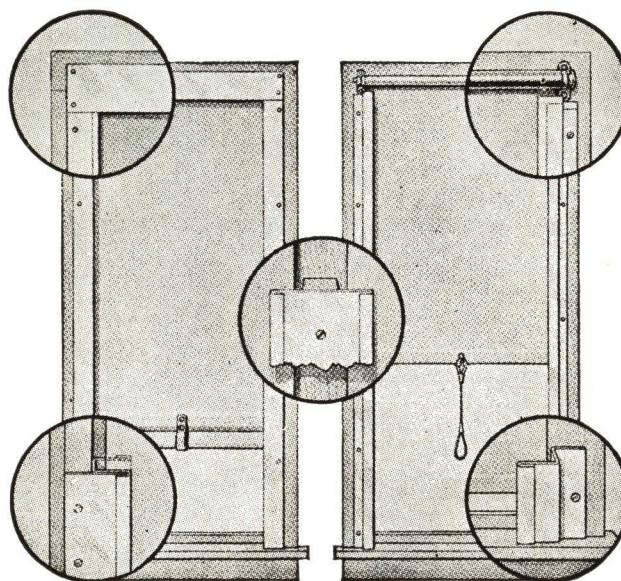
Ordinarily furnished with black finish on both sides com-

pletely opaque to strong sunlight, these shades can also be furnished with black finish on one side and tan on the other, when it is necessary to match the color of other shades.

To prevent light entrance at the sides of the shades, our Lite-Tite Metal Troughs (two typical installations illustrated below) assure the exclusion of all light. They are constructed of heavy gauge cold rolled steel and are made up to meet individual needs.



Lite-Tite Shades



Lite-Tite Metal Troughs

Type I—Inside Mounting—Type O—Outside Mounting

THE ASTRUP COMPANY

Manufacturers and Designers of Awning Hardware and Awning Fabrics

PLANT AND GENERAL OFFICES

2937 West 25th Street, CLEVELAND, OHIO

OFFICES AND WAREHOUSES

EASTERN: New York, 39-41 Walker Street
FLORIDA: Miami, 742 S. W. 8th Street

CENTRAL STATES: St. Louis, Mo., 1908 Locust Street
PACIFIC COAST: Los Angeles, Calif., 656 West Knoll Drive

Products

ASTRUP AWNING and TENT HARDWARE.
ASTRUP ROLLER GEAR MECHANISMS: Manually and Electrically Operated.
ASTRUP TENSO-LOK (Lateral Type) ARMS: For Open Face and Recess Box Store Front Construction.
ASTRUP LID OPENING and CLOSING MECHANISM: Hinge Type, Pivot Type.
ASTRUP AWNING FABRICS.

Astrup Awning Fabrics

Painted—Woven—Fire Resisting—Mildew Resisting

Astrup Awning Fabrics are made from the finest materials procurable and are carried in many varied designs and patterns. These fabrics are exceptionally attractive, brilliant and vivid in tone and coloring. Their wide variety allows for a selection that will harmonize with any store front design; special designs can be manufactured when desired.

ASTRUP AWNING EQUIPMENT FOR STORE FRONTS

Operating Gears and Arms—Astrup Operating Mechanisms and Tensolok Arms have been specially designed to harmonize and blend with modern store front architecture. Each fixture is compact, durable in construction, positive in operation, long lived and requires minimum installation expense. *When awning is completely rolled up, Tensolok (Lateral Type) Arms fold horizontally and are concealed and do not detract from the Architectural beauty of the Store Front.* Operating fixtures are available for inside or outside operation and for open face and recess box construction.

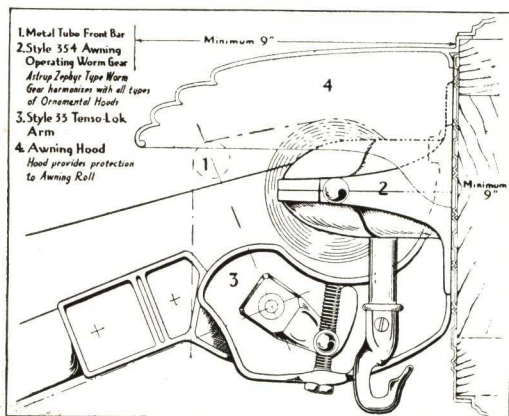
Awning Rollers—Astrup Steel Tubing is specially rolled of high carbon stock to prevent sag, and give maximum efficiency in awning operation.

Awning Rollers of Astrup Steel Tubing less than 20 ft. require no center support. Awning Roller should be located not less than 9 ft. 6 in. above sidewalk level.

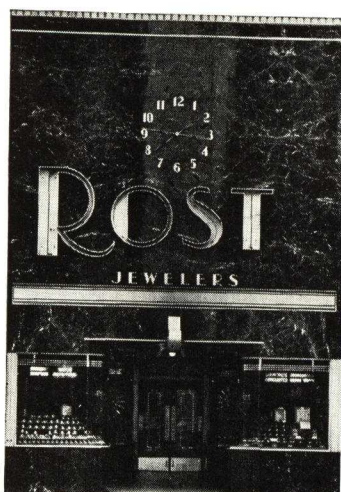
Awning Front Bar—Should be located not less than 7 ft. above sidewalk level. Some city regulations require 7 ft. 6 in. Ends of front bars should be capped or plugged with Astrup Ornamental Plug Ends for resistance to weather elements.

"Display-Window" Protection—For proper sun shade protection awnings should project at least as far forward from face of window as the bottom of the window is below clearance limit of awning. Astrup Tensolok Arms are made in various lengths to provide for any desired awning wall and projection or pitch of awning.

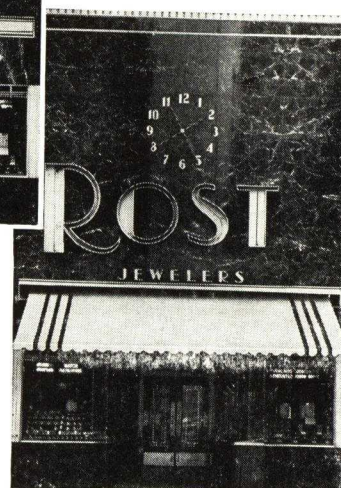
Astrup Electrically Operated Equipment—Complete with Limit Switch (to control distance that the awning is to roll and unroll), Button Switch, Control Switch, Motor, Operating Gears completely mounted and wired ready for installation. Simple to install, efficient in operation, trouble-free, inexpensive. Write for detailed folder.



Detail of Typical Open Face Awning Construction with Awning Hood



Actual Installation of Recess Box Fitted with Lid Panel and Operated with Astrup Pivoted Type Lid Mechanism



For Construction, see illustration at bottom of following page.

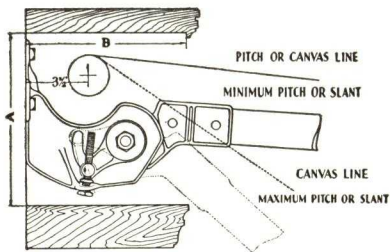


Actual Installation of Awning with Hood

Note to Architects

"Astrup Awning Hardware for Modern Store Front Construction," a complete, detailed Manual on Awning recess box construction furnished on request, or, if desired, we will write your preliminary specification and check your drawings of awning bars, without obligation.

ASTRUP RECESS BOX MECHANISM



Tenso-Lok Recess Arm Bracket

Recess box dimensions A and B vary with angle of awning and arm. Write for recess box sizes, and advise height of box above sidewalk and projection of awning from building

Trend of modern architecture is to provide concealed or recess awning box construction. This allows all operating awning mechanism and cloth to be concealed when awning is completely rolled up. Tenso-Lok (Lateral Type) Arm installation permits all metal parts to be concealed within recess box.

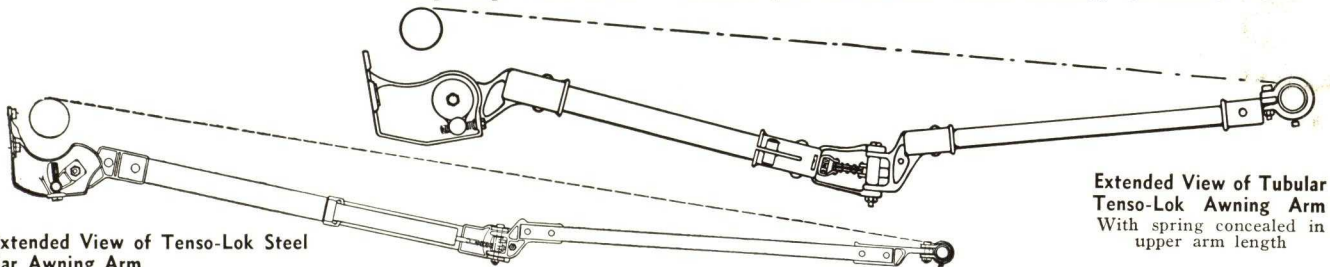
Tenso-Lok Arms equipped with center spring control force unrolling of awning and keeps top cloth cover

"taut" when awning is completely unrolled—assuring neat, trim appearance. They also insure fractional slant adjustment. Unexcelled for compactness, durability and protection against elements. Tenso-Lok Steel Bar Arms made in lengths from 3 ft. 6 in. to 11 ft. Tubular Tenso-Lok Arm in lengths 4 to 8 ft. Furnished in Black Japanned, Hot Galvanized, Cadmium and Chromium Finish, Solid Bronze and Stainless Steel.

Tenso-Lok Steel Bar Arms are made in two numbers for recess boxes—Styles 31 and 34. Style 31 is furnished in 3 ft. 6 in. to 6 ft. 6 in. lengths. Style 34, in 7 to 11 ft. lengths. Tubular Tenso-Lok Arm also in two numbers—No. 50 in 4 to 7 ft. lengths, No. 51 in 7 ft. 6 in. to 8 ft. lengths.

All roller recesses should be weatherproof, with drain plate provided. If framed in wood, the backing (to which the awning parts are fastened) must not be less than 2 in. thick and of solid construction. Steel back plates should not be less than 1/4 in. thick. Awnings up to 20 ft. require no center supports. For wider spans, split cover awnings are recommended (see illustration "Hood Awning," preceding page).

Extended View of Tenso-Lok Steel Bar Awning Arm

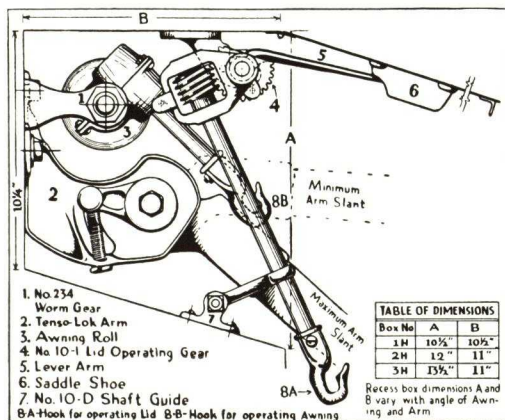
Extended View of Tubular Tenso-Lok Awning Arm
With spring concealed in upper arm length

LID OPENING AND CLOSING MECHANISMS

Modern recess boxes may be fitted with covers to "close up" and conceal recess box openings. This method completely conceals awning mechanism and cloth and provides complete weatherproof protection. Lids should be made of same metal as building front or of metal to harmonize with it. Recess box should extend beyond glass line on both sides to allow canvas to properly protect window opening, i.e., 5 1/2 in. on operating end and 3 in. on opposite (blank) end provides adequate cover-

age. Lid Spring Equalizers are recommended for use on all lids.

Angle brace bar should be placed at bottom of lid or panel (when lid is not expressly designed to provide rigidity) to prevent lid from "buckling." This angle brace should be placed on inner side of lid (as low as possible but sufficiently high enough to clear inside of recess box opening) and should extend horizontally the full length of lid. Also straps are recommended to be placed vertically on inside of lid panels at each lever arm or pivot member position.



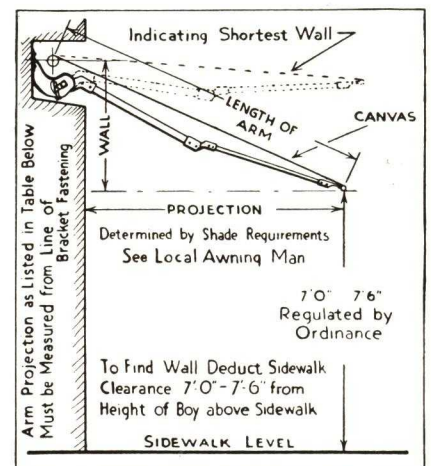
Astrup Type Detail

Hinged Lid Construction

This type lid construction permits the lid to be hinged to front of recess box independently of the lid operating mechanism.

The lever arms (fitted with bronze rollers) project the lid and facilitate smooth operation. This construction automatically locks the lid in open and closed positions preventing damage by wind.

Lid cover plates and hinges furnished by contractors.



Pivoted Lid Construction

(See detail lower right corner.) This type lid construction permits lid to be actuated by lid pivot members that are attached to lid shaft which extends horizontally across width of recess box. Pivot members are long; they protect lid and offer rigidity. Only the Pivoted Lid Mechanism is furnished by Astrup (not the lid panel).

Architects Complete Specifications

Recess Box (and Lid Panels) are to be furnished by store front contractor. Must be of suitable size and construction for Astrup Awning Equipment (see Hinged or Pivot Type Detail).

If lid panel to be applied to recess box—recess box to be of suitable size and construction for Astrup Type.

Panel Equipment—to be Astrup (hinge or pivot type) Lid Panel Mechanism.

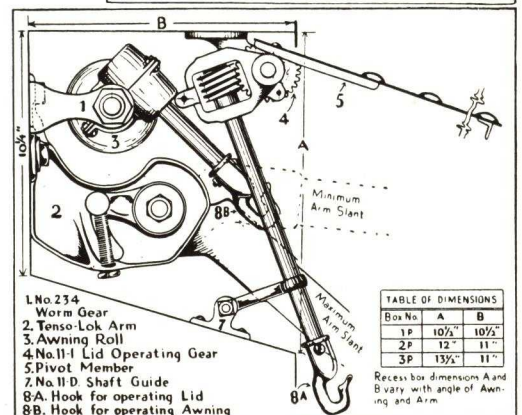
Roller Equipment—will consist of Astrup High Carbon Steel Tubing for rigidity.

Awning Equipment—to be Astrup Style (for Hinged or Pivoted).

Awning Arm—to be Astrup Tenso-Lok (Lateral) Arms.

Awning Operation—Astrup (inside or outside) Control (state construction desired).

Awning Cloth—to be Astrup 8.42 oz. U. S. Army Duck in color to be selected.



MEMORANDA

The FANNER Line



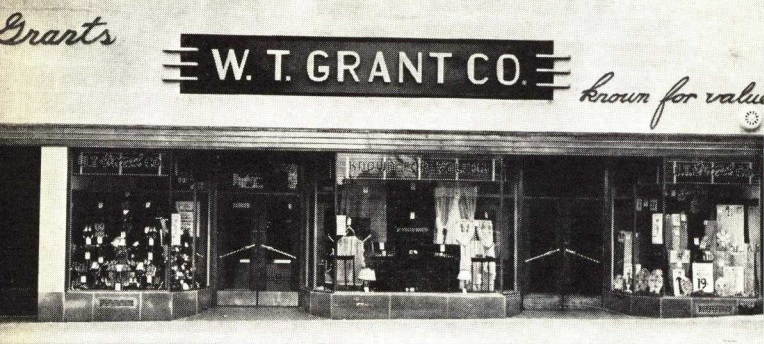
DESIGN HARMONY

MODERN STORE FRONTS

NEED MODERN

AWNINGS





W. T. GRANT CO. STORE, WHITE PLAINS, N. Y.

Split type awning 39 ft. long. Recess equipped with hinge type lid and operated with one operating mechanism. Fanner gear roller fixtures, lateral arms and lid mechanism used throughout

MODERN store fronts—a recognized merchandising necessity today—have made essential the development of awnings which will harmonize with and enhance the store front design.

In the past architects usually considered awnings as a necessary evil—the store front was carefully studied, designed and constructed, then the awning was added and the whole, beautiful effect so painstakingly achieved was completely destroyed. That condition is now a thing of the past—the awning has assumed its proper place and the architect can now make it an attractive and efficient unit in his complete design.

From a purely practical angle the awning was originally developed

to protect the window displays from the effects of sun. With the advent of air conditioning and its widespread use in stores, air conditioning engineers have proved conclusively that awnings will result in a substantial reduction in the operating costs of air conditioning units since they will eliminate as much as 75% of the heat gained through the window glass.

The purpose of this catalog is to show the architect examples of modern store fronts in which awnings have been made an integral part of the design and to furnish him with basic information which will enable him to take advantage of the latest developments in awning construction in his own projects.

THE COMPANY

THE FANNER MANUFACTURING COMPANY, established in 1894, has engaged in the manufacture of awning parts since 1909. During that time it has pioneered in the development of awning fixtures, lateral arms and hardware that make the present smart appearing, attractive awning installations possible.

FACILITIES AND SERVICE

The Fanner organization of engineers, designers and workmen couple technical ability with practical knowledge of manufacturing awning parts. The services of this organization are always available to architect or awning manufacturer.

In addition, Fanner has everything it requires in physical resources for conducting its business. Our twelve acre plant at Brookside Park in Cleveland houses modern malleable and gray iron foundries, machine, galvanizing and assembly shops—complete facilities for the manufacture of awning parts from raw material to finished product.

Through dealers located in the leading cities throughout the country and through our own warehouse facilities, Fanner gives unexcelled service to the needs of every user of awning parts.

THE PRODUCT

Among manufacturers of awning parts, Fanner is unique in that it is the only manufacturer that produces from raw materials to finished awning parts. As a consequence of constant control of raw

materials and manufacturing operations, engineering and research assistance, products of the highest quality make up the Fanner Line.

In the manufacture of awning parts, malleable iron is used practically to the exclusion of all other metals. Fanner awning parts are fabricated from special analysis malleable iron developed by Fanner metallurgists.

To protect awning parts from rust and corrosion, Fanner awning parts are Hot Dip Galvanized, the most effective method of rust prevention known to metallurgy. Fanner Hot Dip Galvanizing consists of a thick durable coating of zinc, flawlessly applied so that the heavy shell of zinc becomes a part of the product itself. It adds appearance, utility and life to the awning parts.

Unless special treatment is given to malleable iron parts before they are Hot Galvanized, the Galvanizing process is likely to impair the properties of the iron by making it brittle, less ductile, crystalline in formation and low in resistance to shock. To prevent this happening to Fanner awning parts they are subjected to the Flecto Process before they are galvanized.

The Flecto Process is a patented thermal treatment given to malleable iron to prevent embrittlement caused by hot dip galvanizing. In addition, the process increases the impact resistance of the iron from 33% to 40% over normal malleable iron. So effective is this treatment that the U. S. Government has incorporated it in its specifications for their own malleable iron.

THE FANNER MANUFACTURING COMPANY is the only awning parts manufacturer licensed and equipped for applying the Flecto Process.

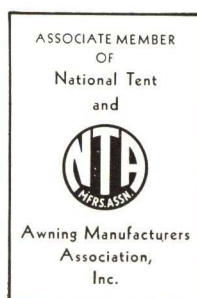
THE FANNER MANUFACTURING CO.

BROOKSIDE PARK

EASTERN OFFICE AND WAREHOUSE

74 Duane Street

NEW YORK, N. Y.



CLEVELAND, OHIO

CANADIAN FACTORY AND OFFICE

CANADIAN FANNER LTD.,

Main and Frid Streets

HAMILTON, ONT.

MODERN STORE FRONTS

Need Modern Awnings

FOR APPEARANCE AND UTILITY



OUTRIGGER ARM

CLOSED

OPEN

DEVELOPMENT of the Fanner Tubulateral Arm has been one of the important contributions to the attractive appearance of modern awnings for modern store fronts. With the old type outtrigger arm the awning supports were exposed on the face of the building, thus entirely nullifying the most careful design. Today, with the Tubulateral Arm, all projecting parts can be hidden and the full effect of the design retained. A comparison of the illustrations at the right and left will clearly demonstrate the clean, unmarred effect obtained by Fanner Awning Equipment.

There are several types of store front and awning construction, each meeting specific requirements. These are outlined below and the architect will find it helpful to consider the store front and awning installation as one problem, since construction of the recess or awning hood is part of the store front contract.



TUBULATERAL ARM

OPEN

CLOSED

TYPES OF STORE AWNING CONSTRUCTION

RECESS CONSTRUCTION—OPEN

Recess construction requires the incorporation in the store front design of a recess of adequate size to accommodate the awning and its mechanism. The awning roller, roller fixtures and lateral arms are installed within the recess, leaving the store front free of defacement that results from the attachment of awning parts. The awning, when not required, is rolled up inside the recess where it is protected and the store front left unmarred.

An awning recess is often described as a "Recess Box" or a "Recessed Awning Bar."

RECESS CONSTRUCTION—CONCEALED

Using a lid to close the recess opening when the awning is not in use is an innovation in recess construction that has protective and decorative advantages.

The lid, made of the same metal as the store front or metal that harmonizes with it, when shut covers the recess opening. The awning, concealed inside the recess behind the lid, is safely protected from weather, dirt and deterioration. The store front, unmarred from the attachment of awning parts and without the awning or

recess opening visible, is improved in appearance tremendously.

Concealed recess construction requires a recess large enough to accommodate the lid operating mechanism in addition to the awning and its mechanism.

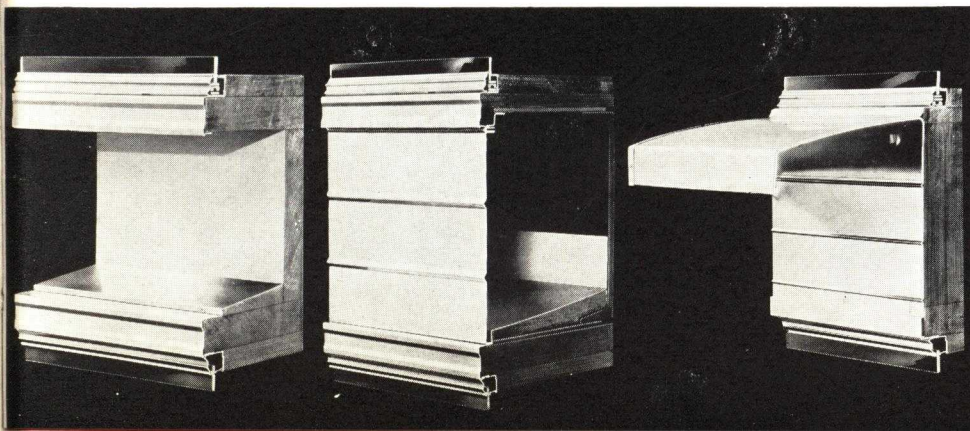
Concealed recess construction is sometimes referred to as a "Concealed Awning Bar."

OPEN FACE CONSTRUCTION

When no recess has been provided, it becomes necessary to attach the roller fixtures and lateral arm brackets to the face of the building or to the transom bar and allow the awning roller to project from the face of the building. This construction is described as "Open Face Construction."

OPEN FACE CONSTRUCTION—WITH HOOD

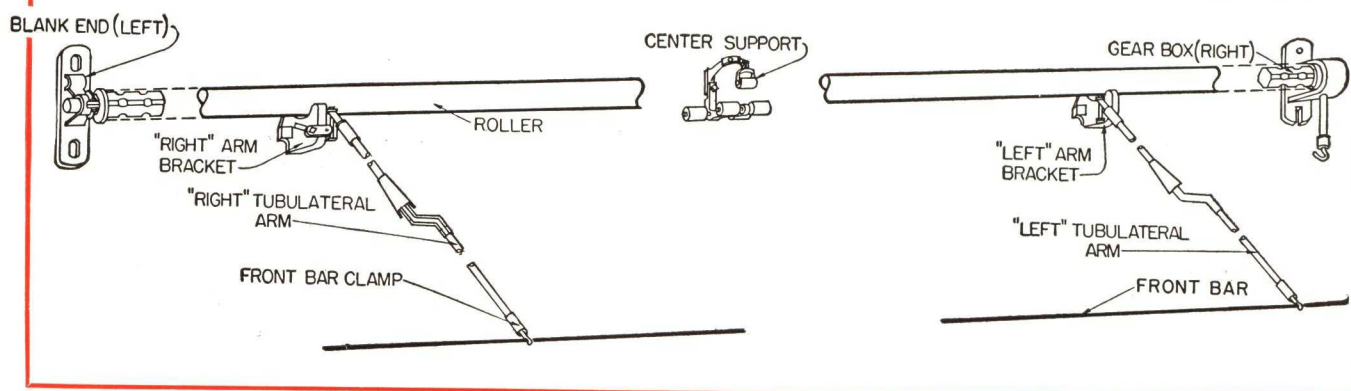
Hoods are frequently used in connection with open face construction to provide protection for the awning when it is rolled up. The hood projects from the face of the building over the awning roller. This type of construction is referred to as a "Hood Type" or a "Hood Awning Bar."



THREE TYPES OF AWNING BARS OFFERING THE ARCHITECT OP- PORTUNITY FOR DECORATIVE AND HARMONIOUS TREAT- MENTS

1. OPEN TYPE RECESS
2. CONCEALED RECESS WITH LID
3. HOOD AWNING BAR

STORE AWNING CONSTRUCTION



The modern store awning is constructed to roll snugly up against the building or into a recess. The awning roller is operated by means of a self-locking, enclosed type, worm gear, which usually is equipped with a hook and operated by means of a winding brace with an eye for engaging it to the hook. Sometimes the worm gear is connected to a gear box that operates by means of a crank. This gear box may be fastened to the face of the building or inside the pilaster, at a convenient distance above the sidewalk, with the drive shaft running down the face of the building or inside the pilaster. The worm gear supports one end of the roller, usually the right end, and the other end of the roller is supported by means of a blank end bracket. If the roller exceeds twenty feet (20') in length, center supports are used to support the intervening section of the roller, the number of center supports required depending on the length of the roller.

The awning when projected is supported by lateral arms that fasten under the awning roller. The outer ends of the lateral arms attach to the front bar of the awning. As the awning winds up on

the roller the lateral arms fold horizontally against the building or inside the recess, underneath the awning roller. (See drawing above.)

The awning is usually constructed with the canvas in one piece on the awning roller. Sometimes it is necessary to divide the awning roller and canvas into sections, the sections to be operated as a unit with one worm gear. An awning of this type is described as a "Split Type Awning."

Roller support brackets are used to support the intervening ends of the rollers on a split type awning. Another method sometimes used when the roller is divided in two sections is to erect the worm gear between the two sections and use blank end brackets at the ends of the awning for supporting the rollers.

When the opening between sections of a split type awning must be closed, undercovers are used. These undercovers roll up on spring rollers that are erected underneath the center support brackets. The covers are fastened to the front bar of the awning and operate in unison with the awning.

STORE AWNING MEASUREMENTS

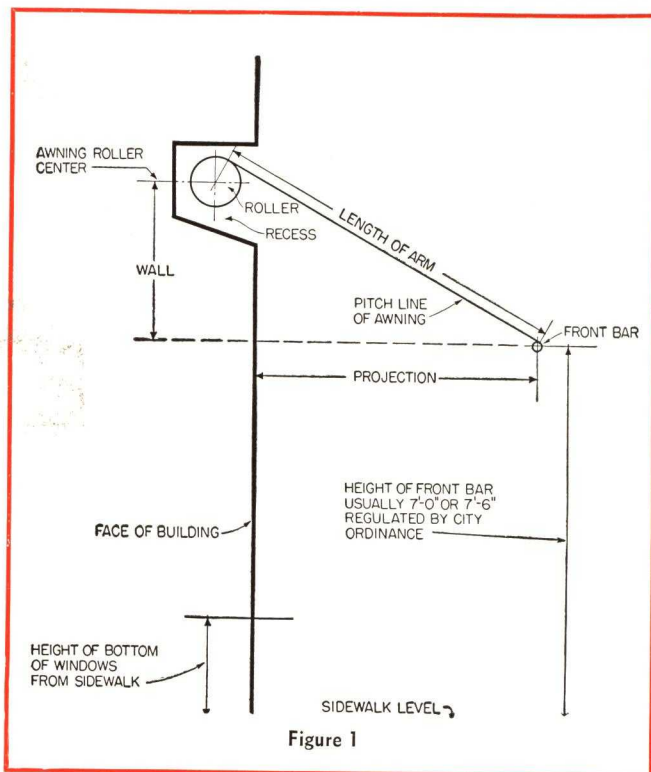


Figure 1

WALL — The "wall" measurement of an awning is the distance down the face of the building, from the center of the awning roller to a point on the face of the building that is in line with the front bar of the awning, when the awning is in its correct projected position. Wall measurement is sometimes described as the "down" of an awning.

Wall measurement is determined by subtracting the height of the front bar of the awning above the sidewalk from the height of the awning roller center from the sidewalk.

The height of the front bar from the sidewalk is usually 7 ft., or 7 ft. 6 in. This height is usually regulated by city ordinance, and referred to as the clearance limit of the awning.

PROJECTION — The "projection" of an awning is the distance from the face of the building to the front bar of the awning when the awning is in its correct projected position. Projection measurement is sometimes described as the "out" of an awning.

Projection measurement is determined by shade requirements of the awning and the awning contractor should determine this measurement.

For proper shade protection an awning usually should project at least as far forward from the face of the building as the bottom of the windows are below the clearance limit of the front bar of the awning. To determine, subtract the height of the bottom of the windows from the sidewalk from the height of the front bar of the projected awning from the sidewalk.

LENGTH — The distance from end to end of an awning across the face of the building is the "length" of the awning.

RIGHT AND LEFT OF AN AWNING — The right and left of an awning is determined by facing the awning looking into the building. Your right and left in this position is the right and left of the awning.

(When inquiring for information about awning construction always give the awning measurements or furnish details that these dimensions can be determined from.)

RECESS CONSTRUCTION

WITHOUT LID — HINGE LID — PIVOT LID

At Left: THE FRANCES SHOP

South Bend, Ind.

Hinge Type Lid operated with one lid operating gear.

Awning is 40 ft. long, split type without undercovers

SUCCESSFUL recess construction must start with the designer of the store front and terminates with the installation of the proper Fanner equipment by a competent awning manufacturer. It is important that the following facts be kept in mind:

(1) The recess must be large enough to accommodate the awning and the equipment that is to be installed in it.

(a) The required depth and height of the recess is governed by the wall and projection of the awning and the use or non-use of a lid.

(b) A larger recess is required whenever a lid is to be used as the recess must accommodate the lid operating mechanism in addition to the awning and its equipment.

(2) The recess opening must not vary in size across the front.

(3) The recess should extend beyond the glass line on both sides to provide space for the gear roller fixtures that must be erected at the ends of the roller, thus allowing the canvas to completely cover the windows.

RECESS DIMENSIONS

LENGTH — A recess should be long enough to extend 5 in. beyond glass line on both sides to provide space for the roller fixtures.

DEPTH — A recess must be deep enough to inclose the roller fixtures and lateral arms when the awning is rolled up. If a lid is to be used the recess must also inclose the lid operating mechanism. With Fanner equipment (roller fixtures, lateral arms, lid mechanism) the minimum inside depth of a recess should be

9 IN. WHEN NO LID IS TO BE USED

10 IN. WHEN A LID IS TO BE USED

HEIGHT — The height of a recess is governed by the angle of the lateral arm in an open position, this angle in turn being governed by the pitch of the awning. The required height varies with the pitch of the awning because of interference from the bottom of the recess with the arm; therefore the height must be sufficient to allow enough clearance between the arm and the bottom of the recess to allow the arm to be adjusted to the angle required.

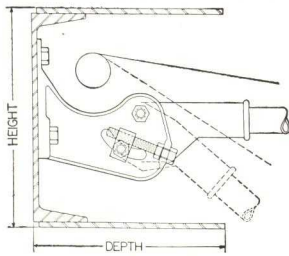


Figure 3

HOW TO DETERMINE REQUIRED HEIGHT OF A RECESS

To determine the height required, the wall and projection of the awning must be known. (See "Store Awning Measurements," page 4.) After determining the wall and projection measurements, lay the awning out to scale as shown in Figure 2. The line from the awning roller center to the front bar center will represent the pitch line of the awning. Extend the awning roller center line toward the front bar as shown. Place protractor on the awning roller center and measure angle between the awning roller center line and the pitch line of the awning. With this angle determined the size recess can be determined by referring to Table 2 if the recess is not

(4) The recess should be high enough above the sidewalk to permit the installation of the awning roller at least 9 ft. 6 in. above the sidewalk.

(5) The back of the recess must be rigid to provide substantial backing and support for the gear roller fixtures and lateral arms. If the recess is framed in wood the back should not be less than 2 in. thick.

(6) If the recess is to be equipped with a lid the top must be level and rigid so it will properly support the lid fixtures that must be fastened to it. The trim of the store front above and below the recess must also be level and parallel.

(7) The bottom of the recess should be inclined and flashed with metal lining so it will drain. The height of the incline does not need to be over 1 in., for if it is run up too high in the back of the recess it may interfere with the installation of the awning equipment.

to be equipped with a lid, and to Table 3 if the recess is to be equipped with a lid.

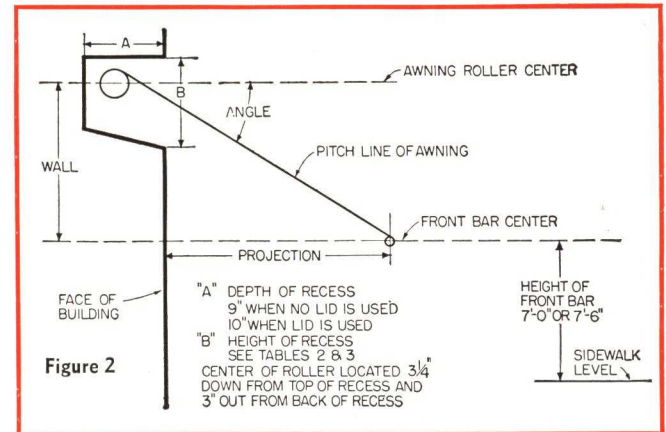


Figure 2

Recess dimensions given in tables below are based on the use of Fanner equipment (roller fixtures, lateral arms, lid operating mechanism) with center of roller located $3\frac{1}{4}$ in. down from the top of the recess and 3 in. out from the back of the recess.

Table 2 Recess Without Lid			Table 3 Recess with Lid		
Angle in degrees	Size recess Inside dimensions		Angle in degrees	Size recess Inside dimensions	
	Depth	Height at front		Depth	Height at front
20° and less	9"	9"	25° and less	10"	10"
Over 20° to and including 31°	9"	10"	Over 25° to and including 33°	10"	11"
Over 31° to and including 38°	9"	11"	Over 33° to and including 39°	10"	12"
Over 38° to and including 45°	9"	12"	Over 39° to and including 44°	10"	13"
Over 45° to and including 49°	9"	13"	Over 44° to and including 47°	10"	14"
Over 49° to and including 52°	9"	14"	Over 47° to and including 50°	10"	15"

LID OPERATING MECHANISMS

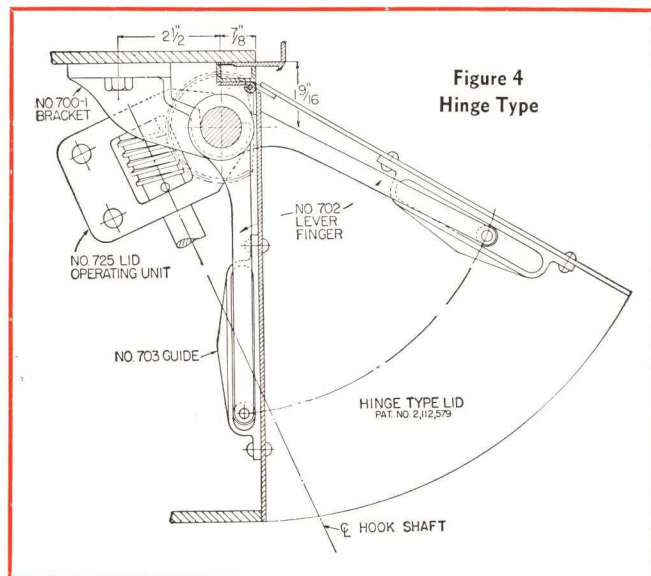
For Concealed Recess Construction

DESIGN harmony and protection are the two principal advantages to the use of a lid for closing the recess opening on a recess installation.

From the standpoint of design, the most attractive effects are achieved when the lid is made of the same metal as the store front, or from metal that harmonizes with it. As a general rule, store front fabricators furnish the lid when this type of awning construction has been specified.

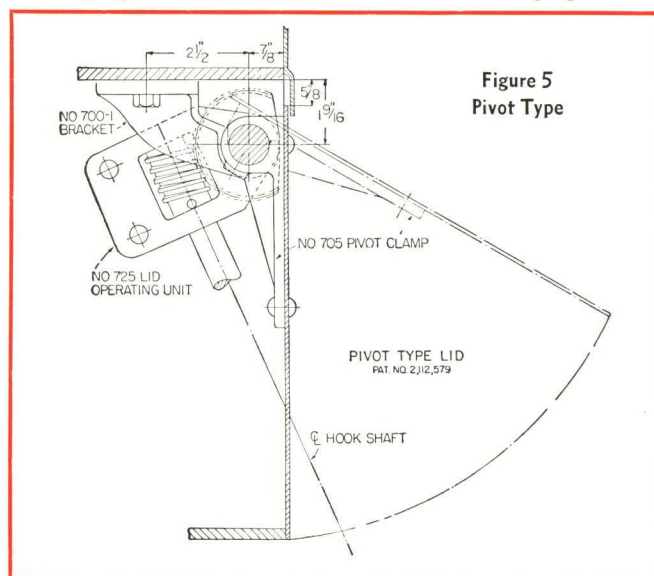
Depending upon the type of lid to be used, Hinge or Pivot, depends the type of mechanism required to operate the lid. The various parts that make up the mechanisms are described and illustrated on the facing page, and will enable the architect to see at a glance the fixtures required and their relation to smoothly operating equipment.

TYPES OF LIDS—Lids are of two types deriving their description from the method used for hinging them.



HINGE TYPE—A lid hinged to the top of recess independent of the lid operating mechanism is described as a "Hinge Type Lid." The lid is joined to the lid operating mechanism by means of lever fingers that are mounted on the lid shaft and guides that fasten to the inner side of the lid. Rotation of the lid shaft causes the lever fingers to regulate the position of the lid. See Figure 4.

A continuous hinge made of non-rusting metal should be used and it should be supplied by the store front fabricator.



PIVOT TYPE—A lid supported by and fastened to the lid shaft by means of pivot clamps is described as a "Pivot Type Lid."

The pivot clamps mount on the lid shaft and the lid is fastened to the clamps and pivots on the shaft when being opened or closed. See Figure 5.

When a pivot type lid is closed there is a small opening between the lid and the top of the recess that should be closed by an overlapping metal strip fastened to the store front.

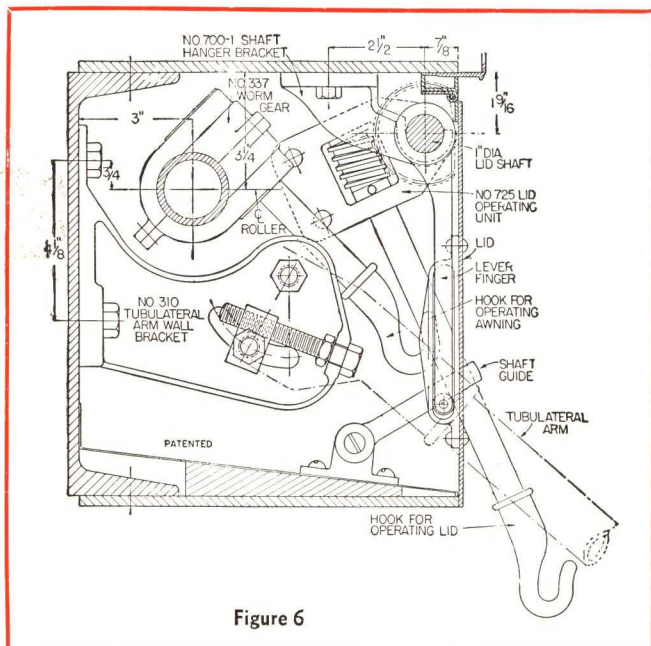


Figure 6

Cross section view of recess showing Lid Operating Gear, Awning Gear and Tubulateral Arm Bracket in position

LID REQUIREMENTS

Lids should be of the lightest construction, consistent with sufficient strength to avoid sagging and buckling. A limit of 4 lbs. per lineal foot is advisable. (Some store front fabricators recommend .078 stock in bronze and .093 stock in aluminum.)

Lids must be rigid and should be reinforced where required. An angular strip placed on the inner side of the lid horizontally along its entire length is effective as a reinforcement. Strip should be placed as near the bottom of the lid as possible but up high enough to clear the bottom of the recess so it will not interfere with the lid closing tight.

The practical length of lids varies with conditions. To be entirely safe it is advisable to make two sections of lids over 30 ft. in length and operate each section with separate operating mechanisms.

SHAFT REQUIREMENTS

The lid shaft must be 1 in. diameter and either cold rolled steel or steel shafting may be used. Shaft must be straight. No holes should be drilled through it but spot drilling for the attachment of the lid fixtures by means of set screws is recommended. Painting the shaft with aluminum paint to prevent rust is advisable.

RECESS REQUIREMENTS

It is of the utmost importance that the recess be of proper construction and of adequate size to accommodate the awning, roller fixtures, lateral arms and lid operating mechanism. See page 5 for information regarding construction and size required.

LID OPERATING SHAFT WITH FIXTURES ASSEMBLED

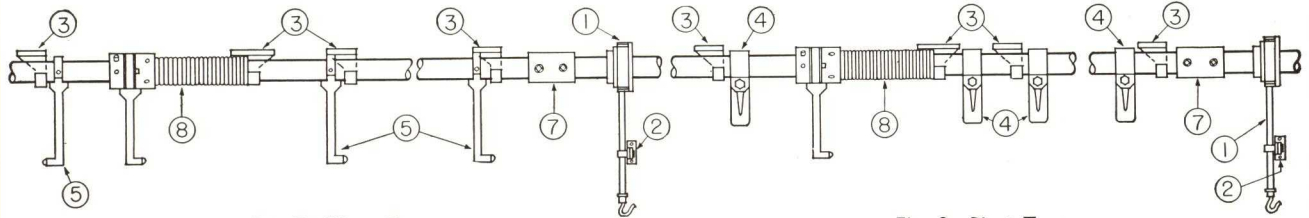
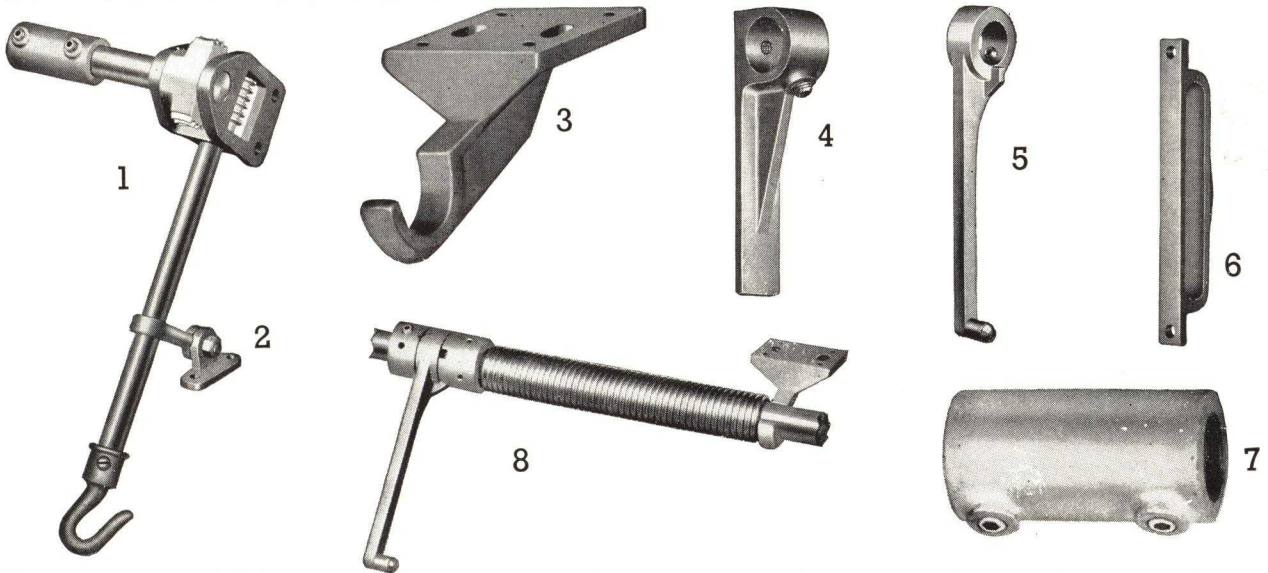


Fig. 7—Hinge Type

Fig. 8—Pivot Type

LID OPERATING FIXTURES (Patent No. 2,111,579)



(1) **NO. 725 LID OPERATING GEAR** — A complete assembled unit for operating the lid. Couples to the lid shaft and fastens to the side of the recess, either left or right. Unless otherwise specified gear is furnished for attachment at right end. Gear shaft can be set at angle position for operation through front of recess or in vertical position for operation through the bottom of recess.

(2) **NO. 728 SHAFT GUIDE** — Provides a bearing for the gear shaft, relieving strain on the lid operating gear.

(3) **NO. 700-1 SHAFT HANGER BRACKET** — Used for supporting the 1 in. diameter lid shaft. Brackets fasten to top of recess. One at each end of shaft and others approximately 3 ft. apart from end to end of shaft.

(4) **NO. 705 PIVOT CLAMP** (For Pivot Type Lids Only) — For fastening lid to the shaft. Clamps mount on shaft approximately 3 ft. apart from end to end of shaft. Lid is fastened to clamps and pivots on shaft by means of them.

(5) **NO. 702 LEVER FINGER** } (For Hinge Type Lids Only) —

(6) **NO. 703 GUIDE** }

These fixtures are used for connecting a Hinge Type Lid to the lid

operating mechanism. The Lever Fingers mount on the shaft approximately 6 ft. apart and the guides fasten to the inner side of the lid, located so that the roller of the Lever Finger will operate in the slot of the guide. As the lid shaft rotates the Lever Fingers operate the lid.

(7) **NO. 706 SHAFT COUPLING** — Used for coupling shafts when more than one length is needed. Coupling is bored to size so shafts will be in line.

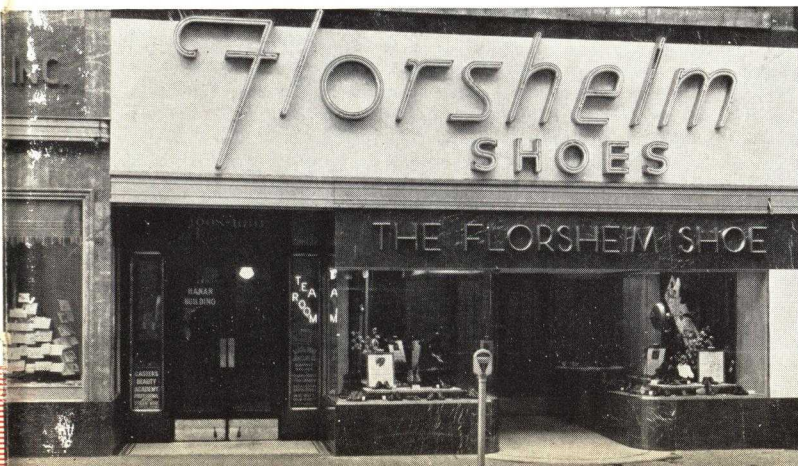
(8) **NO. 707 TORSION SPRING ASSEMBLY** (Patent No. 2,111,579) — Used to eliminate the twist and torque in the lid shaft and aid the operating gear in the operation of the lid. Locate one to the left of the Shaft Hanger Bracket second from the end of the shaft opposite the end to which the Lid Operating Gear is attached. From this point locate other Torsion Spring Assemblies at alternate Shaft Hanger Brackets approximately 6 ft. apart. No Torsion Spring Assembly required next to Lid Operating Gear.

The smooth and easy lid operation that results from the use of Fanner Lid Operating Equipment is due, in no small measure, to this Torsion Spring Assembly, a patented Fanner feature. They should be used on every lid installation.

7

FLORSHEIM SHOE STORE, KANSAS CITY, MO.

Awning is 19 ft. in length with Hinge Type Lid. Awning and lid operated with Fanner Equipment



COMPONENT PARTS USED FOR A STORE AWNING

LATERAL ARMS

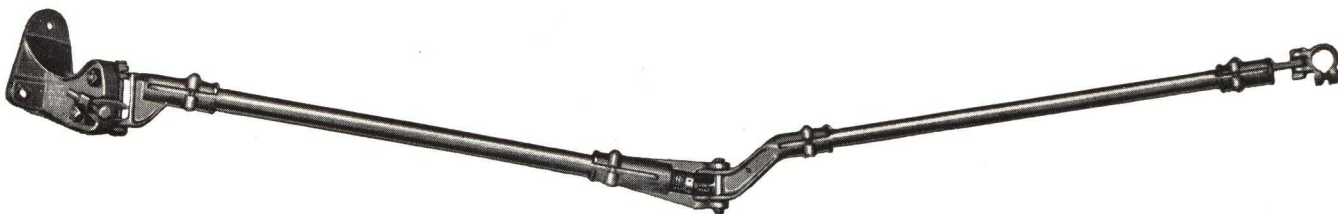
Lateral arms are used to support a store awning when it is projected. Lateral arms fasten under the awning roller and as the awning winds up, the arms fold horizontally against the building underneath the awning roller.

Lateral arms are made in "rights" and "lefts" and at least two

arms (one "right" and one "left") are required for an awning. If the awning exceeds twenty feet (20') in length, additional lateral arms are required. Best results follow when an even number of "right" and "left" arms are used.

The Fanner Tubulateral Arm, a modern creation expertly designed and manufactured, efficient in operation, is the cornerstone of better store awnings.

THE FANNER TUBULATERAL AWNING ARM (Patents Nos. 1,759,715, 1,993,183 and 2,123,828)



Considering the Fanner Tubulateral Arm from the standpoint of appearance, efficiency in operation, durability, ease of adjustment and erection, or from any standpoint that a lateral arm can be judged from, is certain to lead to the conviction that it is the outstanding lateral arm. Actual service quickly confirms this conviction for the continued efficiency of the Tubulateral Arm under hard usage is remarkable.

The Tubulateral Arm is the very latest type of lateral arm. Its design is unique, its streamline appearance distinctive and especially adapted to modern store front architecture. It is suitable for either recess construction, open face construction or use under hoods.

It embodies a combination of outstanding and basic features that assure the very utmost in lateral arm efficiency, noteworthy of which are:

TUBULAR CONSTRUCTION — Provides maximum strength with lightness and the trim streamline appearance that harmonizes perfectly with modern store fronts.

PARALLEL FOLDING — Provides the neat compactness that typifies the Tubulateral Arm when folded. Because the outer tube is straight the arm folds firmly against the awning roller and into smaller recesses than is possible with arms that have an offset in this tube.

PATENTED ADJUSTABLE CENTER SPRING CONTROL (Patent No. 2,123,828) Insures efficient, positive operation by compelling the Tubulateral Arm to unfold easily no matter how flat the pitch of the awning. When the arm is projected the Control holds it in its corrected projected position, thus keeping the canvas taut and free from bag, which results in improving the appearance of the awning and preventing the canvas from wearing or being damaged through contact with the arm. Control can be adjusted to suit requirements of each particular installation.

NEW WALL BRACKET — Designed for use with either open face or recess construction. This bracket, compact and small enough for installation in even the smaller recesses, is trim in appearance and possesses the rugged strength required for properly supporting the lateral arm. Has three fastening holes which eliminates the drilling of the extra hole that four hole brackets require and also provides a more efficient bearing than is possible with a four hole bracket.

IMPROVED SLANT ADJUSTMENT — The Tubulateral Arm can be adjusted to the exact angle (slant) desired very easily by means of the hex adjustment screw located on the face of the bracket. The improved locking features incorporated into this adjustment prevent the adjustment from slipping and the arm from "whipping" when it is projected with the awning unrolled and subjected to wind pressure.

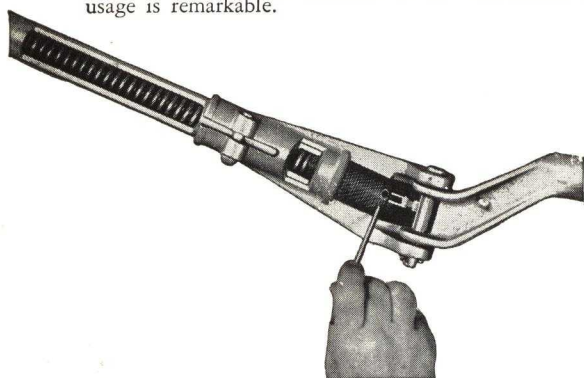
ACCESSIBILITY OF ADJUSTMENT PARTS — Because all adjustment parts are easily accessible, the Tubulateral Arm is extremely easy to adjust thus saving time and making erection easier.

GENERAL — Fine and durable construction characterize the entire Tubulateral Arm and as a result the strength of the arm is uniform which minimizes stress on any one part. The castings are Fanner special analysis malleable iron and are Fleeto Processed to increase their impact strength and prevent them from being embrittled by the application of the hot galvanizing process. The tubular sections of the arm are fabricated from heavy gauge high carbon steel tubing and are assembled into the castings by a unique method that prevents them from twisting or loosening. The sections of the arm are joined with carbon steel hinge pins. The patented center spring control is connected to the arm with bronze chain. The slant adjustment screw is made from high carbon heat treated steel.

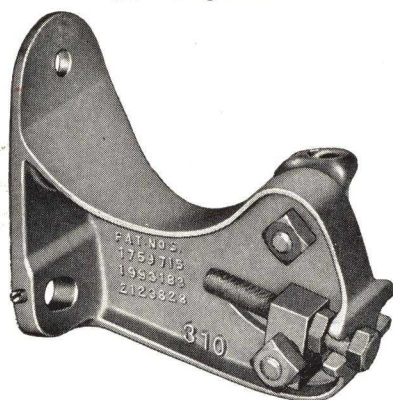
Tubulateral Arms are manufactured in lengths of 6 inch variation starting with 3 ft. 6 in. length arms. Arms 8 ft. 6 in. and longer are made with larger and heavier castings and larger diameter heavier gauge tubing.

Standard finish is hot galvanized. Lustrous black paint finish will be furnished if desired.

Tubulateral Arms are shipped in individual fibre-board cartons.



View of the center section of the Tubulateral Arm, showing Adjustable Spring Control with section of upper tube cut out to show spring. Adjustment is made by inserting pin in slots of threaded adjustment sleeve and turning sleeve



View of Wall Bracket of Tubulateral Arm, showing slant adjustment screw. Strength and compactness are embodied in design of this bracket



8 Folded view of Tubulateral Arm. Note compactness and how sections fold parallel

GEAR ROLLER FIXTURES

All fixtures, viz: worm gears, gear boxes, blank end brackets, awning checks, center supports and center support brackets required to support and operate an awning roller are encompassed in the description "Gear Roller Fixtures."

Gear Roller Fixtures are manufactured for all types of awning construction and successful awning construction depends on the

selection of the proper type. For best operating results, ball bearing equipped fixtures are recommended especially for large awnings.

The Fanner Line includes an extensive assortment of gear roller fixtures comprising all types and ranging from low cost fixtures to modern ball bearing equipped fixtures. For complete line see our general catalog.

WORM GEARS —BALL BEARING

No. 337 ADJUSTABLE WORM GEAR (For Recess Construction) — This is an excellent worm gear designed especially for recess construction and with power to operate large awnings. Gear shaft can be adjusted to any angle or position required. It has full ball bearing construction, steel cut gears, galvanized malleable iron case and bracket and is equipped with an Alemite fitting for easy lubrication.

No. 131 (For Open Face Construction) — This fine sturdily constructed worm gear is recommended for smooth, easy operation of large awnings. It has full ball bearing construction, steel cut gear, galvanized malleable iron case and is equipped with an Alemite fitting for easy lubrication.

BLANK END BRACKET

No. 3370 BALL BEARING BLANK END BRACKET — Made with horizontal fastening plate for recess construction. Used for supporting awning roller on end opposite gear.

ROLLER SUPPORT BRACKET

No. 338 BALL BEARING ROLLER SUPPORT BRACKET — This is an excellent bracket for supporting the roller of a split type awning. The roller bears and revolves on the ball bearing that the bracket is fitted with. The bracket is galvanized malleable iron. Made for 1 $\frac{1}{8}$ in. O.D. tubing, 1 $\frac{1}{2}$ in. steel pipe and 1 $\frac{1}{4}$ in. steel pipe and with 3 in. projection.

AWNING CHECK

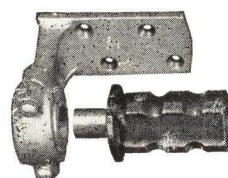
No. 601 BALL BEARING AWNING CHECK — This is a valuable fixture that should be used on every roller awning. It is used to regulate the distance an awning can be unrolled thus preventing the canvas from being rolled on the inner side of the roller with consequent cutting of the canvas. It fits inside the roller and takes the place of the blank end bracket. It is very easy to adjust and will not jam. It has full ball bearing construction, malleable iron bracket and frame and brass shaft and stop nut. Made to fit 1 $\frac{1}{8}$ in. O.D. and 2 $\frac{3}{8}$ in. O.D. steel tubing and 1 $\frac{1}{2}$ and 2 in. steel pipe and is equipped with brackets with 3 or 3 $\frac{1}{2}$ in. projection.

CENTER SUPPORT

No. 680 BALL BEARING CENTER SUPPORT (Patent Applied for) — This center support eliminates wrinkling and wearing of the cloth, requires no reinforcing strip in the awning cover and helps to provide smooth, easy roller operation. It introduces an entirely new principle in center support construction. The bottom roller carriers are suspended on springs that cause the rollers of the support to bear evenly and firmly on the canvas. Compressed by the weight of the awning roller, the springs adjust to the alternate increase and decrease in weight resulting from the rolling and unrolling of the canvas simultaneously with the operation of the awning roller. The roller shafts of the support are mounted on ball bearings to insure smooth, easy operation and prevent the rollers from sticking. The top of the support is removable and adjustable, vertically and horizontally so large and small rollers can be accommodated.

The support will fit into an awning recess and is designed so installation is easy as all fastening bolts and adjustment parts are accessible from the front of the recess.

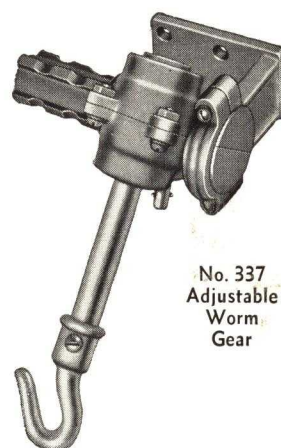
The support has full ball bearing construction, galvanized malleable iron frame, bronze springs and special treated hardwood rollers.



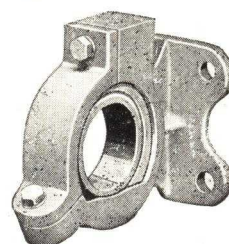
No. 3370
Blank End Bracket



No. 131
Worm
Gear



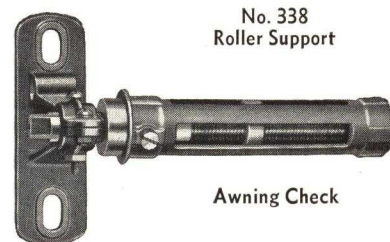
No. 337
Adjustable
Worm
Gear



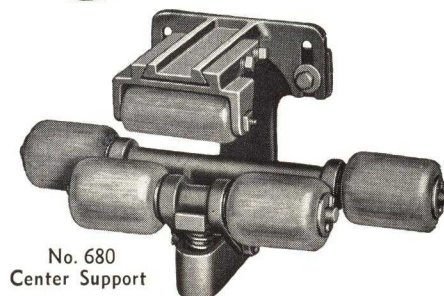
No. 338
Roller Support



Winding Brace



Awning Check



No. 680
Center Support

AWNING ROLLERS

Awning rollers must be constructed to eliminate all sag at the center. A sagging roller will cause excessive wear of moving parts and loosening of bolts and screws and result in unsatisfactory performance of the entire awning installation.

Awning rollers free of sag can be constructed from Fanner High Carbon Steel Tubing that is rolled especially for awning rollers. This tubing is rigid and light. It is furnished in lengths of 20 ft. and in 1 $\frac{1}{8}$ in. outside diameter and 2 $\frac{3}{8}$ in. outside diameter. Plain and hot galvanized finishes are available.

FANNER CRANK STYLE OPERATING FIXTURES

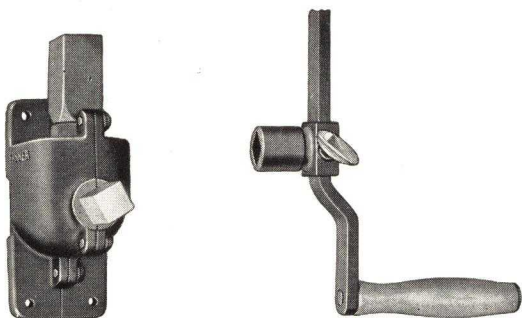
For Operating Awning Worm Gears and Lid Operating Gears

Awning worm gears and lid operating gears usually equipped with a hook and operated by means of a winding brace can also be connected to a gear box that operates by means of a crank. Fixtures for operating by this later method are shown on this page.

Gear boxes can be fastened to the face of the building at a convenient distance above the sidewalk with the drive shaft running down the face of the building or the box can be installed inside the

masonry jam or in the pilaster with the drive shaft inside. If the later method is used, it can be arranged so the gear box can be operated from either inside or outside the building.

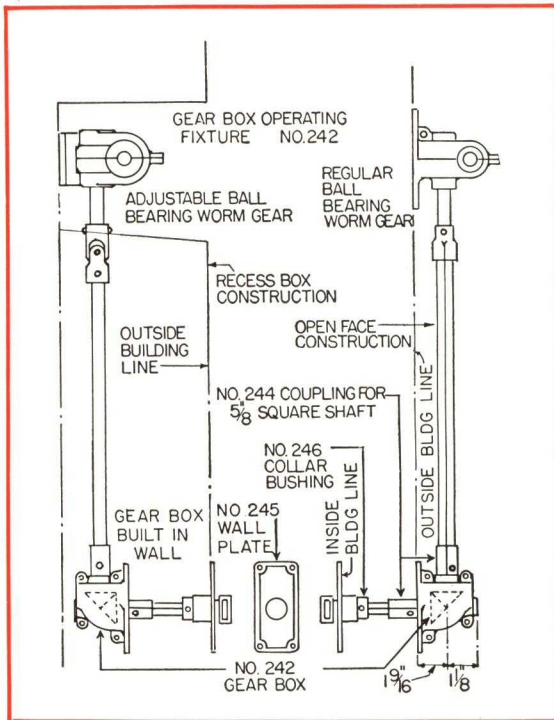
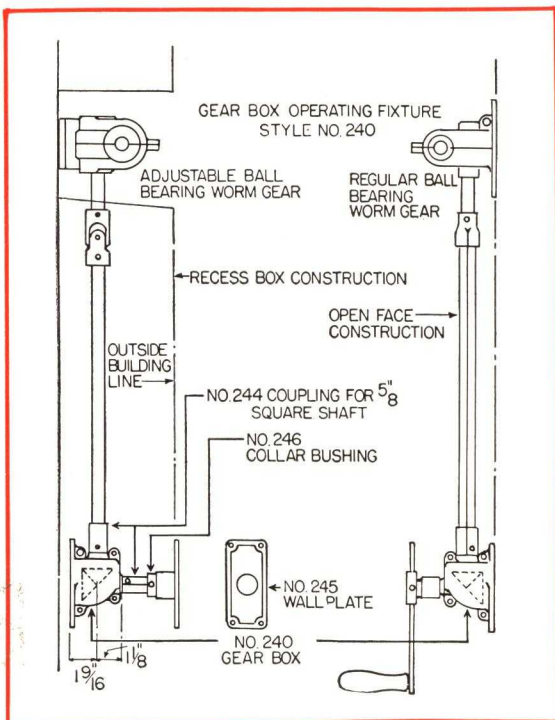
These fixtures are furnished in either galvanized malleable iron or bronze. Gear boxes are equipped with bronze gears. Style No. 240 gear box has the crank shaft extending from the front and No. 242 has the shaft extending from the back.



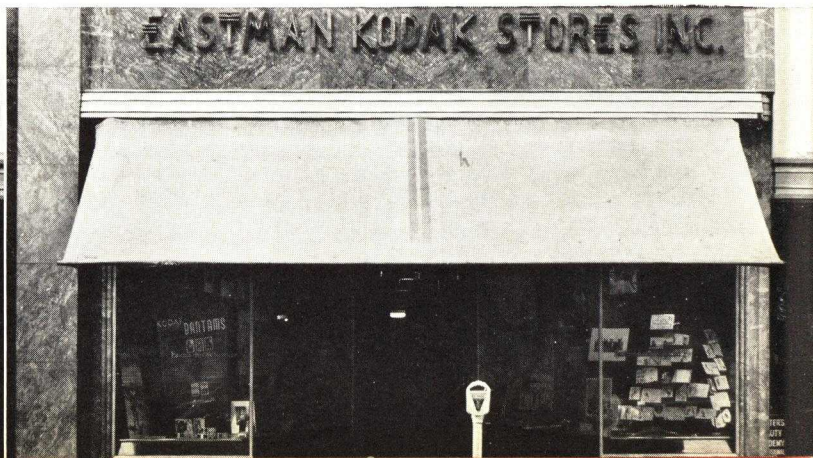
No. 240 GEAR BOX



No. 242 GEAR BOX



EASTMAN KODAK STORE, KANSAS CITY, MO.
Hinge Type Lid, Awning and Lid Operated with Fanner Equipment



STORE AWNING SPECIFICATIONS

Many chain stores and other large users of awnings deem it advisable to prepare specifications covering their awnings. To assist those interested in this commendable practice, we have prepared the following specification that covers the important factors in awn-

ing construction. Awnings built in accordance with this specification are the better type that result only when the best of materials are used and correct erection methods are followed.

AWNING SPECIFICATIONS

AWNING ROLLERS—Rollers shall be 1 $\frac{1}{8}$ or 2 $\frac{3}{8}$ in. outside diameter Fanner High Carbon Steel Tubing. If over 20 ft. in length, rollers shall be made in sections and coupled with steel or malleable iron roller couplings. Ends of rollers shall be fitted with malleable iron gudgeons securely riveted.

GEAR ROLLER FIXTURES—Awnings shall be operated by means of Fanner Galvanized Worm Gears of proper type and capacity. Fanner Galvanized Blank End Brackets or Ball Bearing Awning Checks to match worm gears selected shall be used.

If gear boxes, center supports or center support brackets are required they shall be of Fanner type and manufacture.

Selection of gear roller fixtures shall be worked out in accordance with THE FANNER MANUFACTURING COMPANY specifications on gear roller fixtures.

SUPPLEMENTAL PARTS—Winding braces and all miscellaneous awning hardware that may be required shall be of Fanner type and manufacture.

LATERAL ARMS—Fanner Galvanized Tubulateral Arms shall be used, size to be determined by the wall and projection measurements of the awning. Two arms shall be used for awnings up to 20 ft. in length with another arm added for each additional 10 ft. of awning. (An even number of lateral arms should always be used when possible.)

FRONT BAR—Front bar shall be 1 in. inside diameter galvanized steel pipe finished with a galvanized cap on each end.

CONSTRUCTION OF AWNINGS—The construction of the awnings shall be so arranged that there will be a clearance of at least (7 ft. or 7 ft. 6 in.) from the sidewalk to the front bar of the awning when the awning is lowered for use. The awning shall project from the face of the building sufficient distance to protect

the windows from sun at all times unless otherwise directed or prevented by some local building condition.

ERECTION OF AWNINGS—Gear roller fixtures and lateral arms must be mounted (tap-screwed) on steel plates of proper size and the plates securely fastened to the building. Whenever steel backing is available the gear roller fixtures and lateral arms may be fastened to it by drilling and tapping the steel and using machine bolts for fastening or by bolting entirely through the steel. Lock washers must be used on all bolts and screws. All bolts and screws must be galvanized.

GENERAL—The awning contractor shall comply with all local, city and state regulations covering the work and shall provide all necessary permits required.

The awning contractor shall be responsible for any damage to the property of caused by the carelessness or negligence of himself or his employees during the installation. He shall provide workmen's compensation and liability insurance for the protection of his employees and the general public until the work has been completed.

The awning contractor's estimate shall include supplying all materials, labor and equipment necessary for the complete manufacture and erection of the awnings.

AWNING FABRIC—(A specification covering the awning fabric can be included. We make no recommendation as to this material as our sphere in the awning industry is confined entirely to the specialized manufacture of awning hardware fixtures, lateral arms and lid operating mechanisms. Our distributors either manufacture or distribute awning fabrics and will be glad to co-operate with you.)

LID MECHANISMS—When recesses are to be equipped with lids the lids shall be operated with Fanner Mechanisms. Selection of mechanism will be worked out in accordance with THE FANNER MANUFACTURING COMPANY specifications on lid mechanisms.

FANNER SPECIFICATIONS ON STORE AWNING EQUIPMENT

Listed below is mechanism recommended for store awnings of average wall and projection. Other combinations of fixtures besides those listed are available and for details see our general catalog or write us.

Awning Length	Recess Construction Worm gear equipped with hook and operated by means of winding brace						Open Face Construction Worm gear operated by means of winding brace or gear box					
	20' and less	Over 20' to 30'	Over 30' to 40'	Over 40' to 50'	Over 50' to 60'	Over 60' to 70'	20' and less	Over 20' to 30'	Over 30' to 40'	Over 40' to 50'	Over 50' to 60'	Over 60' to 70'
Fanner Worm Gear Required	No. 348-S or 349-S	No. 348-S or 349-S	No. 337 or 338	No. 337 or 338	No. 337 or 338	No. 337 or 338	No. 30-S No. 335-S No. 336-S No. 346-S	No. 30-S No. 335-S No. 336-S No. 346-S	No. 334 or 344	No. 131	No. 131	No. 131
*Fanner Blank End Bracket Required	No. 53 or 53-B	No. 53 or 53-B	No. 3370 or 3380	No. 3370 or 3380	No. 3370 or 3380	No. 3370 or 3380	No. 52 or 52-B	No. 52 or 52-B	No. 3340 1310	No. 1310	No. 1310	No. 1310
*Fanner Ball Bearing Awning Check Required	No. 604-R or 605-R	No. 604-R or 605-R	No. 604-R or 605-R	No. 604-R or 605-R	No. 604-R or 605-R	No. 604-R or 605-R	No. 604 or 605	No. 604 or 605	No. 606 or 607	No. 607	No. 607	No. 607
Quantity of Center Support Re- quired	0	1	2	2	3	4	0	1	2	2	3	4
Quantity of Tubu- lateral Arms Re- quired	2	3	4	5	6	7	2	3	4	5	6	7
Size Tubing Re- quired for Roller	1 $\frac{1}{8}$ " O.D.	1 $\frac{1}{8}$ " O.D.	1 $\frac{1}{8}$ " O.D.	1 $\frac{1}{8}$ " O.D.	1 $\frac{1}{8}$ " O.D.	1 $\frac{1}{8}$ " O.D.	1 $\frac{1}{8}$ " O.D.	1 $\frac{1}{8}$ " O.D.	2 $\frac{3}{8}$ " O.D.	2 $\frac{3}{8}$ " O.D.	2 $\frac{3}{8}$ " O.D.	2 $\frac{3}{8}$ " O.D.
Size Front Bar Required	1" Pipe	1" Pipe	1" Pipe	1" Pipe	1" Pipe	1" Pipe	1" Pipe	1" Pipe	1" Pipe	1" Pipe	1" Pipe	1" Pipe

* The awning check takes the place of a blank end bracket and therefore when a check is used no blank end bracket is required.

† The quantity of Tubulateral Arms shown is the minimum quantity required for an awning of this length. It is advisable to use an even number of arms whenever possible as a better working awning will result.

In the above specification ball bearing worm gears and blank end brackets are not specified for awnings 30 ft. and less in length. They may, however, be substituted if desired and easier awning operation will result from such substitution.

SPECIFICATIONS OF FANNER WORM GEARS RECOMMENDED ABOVE

Gear No.	Projection	Gear Ratio	Kind of Gears	Ball Bearing Equipped	Back Plate Horizontal	Measurement Vertical
30-S	3"	7 to 1	Steel Cut	No	2 $\frac{1}{4}$ "	6 $\frac{1}{4}$ "
131	3 $\frac{1}{2}$ "	11 to 1	Steel Cut	Yes	2 $\frac{1}{2}$ "	6 $\frac{1}{4}$ "
334	3"	8 to 1	Steel Cut	Yes	2 $\frac{5}{8}$ "	6 $\frac{1}{4}$ "
335-S	3 $\frac{1}{2}$ "	7 to 1	Steel Cut	No	2 $\frac{1}{4}$ "	6 $\frac{1}{2}$ "
336-S	3"	8 to 1	Steel Cut	No	2"	6 $\frac{3}{8}$ "
*337	3"	11 to 1	Steel Cut	Yes	4"	2 $\frac{1}{8}$ "
*338	3 $\frac{1}{2}$ "	11 to 1	Steel Cut	Yes	4"	2 $\frac{1}{8}$ "
344	3 $\frac{1}{2}$ "	8 to 1	Steel Cut	Yes	2 $\frac{5}{8}$ "	6 $\frac{1}{4}$ "
346-S	3 $\frac{1}{2}$ "	8 to 1	Steel Cut	No	2"	6 $\frac{3}{8}$ "
*348-S	3"	8 to 1	Steel Cut	No	4"	2 $\frac{1}{8}$ "
*349-S	3 $\frac{1}{2}$ "	8 to 1	Steel Cut	No	4"	2 $\frac{1}{8}$ "

* Adjustable type worm gear for recess construction.

For specifications on other Fanner worm gears and gear roller equipment, see our general catalog.

AKRON FURNITURE CO



AKRON FURNITURE CO.
Akron, Ohio

AKRON FURNITURE CO



FORUM CAFETERIA
Kansas City, Mo.



JEANETTE'S SWEET SHOP
Hoboken, N. J.



SECTION 16

CONTINUED 

F. J. KLOES INC.

Designers, Manufacturers and Erectors of Awning Hardware

DISPLAY ROOM, OFFICE AND FACTORY

269 Canal Street, NEW YORK, N. Y.

TELEPHONE

CAnal 6-2330 and 6109

Product Specialties and Engineering Service

KLOES AWNING ROLLER GEAR MECHANISMS FOR BUILT-IN AWNINGS: manually and electrically operated equipment.

KLOES PATENTED FLEXIBLE FOLDING OUTRIGGERS for Store Front Awnings: Bronze, Brass, Duraluminum and Galvanized Steel.

KLOES PATENTED DISAPPEARING FOLDING OUTRIGGERS: designed and made to specifications.

KLOES PATENTED FOLDING OUTRIGGERS for Large Terrace Awnings. Special constructions to suit requirements.

KLOES SIDEWALK CANOPY FRAMES and FITTINGS; also STATIONARY AWNING FRAMES and CONNECTING FITTINGS.

KLOES RESIDENTIAL and TERRACE AWNINGS of any description.

KLOES TERRACE SOCKETS for future awning equipment, vibration-proof and weatherproof.

MANUAL and AUTOMATIC PANEL OPERATING EQUIPMENT.

Also an unexcelled line of Window Shades and Curtains.

Service

Our Construction Department will be pleased to co-operate with architects and engineers. Detailed designs and specifications for awning installations that will conform with the architect's requirements will be supplied on request. See specimen below at left.

AWNING EQUIPMENT FOR STORE FRONTS**Specification Limitations**

Rollers and Operating Gears—Awning rollers should be located at not less than 9 ft. 6 ins. above pavement level. Roller recesses for built-in awnings must be at least 6x6 ins. in cross section.

Rollers and operating gears may be built into recess above display windows. Built-in roller gearing to be operated by means of long detachable handles or built-in crank gearing. Roller gearing may be completely concealed. (Note: See detail on following page.)

Kloes roller mechanisms all have machine-cut gears in solid bronze cases. Fittings made to suit requirements of conditions.

Awning Outrigger Frames of Various Shapes—Awning front bars are made of tubing to span, without sagging, the distance across

store fronts or between supporting outriggers. Front bar tubings in round or rectangular sections are made of metal to match the material of the store front.

Awning outrigger frames, when extended, must be at least 6 ft. 9 ins. clear of pavement. In some towns local restrictions limit clearances beneath awning frames at 7 ft. 6 ins. or more. To effectively shade display windows the awning outriggers should carry the awning bar to a line at least as far forward from the face of the window as the bottom of the window is below the clearance limit of the awning.

Kloes flexible folding outriggers, plain or ornamental, can be obtained to provide any desired proportion of drop and projection.

Canvas Coverings—Awning covers made to suit any requirements. Fire-resisting or other chemically-treated fabrics of any description.

ROCKEFELLER CENTER

COMPLETE INSTALLATION OF KLOES AWNING MECHANISMS ON BLDG. 4-A-4-B-6

Fancy Extensions and Outriggers

For store fronts specially designed to have awning outriggers concealed within recesses we can furnish outriggers having ornamental members, which, when in raised position, appear as part of the window trim ornamentation, or where no ornamentation is desired outrigger members can be designed to close the recess openings so as to appear to be part of the window framing. Minimum clear width of recesses must not be less than 1½ in. for the usual store front awning.

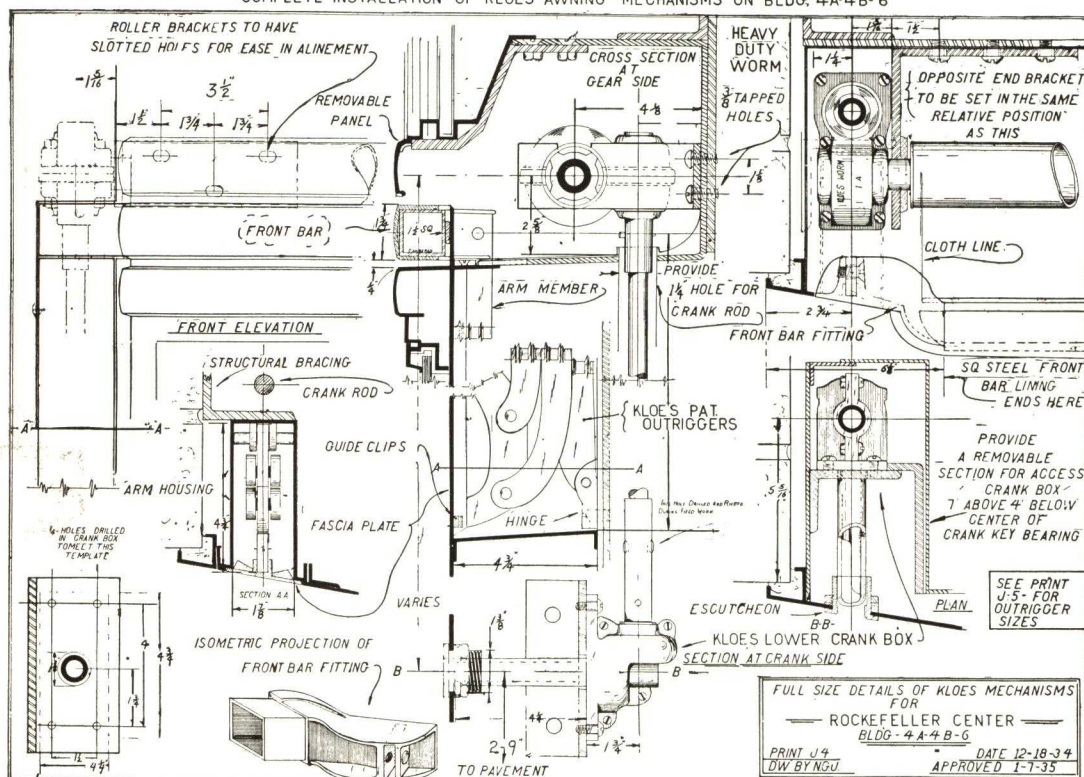
Outriggers which are to be concealed are made to fit the conditions and type of construction called for in the architect's design. (Note: See illustration on following page.)

Shades and Screens

Kloes electric motor control units are used on stereopticon screens, skylight shades, or for other purposes as well as for awnings.

Glazed Fronts

Where glazed facial fronts are to be constructed necessary data with reference to method of fastening awning equipment may be had beforehand, thereby avoiding later marring of the front.

**A Few Buildings on Which Kloes Awning Mechanisms Are Now in Use**

Empire State Building, New York
Rockefeller Center, New York
Hotel Lincoln, New York, N. Y.
Gimbel Brothers, New York, N. Y.
Bloomingdale Brothers, New York
Waldorf-Astoria Hotel, New York
Netherlands Hotel, New York
Hess Bros., Allentown, Pa.

Best & Co., New York, N. Y.
Saks Fifth Avenue Store, New York, N. Y.
Salmon Tower, New York, N. Y.
Savoy-Plaza Hotel, New York, N. Y.
Liberty Lincoln Building, Philadelphia, Pa.
S. H. Kress Co., Various Cities

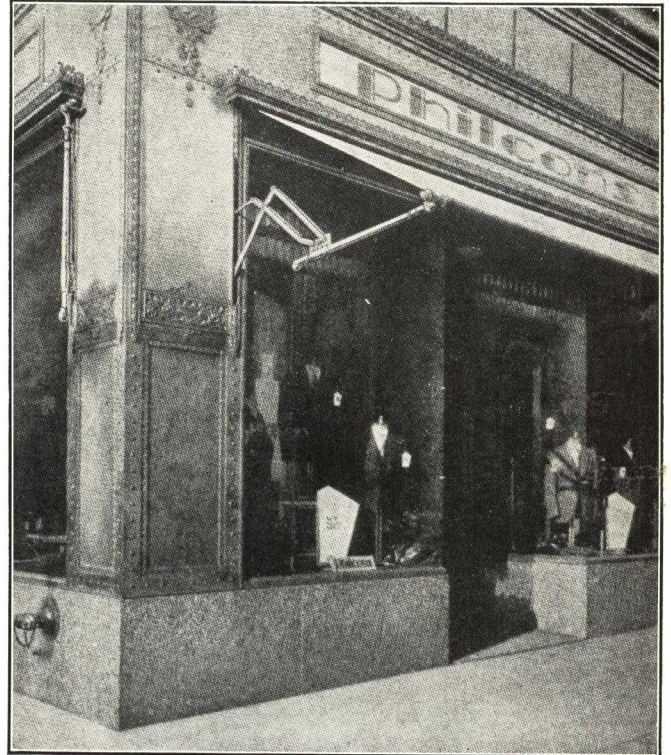
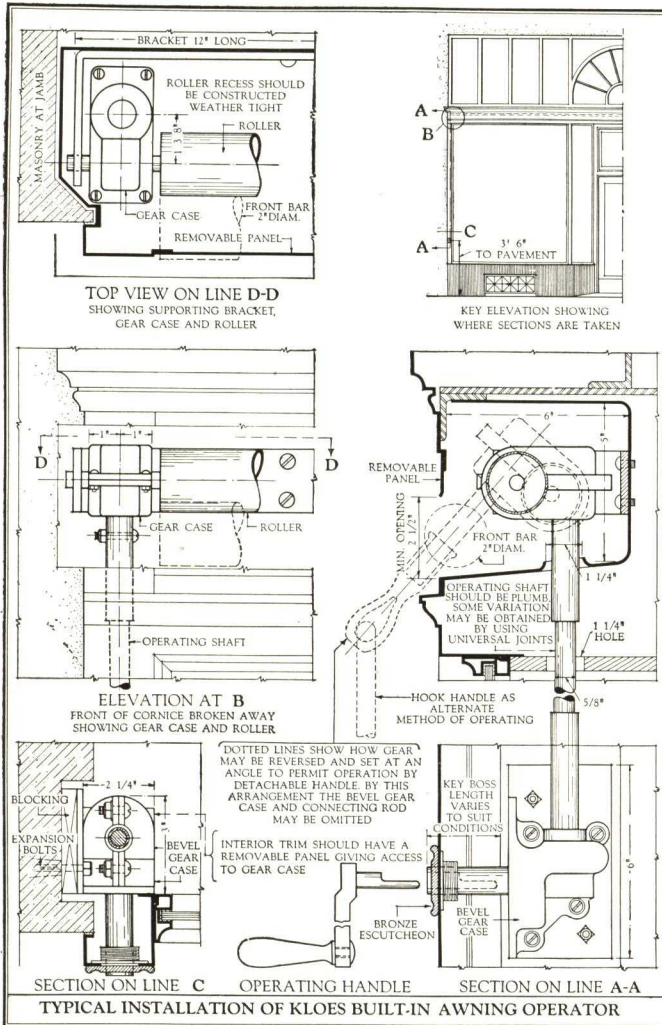
A. I. U. Building, Columbus, Ohio
Strawbridge & Clothier, Philadelphia, Pa.
Fox Theatre Building, Detroit, Mich.
Reynolds Building, Winston-Salem, N. C.

Statler Hotel, Boston, Mass.
Lamson Store, Toledo, Ohio
Rosenberg Store, Milwaukee, Wis.
Polsky Department Store, Akron, Ohio
Dominion Building, Montreal, Can.
Eaton Department Stores, Canada

Complete equipments supplied and shipped for local installation. Easy Assembly Prints and Directions supplied with equipment.

KLOES BUILT-IN GEAR ROLLER AWNING MECHANISM

Kloes Awning Operating Mechanisms and equipment have been specially developed for use on store fronts and similar situations, and are to be concealed when not extended. The awning canvas, which is sometimes provided under a separate contract, is rolled up on rollers which, with the necessary gearing mechanisms, are built into recesses provided (by others) in the construction of the window framing.



Corner of a Large Building Having Twenty Store Fronts All Equipped with Kloes Concealed Equipment

Note compact cornice construction in which awning roller mechanism is located. When in raised position awnings are entirely out of sight, leaving only column effects of outer members conveying design features of architect's selection.

member becomes a short shaft terminating in an inconspicuous eye end which projects diagonally through the fact of the recess opening. This method is shown on the drawing as an alternate.

Concealed Gear—A more inconspicuous type of construction has a vertical connecting passage through one of the trim frames of the window or through a chase in the masonry pier into which a bevel gear crank case with a connecting rod reaching to the roller gear is placed. The crank case may be set up to be operated from the street front or from the inside of the store. The drawing shows this type of control.

Kloes Built-in Gear Roller Awning Mechanism may be used with any type awning outrigger whether straight pivoted, vertical folding, or lateral folding. A complete roller installation includes furnishing and setting the roller, the roller operating devices and all of the necessary hardware, bolts, etc., required for supporting the work in place. The awning box, window trim, etc., must be provided by others. The accompanying illustration shows the details of the roller and gives suggestions for construction of all enclosing and supporting work.

Concealed Awnings—When Kloes concealed awnings are provided there is no canvas or unsightly mechanism visible from the street when the awnings are in raised position. This equipment is unexcelled for compactness and durability.

Kloes Operating Gears—All gear cases are made of bronze, machined to be grease tight, and all gears are machine cut. Complete outfits are made up in our own shops to measurements and details as may be shown on architects' drawings or we will provide designs and shop drawings.

Erection—Our skilled erectors are available for installations at any point if desired, but any capable mechanic, carpenter or iron-worker, can be relied upon to effect a satisfactory installation, following the detailed instructions and prints supplied.

Control Points—The gearing mechanisms which control operation of the awning roller can be driven by hand or by motor and the point of control can be on the street front or on the inside of the window.

Recess Dimensions—Roller recess for ordinary store fronts up to 18 ft. wide need not exceed 5 ins. height by 5 ins. depth; for wider store fronts 6x6 ins. is minimum. Roller recesses should be weatherproof.

If framed of wood the back plate to which the bearings are to be attached should be 1 1/4 ins. thick. Recess boxes made of 1/2 in. thick steel plates are serviceable and economize space.

Awning rollers up to 20 ft. 0 in. in width are supported in end bearings only. For wider awnings intermediate supports are used to extend the length of roller to any required distance.

Gear Control—A popular type of construction provides for operation of the awning roller by means of a long detachable handle. In this case the gear control



Kloes Built-in Gear Roller Awning Mechanism Does Not detract from the Architectural Beauty of the Store Front

TELEPHONE: BRYANT 9-2600

NEW YORK AWNING CO., INC. CABLE ADDRESS: "AWNINGS"Designers and Manufacturers of Stevens "Nyaco" Awnings and Equipment
401-403 West 36th Street, NEW YORK, N. Y.**Products**

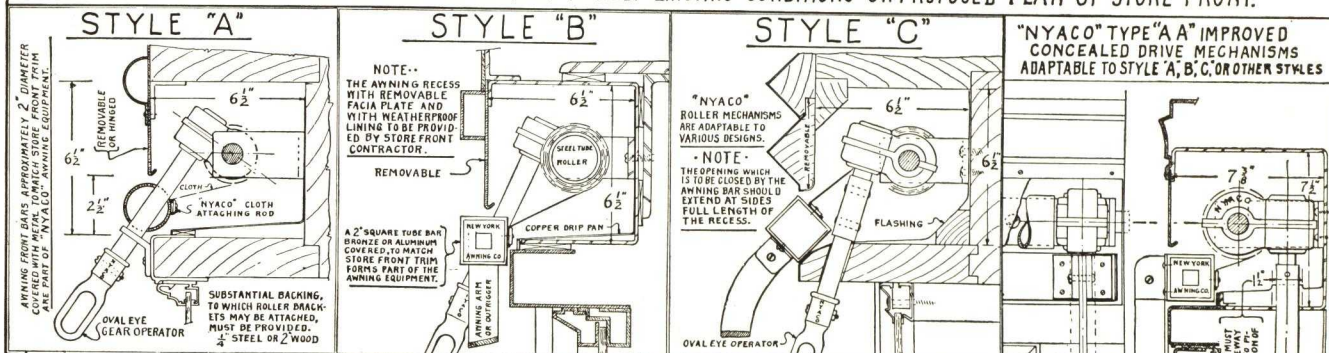
AWNINGS (for all purposes).
AWNING MECHANISMS, ROLLERS AND FIXTURES.
FOLDING ARMS (Collapsible and Disappearing).
TERRACE AND ROOF AWNINGS.
SIDEWALK AWNINGS AND CANOPIES.
MULTI-FRAME ADVERTISING AWNINGS.
FIREPROOF METAL AWNINGS.

**Specialties**

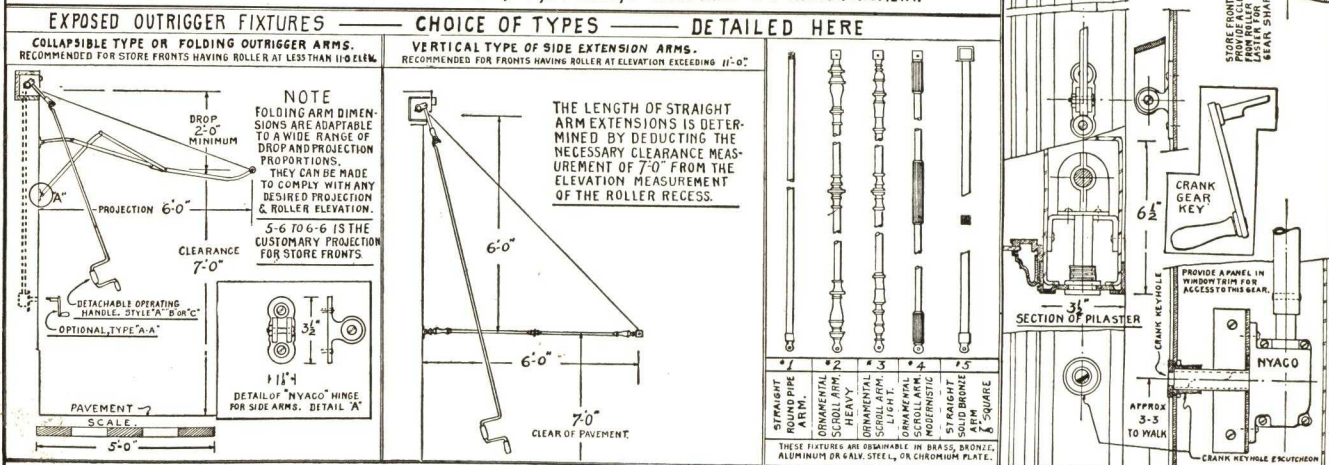
Fire-Retarding Fabrics.
Awning Lettering "Visible at Night."
Nyaco Vestibule Type Awnings.
Facia Cover Operating Mechanism.
Electrically Controlled Awnings.
Worm Gears and Control Boxes.
Exclusive Designed Awning Cloths.

DETAILS OF "NYACO" BUILT-IN CONCEALED RECESS AWNINGS

"TYPICAL LAYOUTS ONLY" CAN READILY BE CHANGED TO MEET EXISTING CONDITIONS OR PROPOSED PLAN OF STORE FRONT.



NOTE.. RECESS BOX WITH FLASHING BY OTHERS (IN ALL CASES). AWNING ROLLER RECESS BOX SHOULD BE LOCATED AT ELEVATION NOT LESS THAN 9'-0" ABOVE PAVEMENT, NOR, IF POSSIBLE, NO MORE THAN 13'-0" ABOVE PAVEMENT.

**Architects' Complete Specifications**

Recess Boxes—To be supplied by store front contractor, of suitable size and construction for NYACO type () awning.
Awning Equipment—To be NYACO style () furnished with all exposed parts in (state metal desired—aluminum, brass, bronze, galvanized steel or brass chromium plated).
Awning Operation—To be by means of NYACO oval and detachable handle (or NYACO concealed type AA, if your store front construction warrants it).
Awning Side Arms—State style desired (NYACO vertical folding, square, round or ornamental).
Awning Cloth—NYACO 8.42 oz. (30-in. width) U. S. Army duck, in color to be later selected.
Drawings—Complete detailed shop drawings must be submitted for approval before proceeding with any work.

IMPORTANT NOTICE

NYACO furnishes *complete awnings*—specially made to your order. Please do not confuse us with supply concerns or agents selling stock fixture equipment only. For your protection, specify—"COMPLETE AWNINGS BY NYACO." (Thank you.)

Prominent "Nyaco" Installations

World's Fair, New York
Lerner's, Tacoma, Wash.
Chrysler Building, New York
Child's, Boardwalk, Atlantic City
Corning Glass Bldg., New York
Newark & Essex Bldg., Newark, N. J.
The Bermuda Press, Bermuda

R. H. Macy & Co., New York
John I. McNair, Launenburg, N. C.
Arnold Constable, New Rochelle, N. Y.
Ivey's, Asheville, N. C.
S. H. Kress & Co., Miami, Fla.
Meyer Bros., Paterson, N. J.
Klein's, San Juan, Porto Rico

Rockefeller Center, New York
Daily Record Bldg., St. Louis, Mo.
Ford Motor Company, New York
Lerner's, Cincinnati, Ohio
Mark Cross—Fifth Ave., New York
Essex House, New York
New York Central Bldg., New York
Birk's Bldg., Montreal, Canada

Empire State Building, New York
Gulf Building, Pittsburgh, Pa.
Mt. Sinai Hospital, New York
Williamsburg Houses, Brooklyn, N. Y.
Loveman, Joseph & Loeb, Birmingham, Ala.
Sojourners Lodge, Cristobal, Canal Zone

We Serve Over 50 Local and National Chain Store Organizations—Insist on NYACO Awnings

THE SENSATIONAL NEW "IDEAL" TYPE STORE AWNING—PERFECTED BY "NYACO"

A Completely Concealed Lateral Arm Recess Awning

No Lower Fastenings Required—All Arms and Fixtures Enclosed in Recess Box

RECENT INSTALLATIONS

Cincinnati, Ohio
El Paso, Tex.

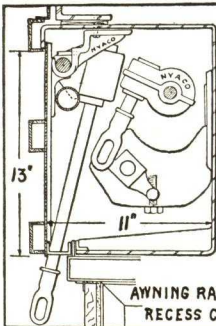
Albany, N. Y.
Laurenburg, N. C.

Chicago, Ill.
Washington, D. C.

Charlotte, N. C.
Detroit, Mich.

Blytheville, Ark.
St. Petersburg, Fla.

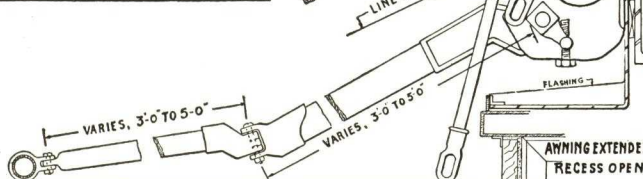
Kansas City, Mo.
Norfolk, Va.



NYACO "IDEAL" TYPE

..TYPICAL.. MEASUREMENTS APPROXIMATE..

LATERAL ARMS FOLD HORIZONTALLY BENEATH THE AWNING ROLLER.
LATERAL ARMS CANNOT BE USED FOR SPACES LESS THAN 8'-0" WIDE.

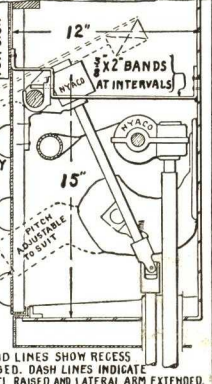


NYACO "PERFECTION" TYPE

OUR EXCLUSIVE COUNTERBALANCE ARRANGEMENT ESPECIALLY FOR WIDE STORE FRONTS

NO FRONT TOO WIDE
NO FACIA PANEL TOO HEAVY
NO SPRINGS REQUIRED

INSIST ON "NYACO"
AVOID MAKESHIFTS



NOTE

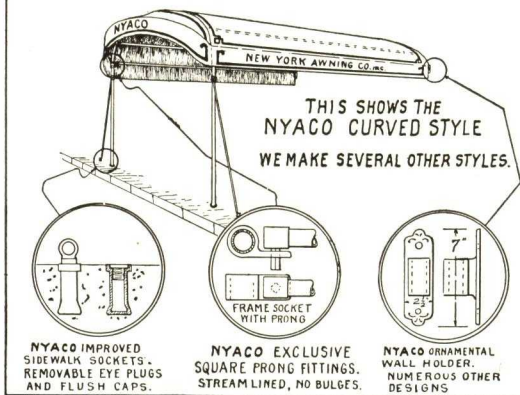
NYACO "IDEAL" AND "PERFECTION" TYPE MECHANISMS OPERATE FACIA COVER PANELS & AWNING ROLLERS WITH EITHER OUTSIDE OVAL EYE OPERATOR OR WITH CONCEALED CRANK BOX & SHAFT, (SEE TYPE "A"), PROVIDED SUITABLE WINDOW FRAME PILASTERS ARE AVAILABLE. THE STORE FRONT CONTRACTOR MUST PROVIDE A RECESS BOX OF REQUISITE SIZE & CONSTRUCTION FOR NYACO EQUIPMENT. WE WILL FURNISH COMPLETE DETAILS.

"NYACO" AWNINGS at ROCKEFELLER CENTER NEW YORK

On your visit to "Radio City" examine our improved and modern style NYACO Store Awnings. NYACO awning cloths are installed on all buildings in the development. Notice the special bronze arms, concealed in side pockets, the disappearing front rods and the concealed operating mechanism; the special fire retarding fabric in brilliant red terra cotta color, which was introduced and installed at

British Empire Bldg. Palazzo d'Italia
R.K.O. Building R.C.A. Building
La Maison Francaise Center Theatre
International Bldg. Time and Life Bldg.

"NYACO" SIDEWALK CANOPIES ENTIRELY REMOVABLE



NYACO IMPROVED
SIDEWALK SOCKETS.
REMOVABLE EYE PLUGS
AND FLUSH CAPS.

NYACO EXCLUSIVE
SQUARE PRONG FITTINGS.
STREAM LINED, NO BULGES.

NYACO ORNAMENTAL
WALL HOLDER.
NUMEROUS OTHER
DESIGNS

"NYACO" AWNINGS USED ON MANY FAMOUS RESIDENCES

INDIVIDUAL DESIGN
EXCLUSIVE FABRIC
SUPERIOR WORKMANSHIP

A Few "Nyaco" Residential Installation References

Walter P. Chrysler W. W. Aldrich
Cornelius F. Kelley Alfred P. Sloan
Wm. B. Leeds Alfred Loomis
Bernard F. Gimbel Robert Bacon
John J. Astor Edsel Ford

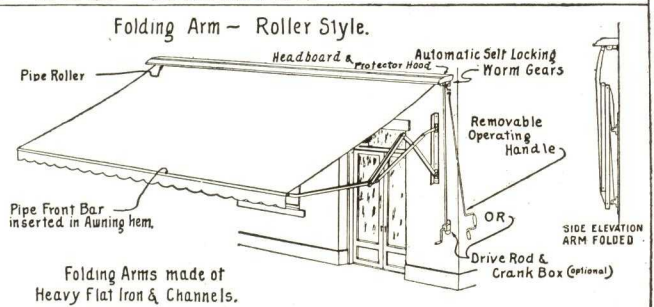
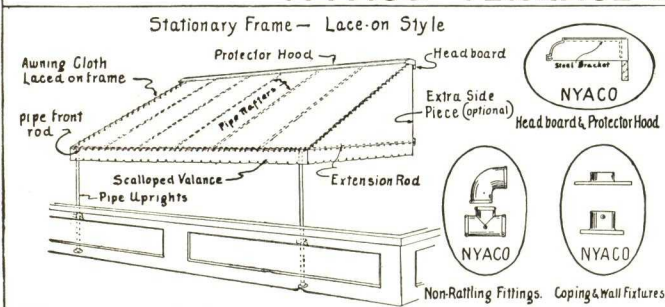
Avoid Fire Hazard

Use "Nyaco" Awnings having cloth with special fire retarding treatment. Send for samples.

Nyaco Catalogue

Gladly sent upon request to Architects, Builders, Engineers. Ask for your copy.

"NYACO" TERRACE OR ROOF AWNINGS



A Few Representative Buildings Having "NYACO" Installations

THE SUNVENT METAL AWNING COMPANY

Sunvent Metal Awning, Sunvent Exterior Blind

3712-18 Bronx Boulevard, NEW YORK, N. Y.

Something New Under the Sun

The Sunvent Metal Awning is custom built for openings up to 8 ft.—a vented awning, simply designed with interlocking sections and remote control. Made in special alloy aluminum, finished in various color schemes obtained from our standard colors.

Not merely an awning, it functions as a venetian blind, shutter, ventilator or heat ray deflector, and affords maximum fresh air, direct light, full vision, shade and privacy.



Outstanding Features

Durability—Made of rust-resisting materials, the action of the elements has no effect. All component parts have successfully undergone exhaustive tests for strength, friction, shrinkage, etc. It can be exposed throughout the four seasons of the year.

Flexibility—A combination awning, vented awning, exterior venetian blind or no-draft ventilator. (see illustrations).

Noiseless—Slats formed to interlock which eliminates clatter or metallic flapping.

SunRay Deflector—Metal reflects back into space the greatest portion of the sun's heat rays.

Window Insulation (Initial Stage of Air Conditioning)—The Sunvent Metal Awning has brought back the awning to modern importance as a valuable heat reducer—especially in conjunction with air-cooling equipment—not only because solar radiation is deflected, but also because

the ventilating function of Sunvent induces free circulation of air beneath the awning. This feature eliminates "heat pockets," prevalent where other materials are used. Sunvent nullifies the heat transfer ordinarily conducted through the window—resulting in noticeably cooler room temperatures.

Light Control—Slats can be venetianed in either awning or blind position with inside remote control, permitting the diffusion or elimination of outside light rays.

Fireproof—Fire-Protective—Entire metal construction renders them fireproof, thus eliminating worry from outside sources. In shutter position, they also serve as a fire preventive.

Window Protector—Rugged construction provides instant protection to windows during disturbances and high winds. Also discourages vandalism and malicious mischief.

Economical

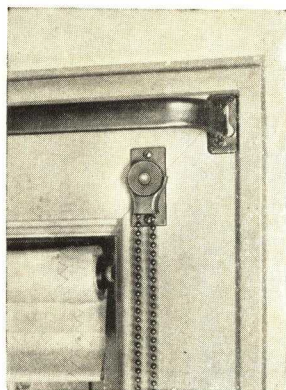
The initial cost of installing Sunvent Metal Awnings is your final cost. Compared with fabric, the life of non-corrosive metal is indefinite. It does not rot, fray, tear or burn, consequently it maintains a neat and trim appearance. Being permanent, all-year awnings, the repeated cost of erection and removal is also saved.

On buildings which are air-conditioned, Sunvents provide window insulation resulting in additional operating economies.

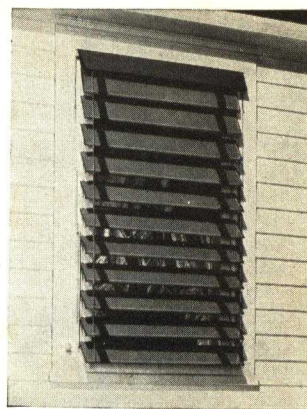
Remember Sunvent is more than a mere awning. Its various benefits, throughout many years of constant service, are inestimable. The results of false economy are costly—it is true economy to buy quality. *Economize with Sunvent Metal Awning.*

Sunvent Exterior Blinds

Sunvent Exterior Blinds (not shown) differ from Sunvent Metal Awnings in that they have metal pins at the ends of the slats, which run in channel guides positioned at sides of openings.



Remote Control—Located inside window. By this device the ventilating function of Sunvent Metal Awning can be regulated conveniently, without opening window or screen.



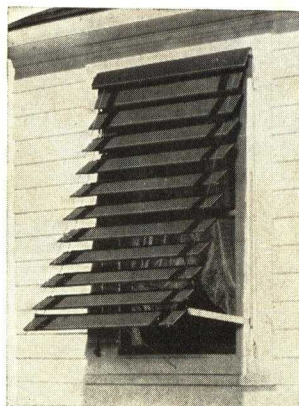
Exterior Venetian Blind—Controlled from interior. Arrests heat on outside of window. Eradicates "dust-catcher" annoyance; and sustains the effect of beautiful curtains.



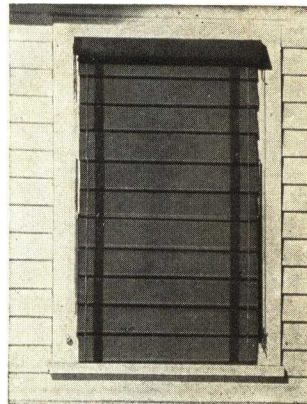
"No-draft" Ventilator—In the "up" position the awning nests compactly beneath a neat metal canopy. It deflects gusts of wind, rain and sleet, thereby protecting a lowered window.



Awning—Neat, trim, attractive and enduring. Noiseless, too, because sections are held together firmly by their interlocking construction—no flapping or metallic clattering.



Vented Awning—An outstanding feature—regulated by remote control. Venting permits free circulation of air, direct penetration of light, and affords full vision.



Shutter-Blind—A turn of remote control device closes the vents and forms a complete enclosure. Eliminates "boarding-up". Discourages vandalism and malicious mischief.

